CHALMERS

# Structuring construction project management processes

## - A case study of a Swedish house developer

*Master of Science Thesis in the Master's Programme, Design and Construction Project Management*

SEBASTIAN AHLSTRÖM
MIKAELA WALLO

Department of Civil and Environmental Engineering
*Division of Construction Management*
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Master's Thesis 2015:5

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Chalmers tekniska högskola 2015:5

Department of Civil and Environmental Engineering
Division of Construction Management Chalmers University of Technology
SE-412 96 Göteborg
Sweden
Telephone: + 46 (0)31-772 1000

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## ABSTRACT

Project managers in construction are working in a complex environment with many processes ongoing simultaneously in several projects. Although, there are a few developed tools supporting their management position and the project managers therefore have to rely on experience and expertise gathered throughout their career. The main purpose with this study is to study the possibility to develop a structured operation system for project managers within a construction company, while simultaneously consider their attitudes towards such change, and furthermore explore their needs for better support functions regarding the process of their work.

An interview based case study has been carried out where seven project managers have been interviewed in the case company. The case company is a house developer focused on development and production of residential buildings and residential areas, which has over several years, gradually standardized its project development process. However, the project manager's role within the company is still considerably free, which is due to the complexity of implementing a structured framework. Interviews were performed in order to gather the project manager's view upon their role, the operation system at the case company, and their view upon a reconstruction of the operation system with a developed supporting tool. The interviews were further complemented with a shorter exercise that intended to provide the study with focus areas when developing the operation system.

The study shows that the administrative work sometimes distracts the managers from performing their core activity of managing the project process. The interviewed managers as well as the literature are promoting an optimization of handling administrational work. This would free up more time for the managers to be spent on the creative part of their job. The result from the study indicates a positive view upon today's well-functioning governing tools, i.e. stage-gates. Further a coherent view among the managers is the potential of aligning all members in the organization by introducing assisting tools. Therefore, a general conclusion is that a new assisting tool for the managers in the operation system should provide a bird's eye view over the projects as well as providing the managers with a responsibility distribution scheme, which will be part of the alignment of the organization.

Key words: Project Management, Standardization, Freedom and innovation, Construction industry, Process-orientation

Strukturerade processer inom projektledning
En fallstudie utfört i ett svenskt husbyggnadsföretag
Examensarbete inom Design and Construction Project Management
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Institutionen för bygg- och miljöteknik
Avdelningen för Construction Management
Chalmers tekniska högskola

## SAMMANFATTNING

Syftet med denna studie har varit att undersöka möjligheten att utveckla strukturerade stödfunktioner för projektledare inom nybyggnadsverksamhet, och samtidigt beakta deras attityd gällande en sådan utveckling. Vidare har detta arbetet undersökt projektledares behov av bättre stödfunktioner gällande deras arbetsform, där risken för att utveckla stödfunktioner som projektledare inte vill ta sig an samtidigt har beaktats. Detta arbete har genomförts med hjälp av en kvalitativ studie där sju projektledare i ett studerat företag, JM, har intervjuats. JM, är en bostadsutvecklare och bostadsproducent som under de senaste åren gradvis har strukturerat deras processer för att leverera projekt på ett mer effektivt sätt. Fram tills nu har företaget avvaktat med att utveckla sådana stödfunktioner på grund av projektledarrollens komplexa natur.

För att bilda sig en uppfattning om projektledarens roll samt vilka utvecklingsmöjligheter som finns gällande det studerade företagets verksamhetssystem så har en litteraturstudie genomförts där fokus har varit projektledarrollen, standardisering, frihet och innovation samt process baserad verksamhetsutveckling. Detta har bidragit till en större förståelse för hur en framtida utveckling av verksamhetssystemet innehållande stöd och verktyg för projektledare skulle kunna utföras. Intervjuerna utfördes med syftet att samla kunskap kring vad projektledarna anser om sin roll, hur deras uppfattning gällande det existerande verksamhetssystemet ser ut samt hur projekteldarnas åsikter angående en framtida utveckling av befintlig struktur ser ut.

