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Improving Project Management Process

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Preface

The topic of process development has always been a passion of mine. It fulfills my interest to develop and create better ways of doing things. In addition, I enjoy creating things that focus on the small but have a powerful overall impact. By developing processes, you can work efficiently and save time and money. Developing processes can improve the efficiency of organizations and increase revenue.

The purpose of this study is to answer general business questions. Normally, companies do not have time to think about how their processes can be improved. The purpose of this thesis is to provide ideas on how to apply Lean ideology creatively. This thesis contains some ideas on how to improve simple daily tasks and recognize the power of what we can all do better.

In addition to learning research skills, organizing skills, development work, and a lot about myself, this thesis project allowed me to engage in some process development work.

Abstract

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Objective of this thesis was to improve project management processes for the case company.

An analysis of the current state of the organization and project management process is conducted using qualitative methods, including process performance analysis and stakeholder interviews. A stakeholder interview and feedback from the main stakeholders are the main sources of data.

The study consists of four stages. Current State Analysis (CSA) is the first step of the process, which identifies the current project management process's strengths and weaknesses. Based on the identified weaknesses, a review of existing knowledge and best practices is conducted in the second stage. In the third stage, the initial proposal for improving the project management process is co-created. The fourth and final stage of the study is validating the initial proposal with the main stakeholders. A final proposal to improve project management, including best practices and plans for future development, is the result of the study.

Keywords: project management process, meeting procedures, project schedule

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1 Introduction

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. Project management is accomplished using the processes such as: initiating, planning, executing, controlling, and closing. (Project Management Institute, 2000)

Project Management plays a crucial role in companies' success if they want to do business efficiently and profitably. A successful project management process can improve the customer experience and customer satisfaction, an important measure for companies. An effective Project Management process allows a project to be controlled, led, and implemented with available resources. The projects have many connected parts, and all the company's activities will be somehow related to the project management.

This study identifies improvements that can make the company's current project management process more effective and profitable.

1.1 Business context of the Case Company

The case company is a cable and wire production technology leader and works globally. The company delivers cable manufacturing lines for technology customers. The main businesses are divided into three processes: Delivering new Production Capacity, Managing Product and Line Portfolio, and maintaining Customer Production Capacity.

The case company has 140 employees working on Sales and Business Strategies, Technology and Development functions, Operations, Services and the support functions HR, IT, and Finance.

The project management team consists of 8 members, including a manager. Responsibilities are divided within the product portfolio and sometimes within the geographical area. Sales and Project Management work close together. The project management team has a potent combination of product experience, and the members have a long history in the company.

1.2 Business challenge, Objective, and Outcome

The business has been brisksed for the case company in recent years. Today's business world demands more flexibility, but the project management of the case company has not been updated to meet those requirements. All functions today demand strong project management to support operations.

Most of the case organization's activities are project-based. The project management process is responsible for managing the project structure during the whole project lifecycle. Typically, the project is delivering new production capacity. Because delivery projects play a crucial role, smooth project management has a significant role in the case company.

This study started to define that the current project management process was unclear in the case company. Project Management is not working well enough; time scheduling of unusual projects and key performance indicators have not been established. The project management process takes care of the whole project management, timetable, resources, and budget.

The objective of this study is to improve the Project Management process, and the outcome of this study is the improved Project Management process. The outcome allows the case company to plan and implement improvements to the process.

1.3 Outline of the Thesis Report

The study consists of seven sections. The first section of the study gives an overview of the study, introduce the business problem and described the company environment.

The project plan, data collection, and research approach are discussed in section 2. Stage two describes project plan providing details of the selected research approach, research design, and data collection plan.

Current state analysis and conclusions are discussed in section 3. Discussion of the business challenges was held in the last section and will address it in the following four stages. In this first stage, gathered details about the current situation. Knowledge was gathered from existing project management process documents, surveys, and interviews with different stakeholders. A current state analysis evaluated the process' strengths and weaknesses.

Section four reviews relevant literature and outlines the study's conceptual framework. Literature research identified weaknesses after the current state analysis was conducted. Relevant literature was reviewed and summarized based on the findings. The collected ideas from literature are targeted to provide ideas to the outcome of the study.

The fifth section presents the initial proposal for improving the Project Management (PM) process. Recommendations were created using relevant literature to address identified weaknesses. Afterwards, stakeholders were consulted and utilized in co-writing the initial recommendations.

Section 6 details the feedback and corrections to the proposal and resulting final proposal. The initial recommendations were verified and based on feedback from the nominated stakeholders, and the final improvement process was established.

Stage 7 covers the conclusions of the study and includes a thesis credibility assessment related self-evaluation by the author. The outcome of the study provides suggestions for improving the case company project management process. Recommendations are specified to focus on two different areas on the project management. Recommendations to improve project management schedule is wider project and needs more effort to establish. Recommendations to improve meeting procedures takes less room to establish and it's ready framework to use.

Next section introduced the project plan, with the selected research approach, research design and the data plan.

2 Project Plan

The business challenge, objective, and outcome were introduced in the previous section. Methods and materials for achieving the outcome are discussed here. This section presents the research approach, research design, and data collection plan.

2.1 Selection of Research approach

A research approach involves logical steps for collecting data, analyzing it, and interpreting the results. Each method of conducting the research has its advantages and disadvantages. In each type of research, a problem is resolved using different research methods, and the objective of the research is generally revealed.

Design Research produces functional and practical solutions, combines development and research, and is conducted in organizations to improve operations. The objective includes processes, activities, products, services, and situations (Kananen, 2013: 20-21).

Qualitative research is a form of research in which a researcher or designated core searcher collects and interprets data, making the researcher as much a part of the research process as participants and the data they provide (Corbin & Strauss, 2014). In qualitative research, the goal is to investigate a phenomenon and to describe the results using information rather than statistical analysis. As the investigation is not strictly constrained to the methods used, it offers more flexibility to the investigator (Kananen 2013: 31-32).

In this study, selected research approach in this study is Design Research, which tools to improve the real business problem. Qualitative research is selected as the research methodology to gain new insights into the topic. This research topic is on real business problems.

2.2 Research Design

The research design consists of four stages which are presented in Figure 1. The stages follow a strict logic: first current state analysis, the literature research, process improvement, and proposal validation to achieve the objective of this work.

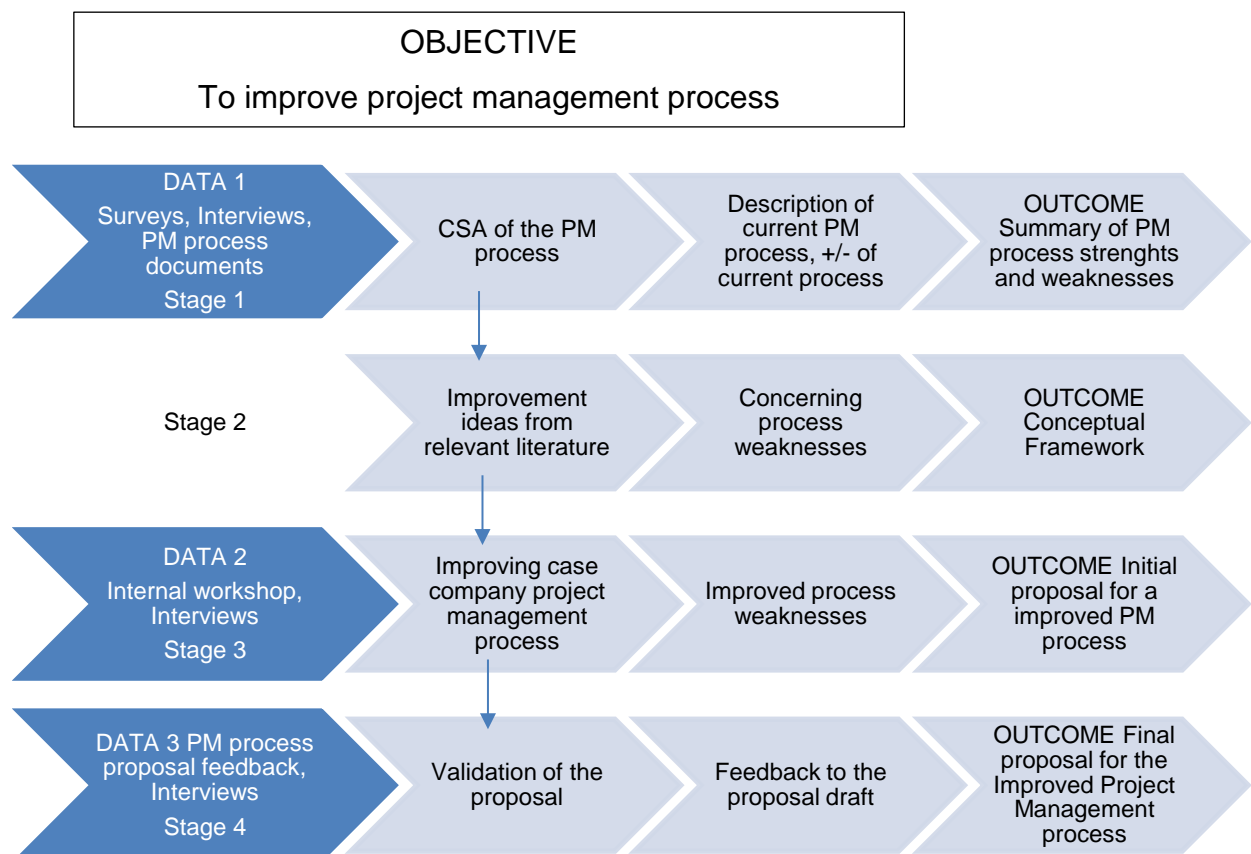


Figure 1 Research Design of this study

The first stage consists of an analysis of the current state. It is conducted with interviews with stakeholders and documents of the project management process. This stage aims to find the current situation's strengths and weaknesses of Project Management process.

The second stage consists of a literature review to collect professional academic literature and the best practices to focus on the identified process weaknesses. The outcome is the conceptual framework of the study.

In stage three, the target is to improve the case company PM process with the help of stakeholders' internal workshops and interviews. The goal is to get an initial proposal to improve the PM process.

The final stage four is the validation of the proposal will be presented to receive feedback, improvement ideas, and changes, if necessary. The validation is performed by presenting the initial improvement ideas to project management.

2.3 Data Plan

This thesis project's data collection and analysis were based on the Data plan as shown in Table 1. The data collection process is divided into three main data collection phases: current state analysis, improving project management process, and validation of proposed PM process.

The data used are interviews, documents, and workshops. As shown in Table 1, the Data 1 information was collected for analysis of the current state. Data 1 included interviews with primary stakeholders, observation, and research of existing process description documents. The main purpose of the interview as a tool of data collection is to gather data extensively and intensively. The structure of the interview was selected using an unstructured interview method. The unstructured interview usually starts with a simple opening question and then progresses based on the initial response (Gill, Stewart, Treasure & Chadwick. 2008).

The documents used were available on the case company's intranet. Interviews were conducted remotely with Zoom. The duration of the interviews took approximately one hour. Observations were collected last year when by attending weekly meetings.

Table 1 Data plan of this study

	CONTENT	SOURCE	INFORMANT	TIMING	OUTCOME
DATA 1 ANALYSIS OF CURRENT PM PROCESS (GATE 3)	<ul style="list-style-type: none"> Description of current PM process +/- of current process 	<ul style="list-style-type: none"> PM process documents Stakeholder's process survey Stakeholder theme interviews 	Internal key stakeholders: <ul style="list-style-type: none"> Head of Project managers Project Managers Head of Project Engineering 	JANUARY	Summary of PM Process strengths and weaknesses
DATA 2 IMPROVING PM PROCESS (GATE 5)	<ul style="list-style-type: none"> Improving process weaknesses 	<ul style="list-style-type: none"> Stakeholder theme interviews Stakeholder workshops 	<ul style="list-style-type: none"> Head of project management Head of Project Engineering 	MARCH	Initial proposal of a partially improved PM process
DATA 3 FEEDBACK VALIDATION OF PROPOSED PM PROCESS (GATE 6)	<ul style="list-style-type: none"> Feedback to the proposal draft 	<ul style="list-style-type: none"> PM process proposal feedback data Interviews 	<ul style="list-style-type: none"> Head of project management 	MARCH-APRIL	Final proposal for improved Project Management process

The data from the sources are shown in Table 2. Interviews were documented in field notes, documents in various files, and recorded observations in field notes. Information was collected for knowledge of the current state analysis. The first data set included six Zoom interviews, three PM documents, and observations of participants.

Table 2 Used data in Current State Analysis

DATA 1 – Current State Analysis					
#	Source	Data Type	Topic	Time	Documented
1	Manager 1	Interview (Zoom)	Process operation	12.1.2022 1h	Field Notes
2	Manager 2	Interview (Zoom)	Process operation	12.1.2022 1h	Field Notes
3	Manager 3	Interview (Zoom)	Process operation	14.1.2022 1h	Field Notes
4	Manager 4	Interview (Zoom)	Process operation	14.1.2022 1h	Field Notes
5	Manager 5	Interview (Zoom)	Process operation	17.1.2022 1h	Field Notes
6	New Capacity delivery process document	Document (PDF)	Process information	11.1.2022	New Capacity delivery process map
7	Project management process description	Document (Intranet)	Process information	11.1.2022	Converted to PM process flow chart
8	Project management process document	Document (Powerpoint)	Process information	11.1.2022	PM process chart
9	Project follow up meeting	Observation (in the meeting)	Process operation	2021	Field Notes

The new capacity delivery process document what is mentioned in sources describes the whole process in the case company when the customer makes an order until the project close. The document is PDF, and it was done with several stakeholders a few years ago. The project management process description is the document in the case company's intranet and explains the process in word. Later this explanation was implemented process chart draft, and it is used in a document as a Project management process document.

Data 2 for the initial proposal were collected during the workshop with Engineering Manager and Senior Project Manager. As shown in Table 3, Data 2 was collected in the online workshop in March 2022. The workshop topic was strongly discussing the limitation, requirements, benefits, and prioritizing of the topics. Data 2 were used for the initial proposal for improving the current project management process.

Table 3 Data 2 collection

DATA 2 – Creating the initial proposal				
Source	Data type	Topic	Time	Documented
Senior Project Manager, Engineering Manager	Workshop (online, zoom)	Process recommendations and prioritizing	18.3.2022 2h	Field notes

Data 3 in Table 4 for the final proposal was collected during the interview at the end of April 2022 and via e-mail after the interview. The Engineering Manager and the senior project manager participated in the interview. Topic was identified by feedback from the initial proposal and, after an interview, feedback from the corrected proposal.

Table 4 Data 3 collection

DATA 3 - Creating the final proposal				
Source	Data type	Topic	Time	Documented
Senior Project Manager, Engineering Manager	Interviews	Process recommendations and prioritations	28.4.2022 2h	Field notes
Senior Project Manager, Engineering Manager	E-mail	Initial recommendations to process	5.4.2022, 9.4.2022	Field notes

This section presented the project plan providing details of the selected research approach, research design, and data collection plan. The next section describes the results of the analysis of the current project management process.

3 Current State Analysis of the project management process

The previous section introduced the methods and materials used to reach the outcome. The last section also presented the research approach, design, and data collection plan. This section describes the current state of the project management process and presents the findings categorized into strengths and weaknesses.

3.1 Overview of the current state analysis

The current state analysis was started based on the data plan. A review of the existing documents in the current process revealed that they were not created correctly. During the current state analysis, the process was mapped and drawn into a visually helpful format using current visualization.

Figure 2 shows the project management process map created with the help of a senior project manager. Additionally, intranet information was used for clarification of the process. To explain the situation and collect valuable views, the PM process chart was of paramount importance during interviews.

PM process map gives a picture of the current process. It shows that project management stakeholders are sales, export, engineering, and procurement. Visualization of the main project management process is presented in Figure 2. This process chart is a draft to clear this process flow, and it's not officially confirmed. The process is divided into seven main tasks. Tasks are entirely done with stakeholders, and the project manager is responsible for setting up the tasks that the project will continue.

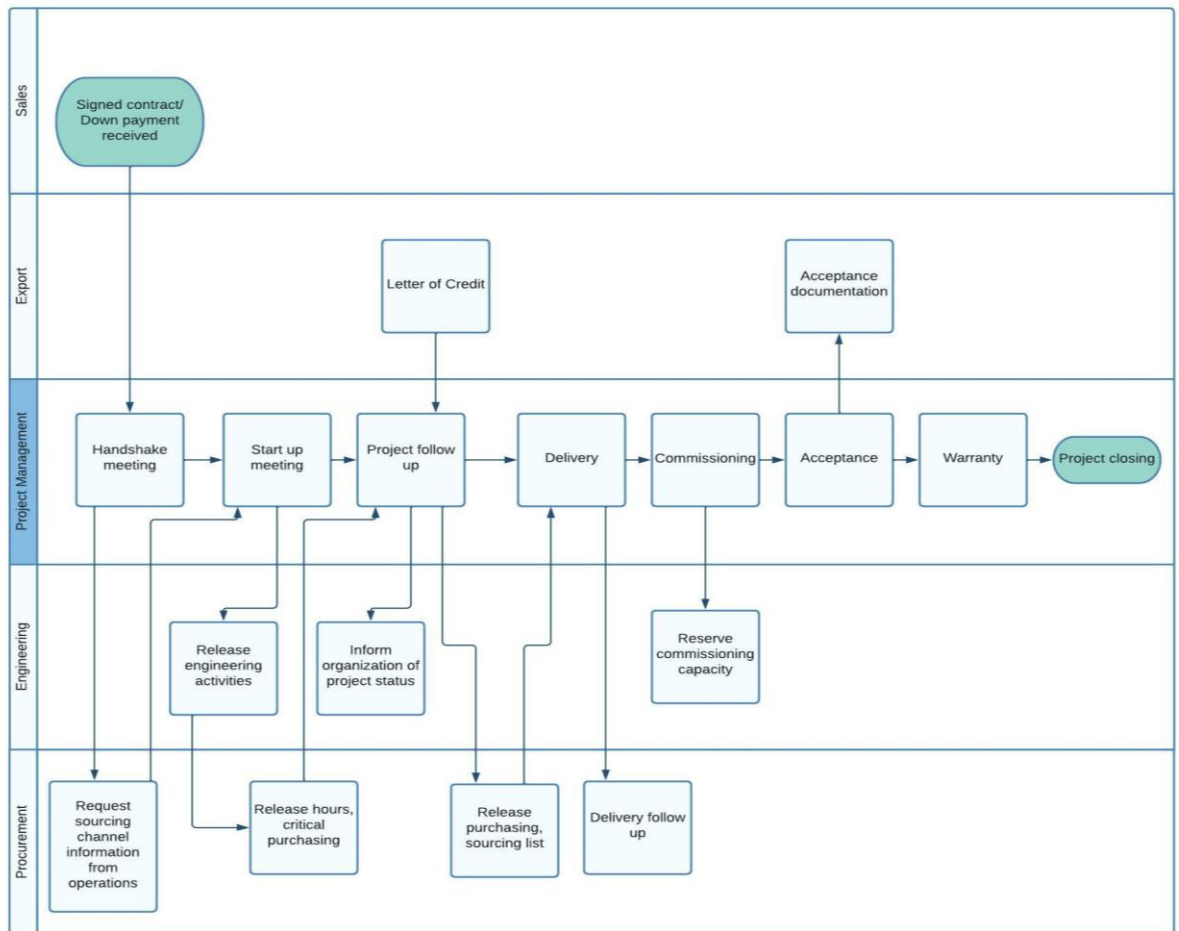


Figure 2 Current Project Management process chart

A vital source of data for the current state analysis was interviews with stakeholders. Interviews were conducted with five stakeholders. Project Managers, Senior Project Managers, and Engineering Manager are used as stakeholders. Each interview lasted an hour, and there was five total. They were conducted via Zoom. To begin the interviews, the first questions were drafted, but most of the discussion was unstructured. The questions used are listed in Appendix 1.

In the interviews, stakeholders identified some pros and cons of the current process. Appendix 2 summarizes the interview topics and answers.

3.2 Description and Analysis of current PM process

The Project Management current process starts when sales sign a contract with the customer and receive a down payment. Then a project manager is appointed, and a handshake meeting will take place to accept the order's details.

The project manager's responsibility is to request sourcing information to define the project schedule. All production comes from outsourcing in the case company, and suppliers' capacity is critical knowledge. When the supplier's capacity has been sorted out, project management will move to a project start-up meeting.

The project manager will inform operations of the details in the project, including schedule, possible changes in schedule, chosen products, and their variations. After the start-up meeting, the project manager will release all the engineering activities and critical purchasing parts.

The next step is project follow-up. The export will inform the project manager when the Letter of Credit is opened. It is input to releasing all the last purchasing activities, and, the project manager will inform the engineering of the project status. After this, project management will take a delivery follow-up role which includes close cooperation with procurement.

When deliveries are completed, it is time for commissioning, and project management must book an engineer to do the commissioning. The project manager will send acceptance documents to export when commissioning is completed.

The project will continue after this with warranty time, but it's more passive. The project will be closed when the warranty has expired.

3.3 Key findings of the current process

As shown in Figure 3, key findings are marked in green and red on the process chart. Those in green represent the strengths of the process, while those in red represent the weaknesses. The red findings are associated with project follow-up, timing for purchases, and delivery follow-up.