Resultaten från denna studie tyder på att det administrativa arbetet distraherar projektledarna att utföra deras kärnverksamhet där fokus är att leda projektet framåt. Projektledarnas uppfattning överensstämmer med vad som redovisas i litteraturen om att ett verksamhetssystem skall fungera som ett hjälpmedel i vad som ska genomföras snarare än en strikt vägledande process i hur arbetet skall utföras. Genom att underlätta det administrativa arbetet för projektledarna, exempelvis genom att introducera en biträdande projektledare, så kan istället tid och kunskap läggas på de mer kreativa delarna i projektet, vilket även skulle öka motivationen hos projektledarna. Vidare så indikerar resultaten från intervjuerna en positiv syn på det i företaget väl utvecklade grind-systemet, och är högt uppskattat genom projektutvecklingen. Baserat på intervjuerna och på litteraturstudien framträder en tydlig slutsats, nämligen vikten av att ett nytt verktyg blir ett hjälpmedel i projektutvecklingen genom att tillföra en visuellt överskådlig tidslinje över projektet, samt att det bidrar med att klargöra ansvarsfördelningen mellan medarbetarna då de ska arbeta på ett mer enhetligt sätt.

Nyckelord: Projektledning, Standardisering, Frihet och innovation, Byggindustri, Process-orientering

# Contents

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Sebastian Ahlström & Mikaela Wallo

# 1 Introduction

The construction industry is facing numerous of uncertainties in every project and there is a general understanding that the proclaimed uniqueness has contributed to that the construction process often is described as inefficient (Polesie et al., 2009). However, the uniqueness of projects are not solely related to the product but also related to the processes and the organizational structure (Polesie et al., 2009). This has led to that construction firms tries to find efficient ways to structure the process in order to avoid the perception of dealing with unique projects and furthermore provide them with a competitive edge (Polesie et al., 2009). Companies have begun to develop their operational systems in order to better follow the company's activities. One important purpose of having an operational system is that all employees in the same field of expertise will work with the same templates and standards (Östlind, 2014).

Reducing uncertainties in construction projects in combination with increased reliability and continuity of the construction processes will favor the customer value and satisfaction (Gadde and Håkansson, 2001; Samuelsson, 2006). This is further supported by Polesie (2013) who argues that process-oriented activities, structured planning and operational sequences that have been learnt through experience is the most effective process for reducing waste and increase customer value. He further argues that top managers often advocate standards in order to increase efficiency. However, implementing standards in construction can be difficult and may result in confronting obstacles. An example of this is brought up in Polesie et al. (2009) where he state *"construction firms implements modern management principles that site managers are expected to accept without considering their need for individuality".*

Polesie et al. (2009) mentions that project managers often perceive standardization negatively, where a common perspective among managers is that standardization erode the freedom of choosing their own methods of running projects. However, Polesie et al. (2009) showed that the already existing standardization in construction projects was perceived as sufficient according to the managers. They argued that the existing governmental rules and regulations, procurement methods, designated teams and standardized forms altogether put enough constraints on the managerial role. Nevertheless, introducing a more structured process of working with supporting functions/tools is interesting from an organizational point of view. Therefore it is of interest to perform further studies on the possibility to implement a more structured process for performing the project manager's activities in larger construction firms without negatively influencing the project manager role.

## 1.1 Purpose of the study

The purpose with this study is to research the possibility to structure activities for project managers within construction firms, while simultaneously consider their attitude towards such change. Interviews with seven project managers within similar projects in different regions will be performed in order to map the project manager's role within a studied construction company, and to furthermore explore their need for better support functions/tools regarding the process of their work. The aim of this study is to present recommendations regarding the development of a structured model/support function for the project manager role within construction. The model will facilitate learning and be provided as a tool for project managers operating within organizations.