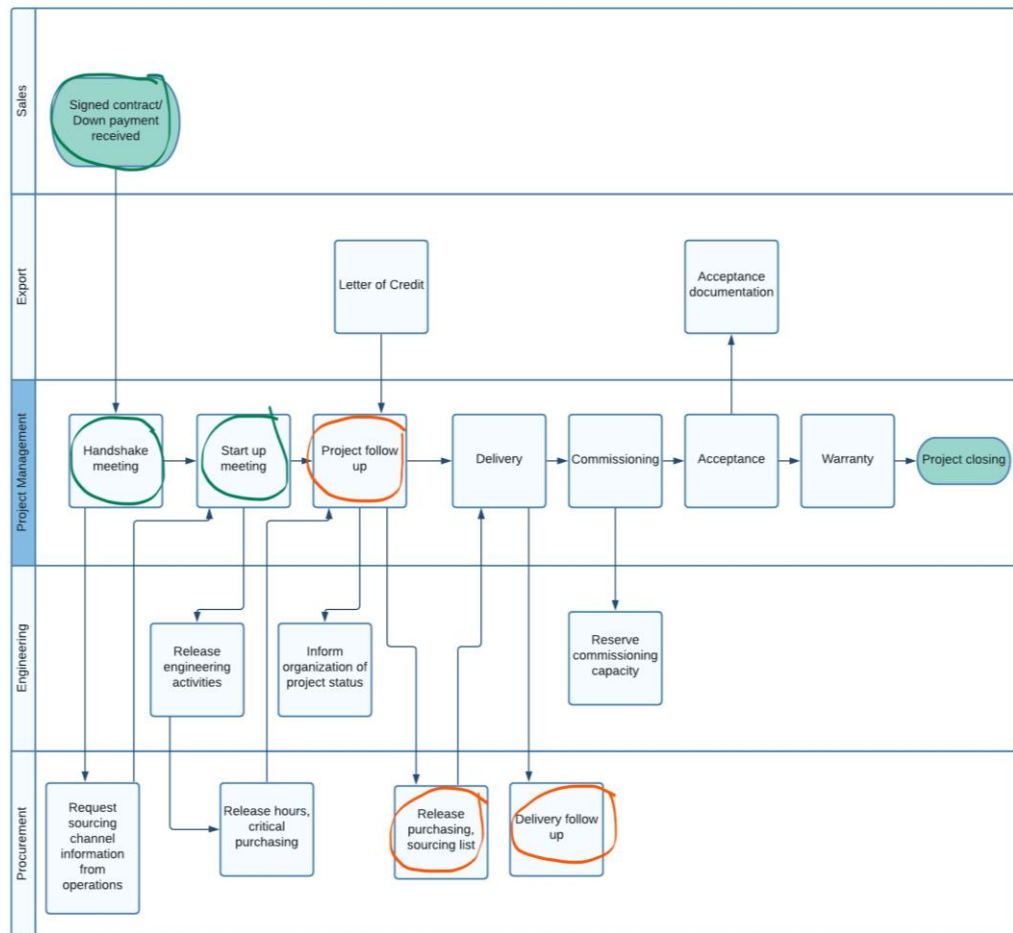


Figure 3 Current Project Management process findings

All detailed findings are categorized in Table 5. Findings are categorized into themes; Strengths, ERP system, Project follow-up, Deliveries, and Purchasing.

Table 5 Summary of the key findings

Category	#	Findings
Strengths	1	Task setting in ERP
	2	Cooperation with stakeholders and its necessary
	3	Easy communication with project members
	4	Standard project timetable setting
ERP system	5	Invalid ERP data
	6	ERP support to users, automatization level is low
	7	Scattered information in ERP
Project follow up	8	Project follow up meetings are unstructured
Deliveries	9	Project rescheduling after changes
Purchasing	10	Managing late and non-conformity deliveries
	11	No valid process description

3.3.1 Strengths of the current process

As shown in Table 6 below, all the findings are divided into strengths and weaknesses. The total of strengths is four, and weaknesses seven.

Table 6 Categorized findings of the current process

#	Strengths or weakness	Sources
1	Task setting in ERP	Interview
2	Cooperation with stakeholders and its necessary	Interview
3	Easy communication with project members	Interview
4	Standard project timetable setting	Interview
5	Invalid ERP data	Interview
6	ERP support to users, automatization level is low	Interview
7	Scattered information in ERP	Interview, CSA workshop

8	Project follow up meetings are unstructured	Interview, Observations
9	Project rescheduling after changes	Interview
10	Managing late and non-conformity deliveries	Interview, Observations
11	No valid process description	Documents

Four strengths were repeated in the current process. All four strengths were determined based on interviews. First was identifying task sets within the ERP system. Project managers use these task sets to mark activities as done. Tasks are linked to other stakeholders.

Communication and cooperation are the second strength. Strength number three is strongly connected to that strength. Cooperation is essential to the process and necessary for managing it well. When an organization is small, its resources cannot be chosen, and then it is about working with all stakeholders. Communication between stakeholders is easy in the current process.

The fourth strength in the current process is establishing a standard project timeline. In a standard project, engineering and supply chain timetables are set to just in time deadlines, which means that all activities must be completed at the latest point in project flow.

3.3.2 Weaknesses of the current process

The interviews and observation revealed a total of seven different weaknesses. The most criticized general topic is the ERP system. ERP is an old version, and it is not supporting the daily work as well as it could.

Automatization in ERP systems is challenging, and information is scattered and needs to use of many tools to collect needed data. Data in the ERP system is untrustworthy because users are not updating it correctly. It takes more time to make sure the correct information and needs double-ensures.

Project follow-up is not a straightforward process on its own. The follow-up is not easy because the information is scattered between ERP, email, and manual documents. Also, the meetings are unstructured and makes project-follow up inefficient.

Weakness of purchasing includes the timing of purchase activities, timing divided between purchasing and engineering, and lack of components. Supply chain challenges are critical, and the follow-up of supply chain capacity is complex.

Delivery issues are related to delivery tracking. Delivery information is manual and not easy to collect in project management. In addition, non-conformity deliveries and late deliveries needs a control process. The valid process is missing.

3.4 Summary of the findings

The goal of the current state analysis was to define the current situation of the project management process and determine strengths and weaknesses from the project management process to build a better project management flow. Table 6 presents the key findings of the project management process.

In table has divided into green highlighted strengths and red highlighted weaknesses. As seen in Table 6, a total of four strengths were identified, and those are working exceptionally well in the process.

The key findings of weaknesses were identified. Total found seven of the weaknesses, potential areas for improvement. All the weaknesses were discussed with stakeholders. Because the reasons what discussion gave was easier to choose few of the weaknesses for potential improvement cases. As the ERP system will be updated in the next years, all ERP connect

weaknesses, from numbers 5 to 7, will not be improved. Also, the stakeholders did not support improving weakness number 10, late and non-conformity deliveries, so that weakness was better to leave out because of ongoing development processes within the case company. Discussion gave a view that the current situation with a lack of components also requires more attention to develop than this study could give.

In order to improve the process, weaknesses 8 and 9 will be addressed. Weakness 8, the meeting procedures need more structure and stakeholders supports the advantages of this improvement. Stakeholders wanted to see what results it will bring to the organization. Meetings are essential part of the organizations daily work and have a significant role in the project management. Meetings are also held between other stakeholders but overall, all the meetings in the company are related to operation of the organization and its affect to organization's profitability in some way. Weakness 9, project scheduling flexibility needs some attention and got support from the stakeholders. Needs to improve time schedule somehow has already been identified before. When stakeholders and the company believe that an improved project schedule will add value to the project, rescheduling the project flow is one of the development parts in the case company.

This section presented current state analysis and key findings with categories strengths and weaknesses. In this chapter the first chose for the improvement was taken. The next chapter introduces a literature review and chosen theories to improve chosen weaknesses.

4 Improving ideas from relevant literature

The previous section described the current state of the project management process and presents the findings categorized into strengths and weaknesses. This section introduces a literature review and chosen theories to improving the chosen weaknesses. Literature was searched according to the outcome of the current state analysis described in Section 3.

The weaknesses chosen for improvement are related to project-follow up and project scheduling categories. The project follow-up focuses on meeting procedures how to create more structure and guideline to the meetings. In this case it means that the focus is going to increase efficiency; improve meeting facilitation and incorporate Lean principles into meetings.

Searching for different scheduling methods is part of scheduling projects. The principles of project scheduling are also discussed. A literature review has been conducted based on these themes.

The literature review is discussed and analysed in four different sections. Those sections deal with meeting procedures including meeting facilitation, Lean, project scheduling including project timing frames and change management. Based on this is develop efficient meeting procedure and project schedule update.

4.1 Change Management principles to support project management

Nothing is permanent and change is present. Change affects the outcome but managing change can control the outcome. Change management is always involved when wanted to create something new. Transforming organization is difficult and mostly those fails. Even transformation needs some soft factors it also needs hard factors. H. L. Sirkin, P. Keenan & A. Jackson have created four key factors to help predict outcomes of change. The four factors are described in DICE; duration, integrity, commitment and effort.

Change management consists of a systematic process for addressing an organization's transition or transformation of goals, processes, or technologies. The purpose of change management is to create strategies for making change happen, controlling change, and aiding people in adapting to change. Change is needed to organization's survival. The keys to successful change are foremost leadership, corporate values, and communication.

A project manager is a professional who is responsible for managing a project and meeting deadlines. The project manager oversees the tactical duties related to a project. These professionals are responsible for keeping the team organized, as opposed to motivating them.

The main responsibility of a project manager is to keep the project on budget and on schedule. Strong project leadership and facilitation are necessary for good project management. The following are some of project managers primary responsibilities

- Assisting in the definition of project scope, objectives, and deliverables
- Managing the budget, documentation, staffing, and ensuring that everyone plays a role
- Providing updates on the progress of a project and potential obstacles
- Identifying potential risks and creating plans if they arise, as well as managing and resolving issues
- Keeping the team and stakeholders updated with progress reports and documents
- Assuring the quality of the finished product through quality assurance tests

To manage a project effectively, a manager must possess strong leadership skills, such as motivating their team and ensuring they perform at their best. Decision-making skills are extremely important for a project manager since decisions will always need to be made. Good managers know what they are doing and can initiate new projects and meet challenges that arise.

Following the change management process is important to ensure process development success. Change management has a major role when focusing to improve project management process. Improvement means that some new tools and practices are adopted and it will affect some change in daily work. All the project needs a leader and project change management the natural leader is named project manager.

4.2 Lean principles adapted to meeting framework

In order to develop meeting procedures, it is important to see similar parts of the required meeting procedures and lean principles and how it could be scaled.

4.2.1 Meeting principles

A meeting is a situation where three or more people come together to discuss one or more topics. Schwartzman (1989) gives a definition that meeting as a communicative event where a group of people can exchange ideas or opinions, solve a problem, make a decision or negotiate an agreement, develop policy and procedures, and/or formulate recommendations, etc. A meeting is characterized by multiparty talk that is episodic in nature, and participants either develop or use specific conventions. In general, there are three different meeting types. Those are decisions, information, and problem-solving meeting. In this content are talking about information meeting.

“If you can consistently have good, productive meetings, your company is going to perform better. Better meetings mean better communication and better decisions, and that’s going to have a direct impact on the bottom line” (Micale, 2002). Today's workplaces are more collaborative and democratic, so organizations need to meet more frequently to share information, receive input, and make decisions together. A good meeting contributes to the success of a company, while a bad meeting wastes both time and money. Communication has very important role in every efficient movement in the organizations. It is base and top of everything and need to be in focus.

Organizing meetings, it is important to question why the meeting is needed. Sometimes, it might be possible to fulfill the purpose of the meeting in another way. If the point is to share information, sometimes e-mail, memos, and informal conversations might well work better (Krattenmaker, 2008). An important reason to have a meeting is to allow people to interact.

As communication, preparing and punctuality are cornerstones of the good and efficient meetings, meetings always need facilitator. Facilitating meetings is a structured method of helping people reach common understandings and solve problems. It is a skill, a process, and an art. The Project Manager is a Meeting Facilitator and has the right skills and capabilities to be an objective facilitator for the meeting. This role involves more than just hosting or being a master of ceremonies and more than just moderating the discussion or monitoring time. Facilitating project meetings is about enabling and guiding (Means, Adams & Spivey, 2007). Facilitator is a person who helps a group to work better, understand their objectives and helps to achieve it.

Means, Adams & Spivey has defined Project Management Facilitator responsibilities for the end-to-end meeting process.

- Establishing and confirming appropriate meeting objectives.
- Translating those meeting objectives into a productive plan for accomplishing them (designing the agenda).
- Communicating effectively prior to the meeting to encourage participant readiness.
- Ensuring that the right people are in attendance to accomplish the objectives.
- Creating an environment that encourages full participation of meeting attendees.
- Getting people engaged and participating productively during the meeting to achieve meeting objectives.
- Communicating meeting results, incorporating meeting outcomes and next steps to maintain project momentum.

- Obtaining and incorporating meeting feedback to continuously improve the meeting process.

Means, Adams & Spivey defined the tools that can be useful for meeting facilitation. Sometimes focus is hard to keep but Objectives, Action Items, and the Parking Lot gives some effective techniques. The agenda and purpose of a meeting must be clearly stated for it to be objective. The agenda is the basis of all meetings and defines where they will take place.

Action Items are items that must be accomplished after the meeting. There will be no discussion of topics that cannot be resolved during the meeting. Meeting rules provide the facilitator with tools to control the meeting. It is a method of setting a time limit for discussions. In case time runs out and no decision has been made, the facilitator can ask the team what they need to do to resolve the issue and assign an action. In the parking lot, ideas, concepts, desires, and thoughts are written down, allowing participants to feel that their ideas have been heard and that they can move on with their work.

Additionally, meeting facilitation provides guidelines for effective meetings. A more efficient meeting execution could save time as meetings are time-based activities. Preparing activities, writing rules, and making controls that require participation will save time and make them more efficient.

4.2.2 Lean

Lean is both a concept that can be viewed and implemented at several levels and a commitment, a process of relentless improvements, that can significantly impact an organization's health, wealth, and competitiveness, (P. Atkinson, 2004).

Lean strategies are based on the Toyota Production Systems. Lean is a business philosophy, not just a toolset or method for improvement. This business philosophy was derived from Toyota's experiences and in particular

from its Toyota Production System (TPS). The focus is on reducing waste in all business processes. The result is a reduction of cost and lead time as well as an increase in quality. Toyota's principles are created for Automotive Industry and the basic principle is to reduce waste. Lean thinking is based on five principles which are specified value, identifying the value stream, flow, pull, and pursuing perfection (Womack and Jones 2003).

Typically, Lean is implemented in production work, but Atkinson (2004) describes Lean as a concept, as well as a process. In addition, Womack and Jones (2003) say that it is not always essential to get deep knowledge of Lean when applying the philosophy; the most important thing is the willingness to make changes. Many sources say that Lean is more like a mindset, and it is useful for any other activities. Lean aims to optimize the delivery of customer value and make work processes as efficient as possible.

Complexity and dynamicity characterize knowledge work. This type of work requires multitasking, collaboration, innovation, and cross-domain collaboration. As well, it is more human-centred than manufacturing work. The lean concept can simply be stated as "less is more". By applying that mentality, Lean can be transformed into knowledge work. Lean improves processes in five steps. These are eliminating waste, specifying the work, structuring communication, solving problems quickly, and engaging the manager, (Staats & Upton, 2011.)

Both manufacturing and knowledge work has several wastes to eliminate. Routine tasks don't require expertise or judgment, but they can be time-consuming. All the activities will raise questions when considering why they are necessary. As in manufacturing work, describing the work is an important part of knowledge work as well. In manufacturing, specifications describe the substance, the order, and the timing of a task. In knowledge work, all of this cannot be applied since the work is performed more in the employee's head. Despite the challenge, knowledge work can be specified and continuously improved once it has been completed. Organizations need more than one person to address issues, so communication plays an essential role in the

process. Effective communication can be promoted by a lean system. (Staats & Upton, 2011).

The five principles of Lean thinking are to specify values in the eyes of the customer, identify value streams for each product, eliminate waste, let the customer pull the flow, and continuously improve.

4.3 Tools for Project Scheduling

Project scheduling has an important role in the project management process. It is a listing of activities, deliverables, and milestones within a project. Project scheduling specifies each activity's start and completion dates, (Demeulemeester & Herroelen).

Before the challenging job of planning and executing a project can begin, its objectives, scope, and strategy must be clearly defined. Detailed scheduling provides a schedule that identifies when, how, and what products, services, and results will be delivered as well as a tool for communicating with stakeholders, managing expectations, and reporting performance, (PMBOK, 2017). A scheduling tool is used to create a schedule model for the project, which includes data such as activities, dates, durations, resources, dependencies, and constraints. These data are then used to create a project schedule.

To get more flexibility, project time schedules must be created by defining how to achieve it. A flexible model has some parts that can be changed if necessary. Flexible scheduling allows more time to be spent where it is needed and executing tasks where necessary. As soon as possible schedule (ASAP) is based on the earliest start time of each activity in the project, (Gido & Clements, 2012). This schedule is referred to as an as-soon-as-possible schedule when resources are allocated to the activities based on the earliest starting times of the activities. The method of ASAP gives project flexibility advantages, moving the flexibility to the most critical project slot.

When executing the tasks in earliest possible time it will give more time in the later slots of the project. As a result of the ASAP constraint, the task is completed sooner, and the total float serves as a buffer during task execution in case of delays.

4.3.1 CPM Critical Path Method

The critical information needed to create a project schedule is the calculation of the time spent on the project. One of the project timing scheduling methods is Critical Path Method (CPM) and a model of CPM is presented in Figure 4. A critical path includes all activities, including the project. All activities have a normal time per day and define immediate predecessors. As shown in Figure 4, an immediate predecessor determines the relationship between jobs and allows the graph to be drawn, (Levy, Thompson & Wiest, 1963).

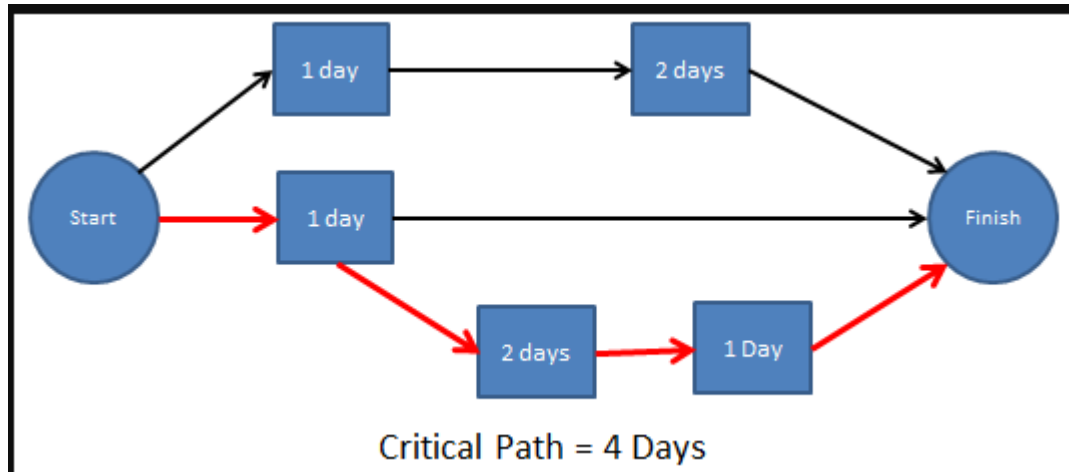


Figure 4 CPM Critical Path Method

Using CPM, construction managers can predict a project's schedule based on its tasks. As well as identifying the tasks that must be completed for the project to be successful, the critical path determines the flexibility of the schedule. It is the longest sequence of tasks that must be completed. Teams can use the critical path to identify the most important tasks within a project and determine how long

it will take to complete everything. (Levy, Thompson & Wiest, 1963) CPD method is a powerful but relatively straightforward technique for analyzing, planning, and scheduling large, complex projects. In order to meet a target date at the lowest cost, the tool provides a way of determining which jobs or activities are critical in their effect on total project time. (Levy, Thompson & Wiest, 1963).

It is important to consider both engineering and economic factors when trying to shorten the critical path: is it physically possible to shorten the time required by critical jobs by assigning more men, working overtime, using different equipment, etc. As a result, it facilitates more precise planning and control by pinpointing the small subset of jobs that play a vital role in project completion time. (Levy, Thompson & Wiest, 1963).

4.3.2 PERT Project Evaluation and Review Technique

If Critical Path methods have some impracticalities, the other well-known time schedule model is PERT Project Evaluation and Review Technique. PERT is a management planning method that determines how long it will take to successfully complete a project. Unlike Critical Path Analysis, Pert uses more skeptical time estimates. It is intended for managing large and complex projects. PERT provides three different estimates of the project's completion time;

- Shortest possible amount of time
- The most probable amount of time
- The longest amount of time

Figure 5 presents the PERT model. Network analysis diagrams are based on arrow and block diagrams, which describes the tasks of the project, their order of execution and the tasks between tasks dependencies.

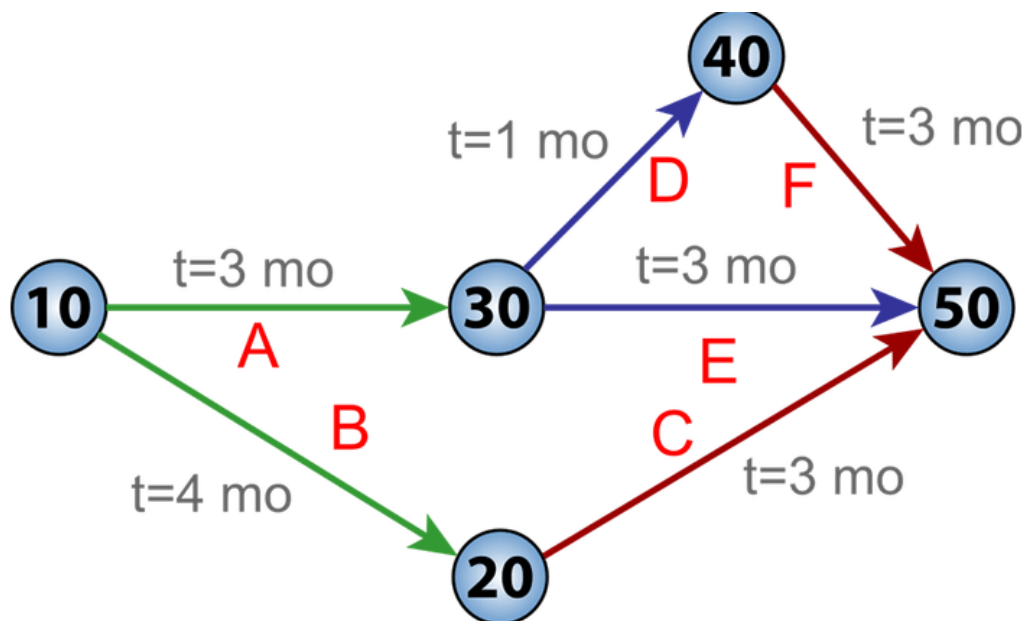


Figure 5 PERT model

Because contractor deadlines are usually not movable, PERT is calculated backward from a fixed end date. PERT is suitable for the projects where completion time of projects is unknown. (Thakur, 2022)

4.4 Summary of conceptual framework

A visual presentation of the key elements from the literature is shown in Figure 6. The figure summarizes the key elements from the literature in a visually compact manner. The objective is to create new methods that bring some change to the current project management process and will improve it better. Value comes from change where the target is to create new ways to think differently, save time and therefore money and give some flexibility to the process.