## 1.2 Research questions

This thesis thus focuses on analyzing and discussing the following research questions:

- How do project managers perceive process oriented activities or other structured working methods considering their need for freedom / individuality and creativity?

- How applicable/needed is a structured model/support function for the project manager´s role within construction regarding their working routines?

- How can such model/tool be framed and used?

## 1.3 Method

In order to examine what the work of project managers consist of, interviews with project managers from different regions within the case company were carried out. Moreover, during the interviews, a shorter quantitative exercise was performed. Further, in order to explore the subject of structured processes from project managers' viewpoint, a literature review was conducted before the interviews were carried out. The literature review looks further into the following subjects: the role of the project manager, standardization, innovation and freedom, and process based business development. In the end of the report, results from the interviews are analyzed with the findings from the literature as a framework, which form the discussion. The discussion is the foundation for the conclusions and recommendations, where the conclusions are trying to answer the thesis´ research questions and the recommendations are aimed to provide the studied company with suggestions for further development of their operation system. Last but not least, the authors suggest further studies.

## 1.4 Delimitations

This thesis only focuses on the project manager role within construction companies, where the project manager's role is to have the overall responsibility for a project's entire implementation, as well as budget responsibility and accountability. The thesis is based on a case study of a Swedish house developer and the concluding recommendations are therefore suited thereafter.

## 1.5 Thesis outline

This thesis consists of seven chapters. The first chapter is an introduction to the thesis, while the second chapter provides a frame of reference, which covers previous research within the areas of project management, the project manager's perceived freedom and creativity within the role, process orientation and standardization. The third chapter describes the methodology that has been used in this thesis and present how the work has been carried out. The fourth chapter presents the studied company and the results from the interviews with project managers. The results from chapter four forms the base for the discussion, which is presented in chapter five. Chapter six concludes the master thesis and presents recommendations to the studied company, as well as suggest proposal of further areas to be studied.

# 2 Theoretical Framework

This chapter consists of the literature review which presents the theoretical framework that has been used in order to understand and analyze the results collected from the preformed interviews. In order to introduce a theoretical framework to the subject of a structured model/support function for the role of a project manager within construction, this chapter is divided into four parts. The first part defines and introduces the concept of project management and the role of project managers within construction. To be able to connect project management to standardization/process-orientation the second part presents the concept of standardization. Furthermore, the concept of freedom and innovation is presented in the third part where there is an interest in investigating the possibility to implement structured activities in larger construction firms without negatively influence the project manager role. Last but not least, the fourth part presents the concept of process orientation.

## 2.1 Project management

Construction projects have been 'managed' since ancient times (Winch, 2010). According to Maylor (2010), major influence on modern project management can be identified as origin from the 1950s. This since there was no generally accepted methods or recognized processes before this time. Furthermore, according to McKeon (2012), the recognition of the project manager role in large-scale projects appeared during the 1970s, which later continued in the 1980s as "*a formalized mean to manage large-scale engineering and construction projects"*. In the 1990s there was a development of standards for the project management process, where the Project Management Institute (PMI) was leading the development and published their Body of Knowledge (Maylor, 2010). Moreover, in the beginning of 2000 there was a widespread need for developing project management with focus on the strategic role of projects, where the project managers became integrators in this new approach (Maylor, 2010). This meant that the project managers were responsible for integrating the required resources, knowledge and processes, from the projects beginning to the end.

There are many existing definitions of project management in the literature, and in this thesis three of them have been studied. According to the Project Management Institute's Body of Knowledge, project management is:

*"The application of knowledge, skills, tools and techniques to project activities to meet project requirements. Project management is accomplished through the application and integration of the project management process of initiating, planning, executing, monitoring and controlling, and closing"* (PMBoK Guide, 2004).