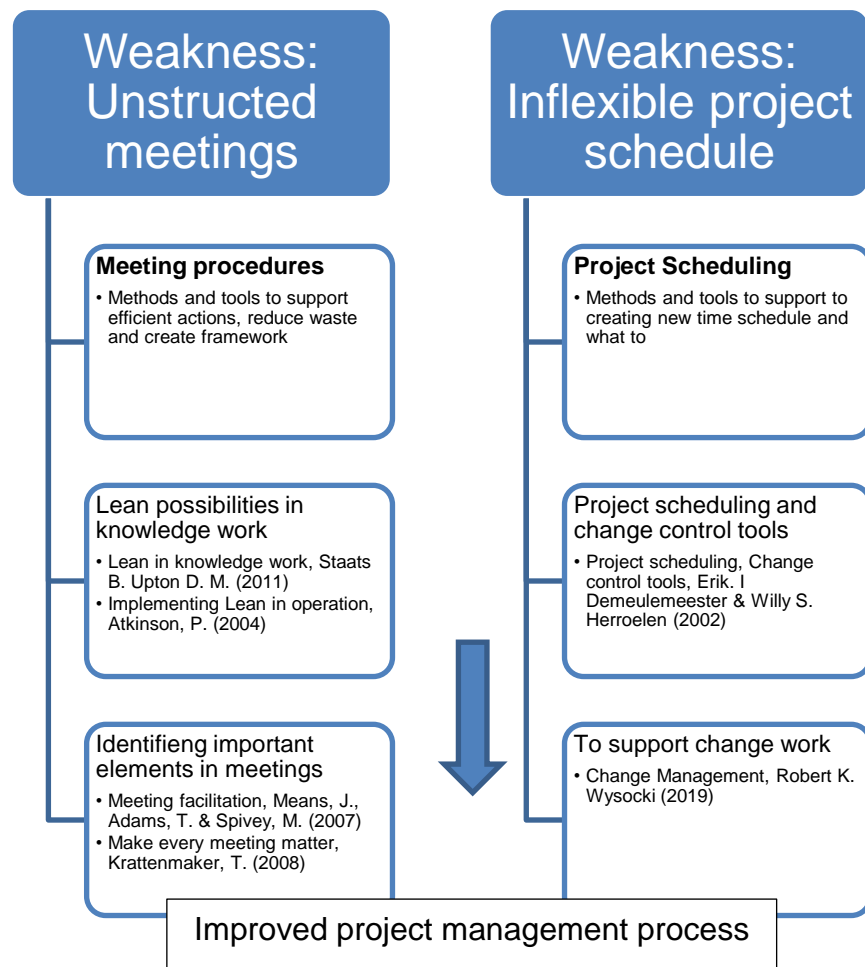


Figure 6 Conceptual framework for improving project management process

To achieve the objective, of the improved project management process, the literature review is divided into two different blocks to collect relevant literature. Literature is used for two different topics which means that key tools and ideas are separated between the topics. Meeting procedures literature identifies how communication, better leading, and Lean methods are important to tackle the inefficiency of the meetings. Project scheduling literature takes on the action of project scheduling tools and attack weight to change management in improving project schedule.

The first block's literature defines how to use Lean in knowledge-based work, what tools and principles are usable in knowledge work and how to improve meeting principles in stronger leadership. Lean in knowledge work, (Staats &

Upton, 2011) and Implementing Lean in operation (Atkinson, 2004) gives overview how to add Lean principles in creative way and will tackle the weakness of unstructured meeting methods.

Meeting facilitation (Means, Adams & Spivey 2007) is focusing to see the importance of a leader in the meeting and make facilitator role stronger. Make every meeting matter (Krattenmaker, 2008) will focus on what is the meetings role in organizations environment and how small meeting needs attention as much bigger meetings. This literature is expected to give knowledge and tools how to tackle the weakness of unstructured meeting methods.

Overall, in the first block literature focus to implement lean in operations, how to use it in knowledge work and give an attention to the meetings. Getting better results from a meeting requires a framework, tools, and strong leadership. Lean principles and meeting facilitation tools work well together to improve meeting processes more efficient.

Second block gives change management tools, project scheduling methods and change control tools to supporting project scheduling, (Wysocki 2019, Demelemeester & Herroelen 2002). This literature support to tackle the weakness of project schedule inflexibility. Tools for managing and controlling change will improve project scheduling to give better results for case organizations. Change management will give a good perspective of the importance to remember the included challenges of changes. Strong link between change management and project management will give a good support to improving project schedule. This combination will help to tackle the weakness of inflexible project schedule.

This section described the literature research and conceptual framework. Chosen literature gives relevant tools and ideas that can be applied to improving project management process. The conceptual framework will then be used in next section five, where creates initial proposal to improve current project management process based on the tools and ideas.

5 Improving case company project management process

The previous section described the current literature review to support this improvement process. This section introduces the initial proposal to improve current project management process weaknesses. The initial proposal is made from previous relevant literature and gained experience.

5.1 Overview of the creating Improvements

The objective of this study is to improve the current project management process. In current state analysis found a few weaknesses to improve. Weaknesses were sorted out from CSA in section 3 that gives information of the weaknesses what is relevant to improve. Some of weaknesses were related to current ERP system and because new ERP system will be launched in the next years, all ERP related weaknesses denied. Weaknesses were discussed with stakeholders and didn't get support to improve late and non-conformity delivery follow up. Unstructured meeting procedures and changes after project scheduling got support from stakeholders. Building the initial proposal started with these two weaknesses.

The initial proposal was built based on the workshop with stakeholders. Stakeholders were two managers in the organizations who has major role in this topic. Workshop has been held in January 2022 and there were discussed the current findings. Stakeholders provided the data what is presented in Table 7. Ideas from stakeholders are useful and gives more insight into the choices for improvement.

Table 7 Data 2 collection

	DATA 2 Improving PM process
Project scheduling	Engineering starts on the same day that the project is contracted

	All the activities can be available to sourcing at the same time if scheduling starts from day 0, no need for critical purchasing activities
	If project activities start earlier it gives more flexibility to engineering and procurement, procurement has the opportunity to do a more comprehensive supply chain management
	Current model starts counting tasks from delivery dates backwards. Challenges with longer project delivery times but tasking based on 5 months.
Meeting framework	Meetings need more structure
	Sales gate meeting role, have to be more before handshake to get the best result to project scheduling
	Value of the meeting, defining how much value meeting will give to the organization/customer/participants

The workshop started with a general introduction to the process and CSA situation and findings. CSA has been created based on the stakeholder's interviews (Appendixes 1 & 2) and findings that came up from that process. In the workshop has been given free word to the stakeholders what they want to say. The discussion was going around the meeting procedures and project scheduling topics. Some connected topics also were in discussion and gave a good view from the other side.

In the workshop, decided to leave one of the weaknesses behind based on the ongoing situation to improve that weakness. The cancelled weakness is late and non-conformity delivery management. Already having an initial process to tackle this challenge and improving this weakness is not fruitful in the current situation. Also, challenges in the lack of components worldwide gives reason to do it separately because the topic is wide and probably temporary.

In the workshop had a good conversation about the current situation and the barriers to implementing new procedures. In the end, two weaknesses were approved for ongoing processes and got support from the stakeholders. Improving meeting procedures and project scheduling are going forward and stakeholders are supporting their development. Stakeholders see that those topics have the potential to succeed and give more value to the stakeholders and organization. Meeting procedures are a topic that is not always the most important improvement target, but stakeholders see that improving meetings more efficiently will give more power and therefore value to the organization. Project scheduling has been an important improvement target for a while in the organization and that topic improvement has seen a powerful role in the project management process itself.

5.2 Improving weaknesses from relevant literature

The weaknesses chosen for improvement are related to Project-Follow up and Project Scheduling. Project follow up weakness is unstructured meeting procedures and Project scheduling weakness is inflexible project schedule. For clearance, weaknesses are divided into two sub-categories to keep improvement process clear. Meeting procedures are one topic and Project scheduling another.

The literature chosen is focusing on meeting efficiency, improving meetings, meeting facilitation, Lean principles, project scheduling tools, and change management. A literature review has been conducted based on these themes. From the current literature gives more theoretical view to improve weaknesses. Based on the literature have gained the best practical choices to tackle the issues and create a proposal to improve process.

Meeting procedures are improved using lean principles, and meeting facilitation gives a good overview of the topic. Lean principles what have used are specified value, map value, flow, pull and perfection. In knowledge work have different liabilities than in manufacturing so Lean in Knowledge work gives

perspective how Lean methods can be used in knowledge-based work environment, (Staats & Upton 2011). Staats & Upton (2011) describes that some of Lean principles can be applied in some form to many knowledge work and get benefits than faster response time, higher quality and creativity, lower costs, reduced drudgery and frustration, and greater job satisfaction.

Project schedule are improved by using a scheduling model to tackle the challenge in current inflexible situation. Defining critical path and/or calculating minimum and maximum time to project frame gives knowledge to initiate a new schedule for the projects in the case organization. Change management and project management principles are to adopted to tackle this issue because strong leadership and process ownership are essential to implement new procedures.

5.2.1 Tools for building efficient meetings

Meetings are generally important parts of working in any group. Meetings gives chance to share information, to reach decisions and to get jobs done. In generally there is three main types of meetings. Information, decision making and problem-solving meetings. Informal meetings might occur almost anywhere and usually do not have explicit agenda, (Linda A. LeBlanc & Melissa R. Nosik 2019).

One important element of project-follow up is informational meetings. This study CSA focused to information meeting in the case company. During CSA found that the meeting procedure is unstructured. Based on that findings decided to look at possibilities to create the meetings procedures more efficient. Decided to create framework to giving a more structure for the meetings. The meeting procedures framework will find some principles from Lean method even it is not a straightforward procedure to implement in meetings.

The base idea to create a framework is that it gives path to follow and allow standardized protocol to every meeting. Idea came from the sources that found something similar has done. There's no direct framework for this kind of meetings

so needs creativity to build useful. Similar studies gave good ideas but to personalize and develop more in case organization's needs. Framework is a guideline that gives rules to the meeting participants. Framework helps participants to focus on right things and check the pinpoints to create a good and effective meeting. It is not rule but it is highly recommended to follow to get good results and therefore all organization members have to be engaged to follow this framework. All the actions need that everyone commits. Mattias Andersson and Ginsun Au-Yeung (2015) has done Lean based improvements for the meetings in the company of Ericsson. There are several good examples in this study that can be used to create meeting framework.

Point of view is that improving meetings requires a framework, tools, and strong leadership. Lean principles and meeting facilitation tools work well together to improve meeting processes. Facilitation helps the group to have an efficient and inclusive meeting. It also involves ensuring that everyone can be involved in discussions and decision-making. Facilitation involves several roles and tasks and is sometimes performed by just one person. Facilitators must be neutral, winning everyone's trust and treating them as equals, (Seedforchange, 2022).

Figure 7 shows the improvement ideas for meeting procedures. The result will be effective meeting and it come out from concentrating to four different areas of the meeting. Lean has five steps protocol which are specified value, map value, flow, pull, and perfection. Those steps are based on this meeting framework and the principles are converted to meet the meeting procedures. Lean can be presented in this topic shortly: getting the right information, in the right form, to the right people at the right time. Lean principles are behind the ideas and have been into account. Right information is behind the purpose, right form is behind the process, right people is behind the people and right time is behind the preparation.

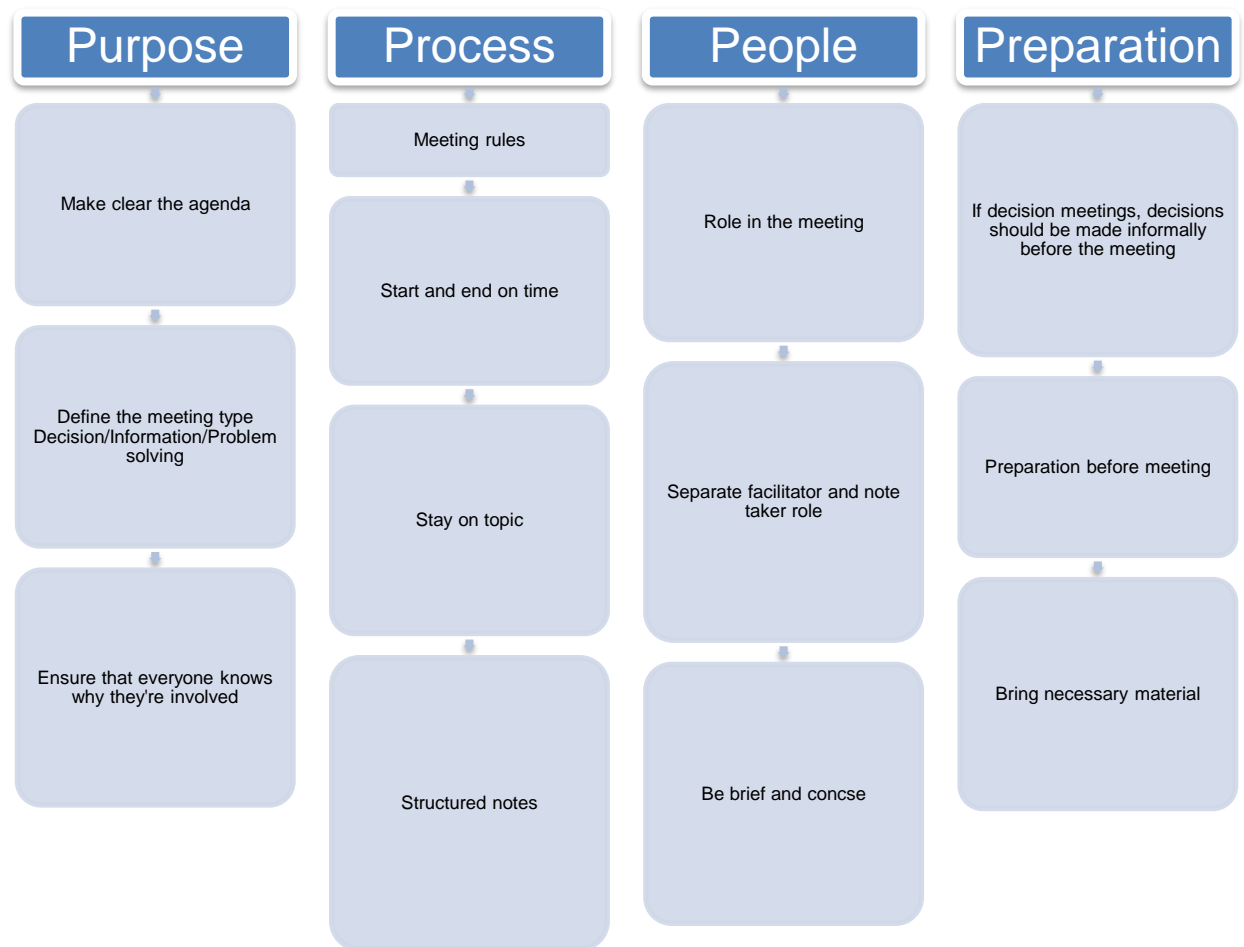


Figure 7 Initial meeting framework

In this meeting process, the meeting is separate for four different areas. Meetings context can be divided into four themes; anticipation, process itself, participants of the process and preparing of the process. Those themes are explained more in the below. This framework is meant to be used for check list tool which will remind the user what is important in the process. It is meant to be a short version to keep the use simple and quick.

Behind the framework, those blocks include more information:

Block: Purpose

To improve meetings,

- the first step is to clear the agenda. An agenda sets clear expectations for what needs to occur before and after meeting. The agenda is basis of everything.
- the second step is to figure out why the meeting is taking place. If it can be handled in conversations, messages, or e-mails. Define what type of the meeting is and share it.
- Ensure that participants know why they're involved. Type of the meeting tells whether decisions or opinions are expected. Make it clear that the people who are responsible for the meeting are aware of it.

Well defined agenda is base for the meeting. Well-built agenda gives strong structure and helps to set boundaries to the meeting. It is easier to create rest of the meeting parts when base is well defined.

The right form will lead to the right purpose. An agenda and objective are part of the purpose. Defined agenda gives clear picture of what is being discussed, what solutions we intend to offer, and what decisions are making. The agenda of an effective meeting needs to be well-structured so that everyone is focused on the right goal.

The agenda defines the purpose of the meeting. It is easy to understand why a meeting is being held if the agenda is clear. Identifying the meeting value helps to determine is it meeting needed or not.

Block: Process

Good action needs defined rules. When set rules for the meetings it helps participants to act in the desired way. Rules are not set because of nuisance. Rules makes everything easier, participants know what to do, when and what is expected. Rules are the sign that people's time is appreciated and valued. In knowledge work time is value and if wants to do efficient actions and do savings it means that must value time. In this context, Lean principles of respect for people mean appreciating their time as well.

Definition of the rules for the meetings:

- In case of delays, double bookings, interruptions
- Communication, before, in the meeting and after
- Rules for other devices use
- Online meeting rules, camera, speaking turns

Important that process will occur at the right time. It is good to define what is rules for the meetings that everyone can accept it. Rules are important to define then participants do the right things. Achieving the objective, the process must be given a defined amount of time.

- Check invitees' calendars when they are available if booking a meeting is preferred. It prevents double bookings, prioritization, and rescheduling issues. The above behavioural actions will save others time when they don't have to do double work.
- Being precise. The process will also run smoothly if it starts and ends on time. Stay in topic, in the meeting has discussed the topics what is defined. If anything important remains, it is a good idea to note it down and share responsibility.
- Take notes / secretary system. Standard memo is the easiest to use. Clear, simple memo that anyone can use it. Standard ways to do notes; Define colours, fonts, definitions, text boxes. Keep it simple.
- Good to define what is important to add notes and what is not. Again, if anything important remains, it is a good to note it down. The topic can be resolved after the meeting if necessary.

Block: People

Places will be taken by the right people. By selecting the right people at the right time, meetings are more efficient. Inviting only the participants who have a role in the meeting reduces wasting time.

- Define the role. Role gives reason to participate. If there is no clear role, the need for participation must be critically considered.
- Nominate separate persons for the role of facilitator and note-taker. One person cannot handle both tasks.
- Keep turns concise. Prepare thoughts.

A clear role is essential for participants to focus on the meeting. Additionally, participation in the meeting increases its efficiency and contributes to the process. It's good to participate in a discussion, to make a decision, or to present something. A meeting with fewer people is more likely to be concise. Furthermore, the participant who cannot participate in the meeting has the opportunity to do other things during the meeting time.

The note-taker and facilitator roles are better to be shared. The facilitator cannot facilitate the meeting and take notes at the same time. Facilitating meetings is easier without the responsibility of taking notes, and the same applies to the other side. It will be easier to involve the participants next time if there are clear tasks to accomplish and the notes will be more organized.

Block: Preparation

- Preliminary work means half done

During the framework, preparation plays a major role. Good preparation means that all participants have done pre-work before the meeting. Whether it is checking own responsibility information, latest updates, preparing pre-decisions, or reviewing last notes, it will provide more value when everything runs smoothly. Pre-work allows that everyone is up to dated and knows what is talking about. Pre-work implements time savings and people appreciation. Preparation reduces the time when can jump right into the topic.

Tools for preparation is communication. Participants are able to prepare for the next meeting if they have clear about role, task and responsibility. They know

what they are expected, what is the topic and if needed their opinion or answer. Shared meeting notes gives good reminder from the previous meeting. As long as everyone has done the pre-work, preparation appreciates others' and saves everyone's time.

As Lean, the principles work in this framework: getting the right information, in the right form, to the right people at the right time.

5.2.2 Tools for building a new project schedule model

Project schedule is base of all the activities during project. If there's no project timetable it is impossible to estimate delivery time to the customer. Project schedule is for customer needs but also for internal use. It is a management tool to follow project flow, set deadlines, and estimate delivery times for products or services.

“Projects are composed of processes; a process is a series of actions bringing about a result” defines PMBOK. Project processes are performed by people. Project management processes describe, organize, and complete the work of the project. Planning is an important part of the process because the project involves doing something that has not been done before, says PMBOK. Project scheduling includes project start and end dates, a timeline, and description of all project tasks, start dates and due dates for each activity and project team members.

Project scheduling has an important role in project success. Scheduling methods have several different and depend on the project type which the scheduling system is suitable. The whole project is time-limited, and time and resource management are strictly connected. If some changes happen in time or resources, it has clearly affected other.

As presented in figure 8, in this case company's schedule has been based on just in time method when all settled activities are counted from the project delivery

date. The delivery date is defined in the agreement with the customer. The release of activities awaits the calculated due date set for the project. Now engineering tasks release at the latest point when it is scheduled. Project flow goes step by step. Engineering and purchasing activities are connected and purchasing activities open when engineering has been done. The issues comes when suppliers are late, lack of components, engineering resources are not enough, or engineering must be modified.

There is no project scheduling draft in the company, but it has been documented in the ERP system. ERP controls time scheduling and gives the due dates for the activities. ERP system calculates the due dates from the given delivery date.

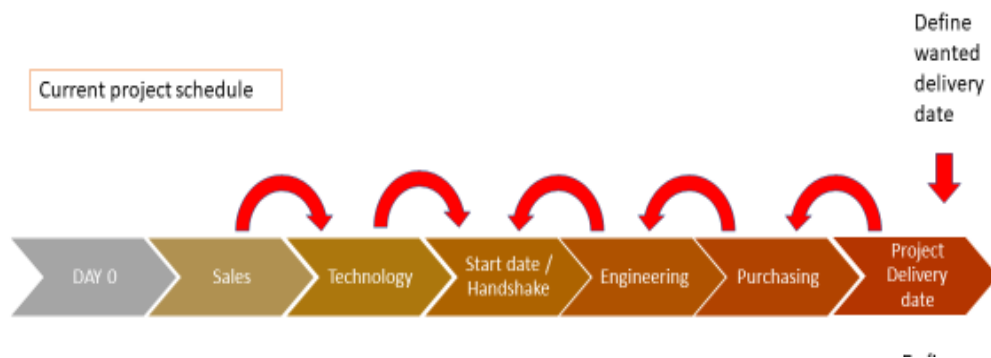


Figure 8 Current project schedule

The improved model of the project schedule is presented in Figure 9. The new project schedule is built to use as soon as possible method. The method differs from the current one in that all tasks are done as soon as possible, regardless of when the deadline is. In case organization this means that project flow is planned to start on day 0. The deadline of the tasks and the deadline of the project are not exactly the same, but tasks progress in their own way. When tasks are started immediately, the next phase of the project can start right after. It gives more time to react when issues occur earlier. The project delivery date is defined, but in this model, all tasks follow their own deadlines, when the project is expected to reach the goal on time.

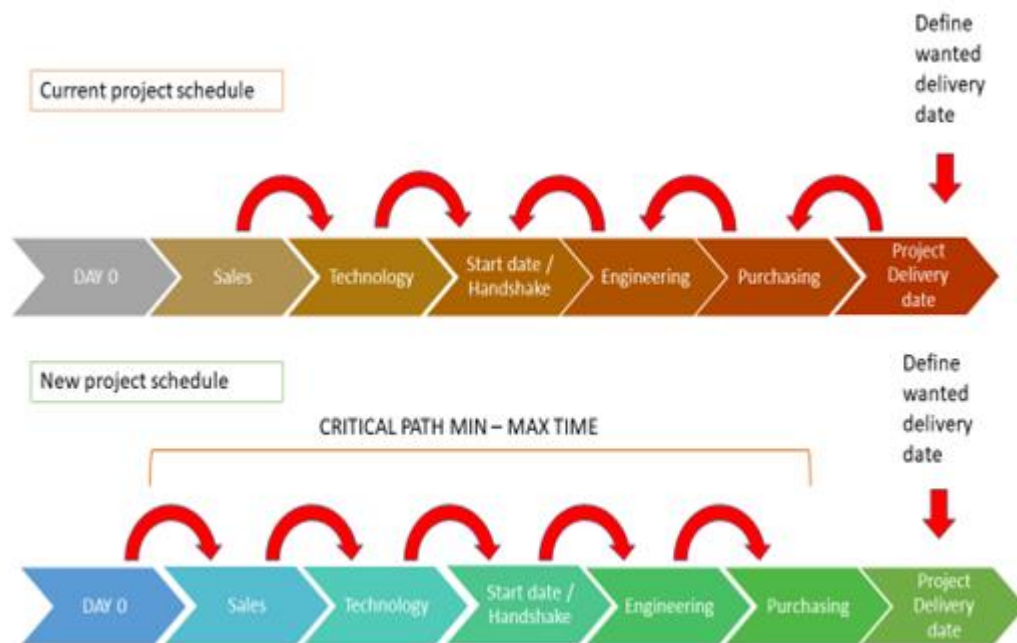


Figure 9 Current and New Project Schedule comparison

A new project schedule needs a defined critical path and project duration estimate. In the new model, defined critical points and waiting points are important for flexibility. Even though the project is not intended to wait for a long time, identifying which parts of the project can be put on hold when necessary is important. The minimum and maximum times give an estimate of how much variation is accepted in the project. The normal method is to use optimistic schedules, which means that the timing is the average of the minimum and maximum. The minimum timing could be used when the project is easy and simple, and the maximum timing could be used when the project is complex, even if the official project delivery date does not change.

Benefits are the reaction time to purchasing components and engineering resources. Also, the model gives a better opportunity to react for category management because you can get the engineering information earlier and have time to do supplier research. The new scheduling method's benefit is that it offers more flexibility. It will give more flexibility to critical tasks which are

nowadays challenging to control. The lack of materials and components are a big issue because of the COVID-19 pandemic.

Because the new project schedule is a big change it must prepare well. Change also needs someone who is involved to lead it. Successful change management consists of four key principles and those are understood change, plan change, implement change, and communicate change.

5.3 Summary of the Initial Improvement Ideas to the Project Management Process

In this project were defined separate procedures to improve the current project management process. Settled targets are to change meeting procedures to be more efficient using Lean-based methodologies and intensify project schedule structure. Defining the critical path and minimum and maximum time for the project is the core of a new project time schedule model.

For the project meetings created a new framework. The framework is a checklist of how to act in a standardized way with the same rules. The framework gives guidelines and pinpoints the important parts to notice when planning a meeting. The framework is useful for everyone in the organization and will be published in general after stakeholders are approved its use.

The new project schedule is a visual proposal of how the project will run more effectively and gives more flexibility to critical project parts. It is a proposed solution to the case company to solve current issues in the project schedule. If a new schedule wants to implement in action, it needs more cross-functional work to define the actual project minimum and maximum times, define the new dates for the ERP system and involve the participants to working in a new way.

Because project managers are the process owners of the project management, they have a vital role in this change management system and in ensuring that

improvement ideas will end up in practice. Project management support is essential to implement a new project schedule.

This section described the creation of the initial proposal for the current project management process. The next section will introduce the validation of the proposal and related feedback.

6 Validation of the proposal

The previous section described the improving process to the case company project management process. This section introduces the validation of the proposal.

6.1 Overview of the proposal validation

A business perspective was required to determine whether the improvements could be implemented. The proposed process improvement was assessed for feasibility and effectiveness. By presenting the proposed improvements to senior managers of the case company and receiving their feedback and critiques, the initial proposal was validated.

Validation was conducted by stakeholders in a single meeting. Engineer Manager and Senior Project Manager participated in the live meeting, which was conducted by the senior management. The structure was like the first-time meeting with the stakeholders. At first time was discussed of the summary of the current state analysis findings and an overview of the conceptual framework themes.

In the meeting the proposal was presented in its initial form. An initial proposal consists of two parts, meeting framework and project schedule. Both proposals were discussed, evaluated, and commented on by managers. Feedback was collected to notes and immediately after the meeting, field notes were transcribed containing feedback.

6.2 Feedback received and Corrections to Initial Process

Overall, managers gave positive feedback and supported the ideas in the proposal. Feedback was more positive and told that the topic is important, and that it will provide good insight. Table 8 is presented the feedback that stakeholders gave in the proposal meeting.

Table 8 Data 3 Feedback to the initial proposal

	DATA 3 Validation of the proposal
Project scheduling	Need to check some details; <ul style="list-style-type: none"> • Need to check how to handle finance if activities start earlier • Need to check L/C opening, some activities have been connected to L/C
	Agreeing and understanding critical paths from project start makes more flexibility to achieve delivery dates, setting up clear milestones for each functions to achieve.
	Project coordinator's role to assist project management
	Communication rules need to be established, an integrated approach to response meeting invites, up-to-date calendars to help scheduling
Meeting framework	Notes in a standardized way, organization communication language to be defined
	Remote meeting gives more flexibility

The project schedule was discussed as well as what needs to be considered when creating a new model. In the new model, financial matters must be carefully considered. As part of the new project schedule, multidisciplinary cooperation is required.

When discussing the meeting framework, a new role of the project coordinator came up to reduce the workload of project managers. Stakeholders support the

establishment of the framework. There have been some details mentioned about communication including language. Mentioned that meetings can be run remotely because everyone can participate in their own way and there is no need to be present for the entire meeting. Stakeholders were curious to see the results at the end and how they would be incorporated into their daily tasks. Regarding the feedback, an improved version of the meeting framework is presented in Figure 10.

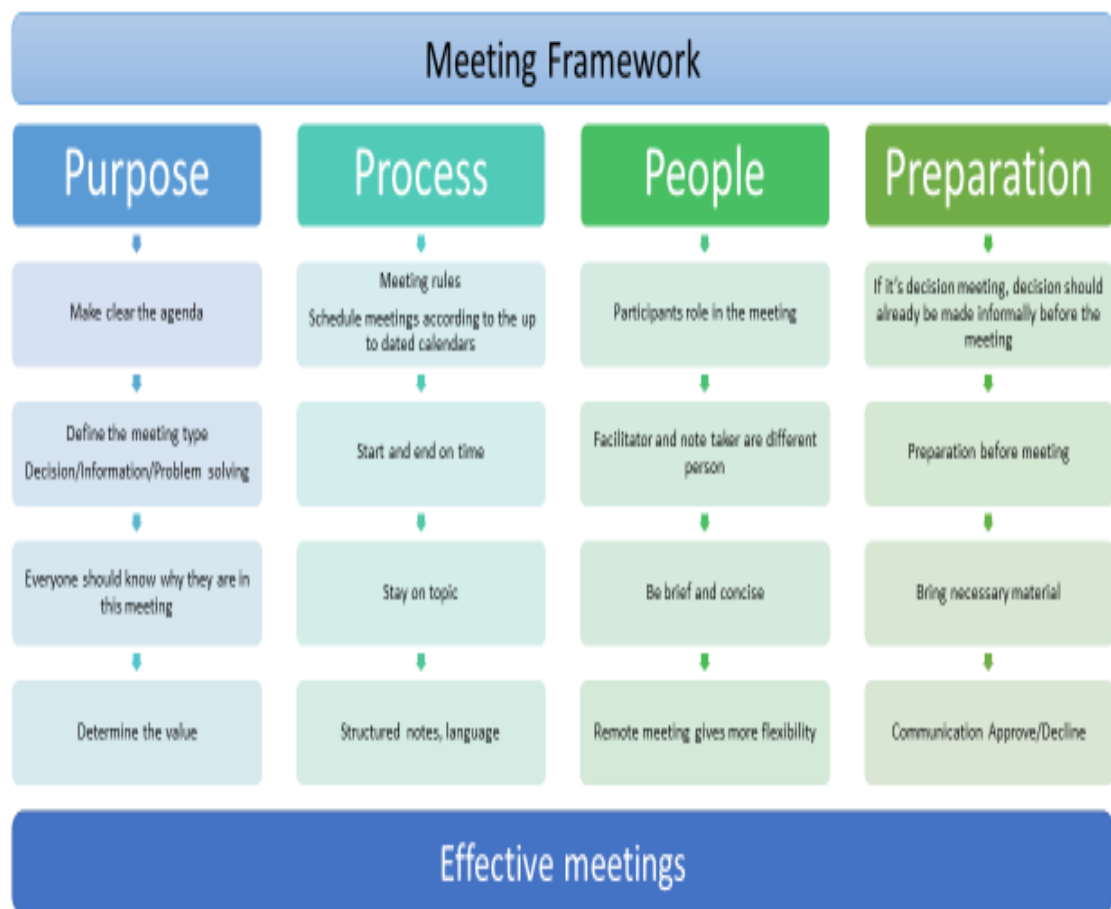


Figure 10 Improved meeting framework

The meeting framework has been improved based on the feedback from the proposal meeting. More details were added to the process model based on the feedback. Additionally, Lean process flow was added to illustrate its connection to this framework. Colors were used to make it more attractive.

For the new project scheduling model, stakeholders mentioned that it is important to carefully review all the tasks that are connected to the current scheduling system, including L/C tasks and financial issues. The new proposal for project scheduling is shown in Figure 11.

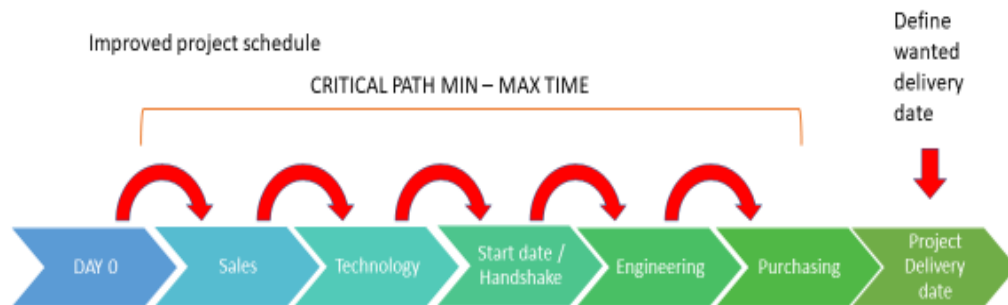


Figure 11 New project schedule model

The new project schedule model illustrates how project schedule should be carried out to create flexibility for the project. The sizes of the blocks do not accurately describe the real situation. All scheduling must be precisely defined in cooperation with the project's stakeholders.

6.3 Summary of the Proposal Improvements

Initial proposal received feedback from the main stakeholders. Based on the discussed feedback, it was decided to make improvements to the meeting framework and the project schedule. The feedback was more things that are good to note in the process.

Feedback mentioned that preparation is needed before implementing new project schedule, and stakeholders should be consulted about all details related to project flow. Among the final recommendations will be a project scheduling process chart with a project start date as soon as possible (ASAP). It is also helpful to identify the most critical part of the project flow by defining a critical

path. All the tasks will start as soon as the project begins, regardless of the final date.

Meeting framework provides guidelines for all meetings in the case company. It gives tips to organize meetings, initiating the right tasks, and focus on the small elements of the meetings. It emphasizes the importance of communication and how to use it more effectively in daily tasks.

The initial proposal was improved based on the feedback and the final recommendation for the project management process improvements were sent to main stakeholders.

This section described the validation of the proposal and its related feedback. Next section introduces the conclusion of the study and self-assessment and relevance of this study.

7 Conclusions

The previous chapter describes the validation stage of the initial proposal and creation of the final proposal. The final section of the study contains an executive summary, recommendations for the practical step and a form of an implementation plan, a self-evaluation of the study and its results, and finally the closing words.

7.1 Executive summary

The objective of this study was to improve the current project management process of the case company. The outcome of the study is the initial proposal that provide the case company to execute and implement the improvements to the project management process. In the base of this study project management process is not working well enough; time scheduling of unusual projects and key performance indicators have not been established. The project management process takes care of the whole project management, timetable, resources, and budget. Workload has been high in past years and in the company have had rush. Therefore, development work has been underrated and the current project management process has been inefficient and needs some clearance.

The study research approach designed to utilize qualitative data gathering methods. The study includes four stages. The first stage was a current state analysis providing the strengths and weaknesses of the current project management process. This study began by analyzing the existing knowledge of project management process. The current state analysis was performed by collecting exist data of the process, by interviews with stakeholders and process workshop. Project management process consist of stakeholder's management project parts. The findings were divided into five categories to focus on. One of the categories was strengths and four other weaknesses. Two categories of weaknesses decided to improve because of the potential. Those categories are

changes in project schedule and unstructured project meetings. Two other categories declined based on the issues in development work.

The second stage was a literature review based on the first stage findings. The conceptual framework for this study was developed based on a literature review of best practices for improving project management process. As a results, the conceptual framework is divided into two blocks. The first block describes the tools for improving project meeting procedures. The second block defines tools for scheduling project timing process.

The third stage was a creation of the initial recommendations to the process improvement. The initial improvement ideas were developed in the workshop with two main stakeholders. Workshop started by introduction of the study in general and explaining the findings. Workshop took time 2 hours. Improvement ideas for meetings were developed by using Lean methodology in knowledge work. Ideas based on the ideology to execute things more efficiently, remove waste, and save time and costs. Scheduling improvement took ideas from different scheduling methods and change management.

The fourth stage was a validation round of the initial recommendations gathering feedback from the key stakeholders and the final result for the improvement to the process. Improvement ideas focus was to improve a project management process and at the end all the improvements are scalable to whole organization use. Meeting procedures are general and will scale to other functions in organization. Operating methods that consider communication in general and gives actions to save time to change daily routines and betting clear, considerate of others, communication. The validation for the initial improvement ideas was set up after the initial improvement ideas establishment. Main stakeholders approved the initial recommendation and gave feedback to changes. Main stakeholders approved the final recommendation after feedback added.

Improvement ideas are fitting to the literature part. From the idea 1 can find Lean principles in general work and idea 2 initiate project scheduling principles in the project management environment. Recommended ideas to develop the current process will improve the process more efficient and serve organization's needs better.

7.2 Practical next step recommendations for project management improvement

The outcome of this study is an improved project management process. To reach this outcome need to do the following actions in the process. Changes have to be agreed in the top management and then spread information to the whole organization. It is important that those changes are committed even if it sounds self-evident. This study provides some solutions to tackle issues in project management process and helps to work more efficiently. After piloting, feedback should be connected to the loop and changes can be made.

The meeting framework is useful in other similar behavioural tasks in the company. It improves communication in all organization and gives structure the communication and meeting procedures. Results can be measured easily after implementation but have to take account to give time to change.

Taking forward the final recommendation to improve the project management process comprises the next recommendations. Create a new project schedule, recommendations need the whole organization engagement.

The next steps of the improvement ideas should be taken in the management level. Those need strong engagement in that level before implementing to use. Second recommendation of new project schedule needs a bigger change in the organization, and it will change mind-set of the original time scheduling during the organization. Before that have to create group of stakeholders to move the change forward.

Recommendations to do next to implement this proposal. Next steps to improve meetings:

1. Establish a meeting framework to top management
2. Establish a meeting framework for general activities
3. Establish a meeting framework for all organizations and implement it
4. Setting up a meeting framework as a new guideline for structured work

Next steps to improve project schedule:

1. Establish proposal to organization's responsible person
2. Approval from the organization management team to change project time schedule
3. Determine the new project scheduling timeframe for general activities within cooperation main stakeholders
4. New timeframe needs support from change and project management, support project management to do changes
5. Schedule process model

7.3 Self-evaluation of thesis project credibility

A credible study is based on accurate documentation and justification of the work and solution performed, according to Kananen (2013:181). This study used Design Research as the research method (Kananen, 2013). To collecting data used interviews, surveys, and observation. Used sources have had multiple documents of the process.

Since the purpose of this study was to address specific organizational challenges, it was decided to use a design research approach. As a real process development, this study is relevant to the case organization. This makes the study's results and outcomes most relevant in the context for which they are intended. It implies that the study's conclusions cannot be applied to another context or organization. The literature was collected from several

sources. There is a wide range of sources that have been utilized and collected from different channels.

Section 2 presented the research plan for the study. The research approach and design are explained in section 2.2. The data collection plan is summarized in section 2.3. The research design increased the degree of reliability by using a systematic and logical approach throughout the study.

For the data collection, three rounds of selected methods and their descriptions were planned. Documentation of data collection rounds was conducted, and based on the findings, decisions were justified. The company is small, so anonymity was important and identification information was removed.

In this study, the goal was to improve the current project management process. In general, the study outcome fits the above objective and can be used by the organization. It contains recommendations for improvement to be implemented, but overall, it will improve the process of project management within the organization.

The recommendations were communicated to key stakeholders. It is essential to involve stakeholders in the process moving forward in order to improve it. In the case organization, the process is followed as deemed appropriate, and the final recommendations are communicated to the principal stakeholders. As part of the recommendations, a concrete set of best practices was presented, proving the study to be appropriate and useful for the organization that conducted the study.

It is possible to estimate and measure results after implementation when the topic has been clarified at the beginning. Meeting frameworks can be measured by time. An effective meeting framework reduces the amount of time spent on meetings and related tasks. Schedule changes can have a positive impact on projects, but they are difficult to quantify. Piloting the new schedule demonstrated its effectiveness. As a result of the new model, stakeholders' working hours were reduced and on-time delivery metrics increased.

This study provides an answer to a general business issue. In today's business climate, development is an important part of a company's success. Direct savings are easily obtainable for businesses, but if they want to become stronger, they should focus on improving processes. The process of process development leads to a more efficient way of working and, therefore, to the saving of time and money. Process development allows organizations to run more smoothly and increase profits.

All changes are the result of people's behavior, so getting people to agree on the methods will be challenging. Changes in the task scheduling must be understood by employees, as well as the importance of communicating in the same way. This thesis presents the following research idea; how to motivate people to change their behavior and how psychological methods can be used to motivate them.

By analyzing the topic more thoroughly, the topic might have been narrowed down even further. Business organizations can make significant changes more effectively if they focus on and improve only one area. It may be possible to involve more stakeholders when the topic is clarified from the very beginning, which could lead to a more involved outcome at the end.

7.4 Closing words

In the modern world, change is becoming increasingly important. It means that organizations are better able to react to changes and need to adapt to new methods more quickly. Moreover, in the business environment, it is challenging to come up with new methods that will meet the need for flexibility and efficiency. When time is valuable in knowledge-based work, saving money can greatly impact revenue and profit for the company. It requires investigating new ways to make time-saving methods to make work more efficient. The purpose of this study is to bring attention to the importance of finding creative ways to do things in a more flexible and efficient manner.

Due to this, organizations do not have time to develop processes and explore other options. This study presents ideas for using Lean ideology creatively and improving the efficiency of simple day-to-day tasks. As well as providing employees with theory tools to improve their behavior, it also provides guidance on how to do so. As a result of this study, employees will be able to contribute their own ideas to improve daily tasks, thereby focusing on all the small changes that make a difference. This study aims to discover how time can be saved and how it can be utilized to improve processes in knowledge-based work.

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