Winch (2010) on the other hand defines the role in fewer words:

*"Essentially an organizational innovation - the identification of a team responsible for ensuring the effective delivery of the project mission for the client".*

Whereas ISO 21500 (2014) emphasize the processes:

"*The application of methods, tools, techniques and competences to a project. Project management includes the integration of the various phases of the project life cycle. Project management is accomplished through processes".*

Although the definitions have been developed over time, the PMBoK Guide is still the most accepted definition regarding project management. Moreover, the definition from the PMBok Guide is also the definition that best describes the role of the project manager at the case company that has been studied, and this definition is therefore used throughout this thesis.

### 2.1.1 Project Management standards internationally

There exist many large transnational organizations that have developed standards for project managers. One of them is the Project Management Institute (PMI) which was formed in North America in 1969 at Georgia Institute of Technology (Slinger and Broderick, 2008). The organization was developed as a non-profit organization with the objective to *"foster recognition of the need for professionalism in project management; provide a forum for the free exchange of project management problems, solutions and applications."* (Chumas and Hartman, 1975). Furthermore, PMI have produced its own standard, the Project Management Body of Knowledge (PMBoK), which is the most commonly used standard throughout the world (Hällgren et al., 2012). Moreover, another organization that has produced its own standards is the Construction Management Association of America (CMAA), which was formed in 1982. CMAA published their own Body of Knowledge which attempts to define the standards and practices of the construction management profession (CMAA Foundation, 2014).

Nevertheless, companies are not legally obligated to follow any of these standards, however they are being used by many organizations as a minimum requirement for bidding and hiring. Therefore the PMBoK is often used as best practice and influencing education, practice and research (Hällgren et al., 2012). However, Hällgren et al. (2012) does question the use of one specific standardized model that has been built for all project managers within various businesses. Where they reason that a generic standard focusing on the project manager role can never be thorough where only the easiest things to deal with can be included and the more challenging tasks are dealt with in abstract ways. PMI do however work with a constant improvement of their standards in order to make them more comprehensive. International Organization for Standardization published ISO 21500 in 2012 and it is published as a standard for project managers internationally (PMI, 2012). This standard is based upon the standards formulized within PMBoK. The standards provide generic guidance, explaining core principles and what constitute good practice in project management (ISO, 2014).

### 2.1.2 The definition of a Project manager

There exists many definitions regarding project management, but how can a project manager be defined more specifically? According to Bolden (2004), it was Zaleznik in 1977 that began the trend to make sense of the question 'what is leadership and what is management?' He presented leaders as *"an artist, who uses creativity and intuition to navigate his or her way through chaos"*, and managers as *"a problem solver who is dependent on rationality and control"*. However, Kotter (1990) distinguish between leadership and management by stating that *"leaders establish direction by creating a vision and a strategy for achieving the vision"*, while *"managers do not develop visions, they develop plans"*. Nonetheless, another common differentiation made by Cadle and Yeates (2004) between leaders and managers is the opinion that *"leaders focus on doing the right things while managers*

*focus on doing things right"*. Furthermore, Cadle and Yeates (2004) assert that *"managers belong to the organization and see themselves as conservators, bringing certainty into a disordered environment"*. Moreover Kotter (1990) also concluded that management is about coping with complexity and he further proposed that good management brings about a degree of stability and consistency to organizational processes and goals (Bolden et al., 2011).

Today, people are generally recruited into management rather than leadership positions within organizations. (Bolden et al., 2011). According to Clegg et al (2008), the tasks that managers do are supposed to contribute to achieving the organizational goals. Moreover he states that *"managing signifies being in charge of something, being responsible for its smooth running and its rational conduct, handling and controlling it as if it were a well-oiled machine"*. He further states that common management activities are interpreting, understanding, communicating, leading, empowering as well as explaining, a manager is in other words *"a person who manages to shape and express directions, in writing and in speech"* (Clegg et al., 2008).

### 2.1.3 The project manager's role within construction

According to Jaworski (2006), the project manager is seen as a key player in the construction industry, and people are often struck by the complexity of a project manager's job, and the fact that they are involved in almost every detail of a project (McKeon, 2012). This is further supported by Jaworski (2006), who states that a project manager is a person that acts throughout the whole processes. Moreover, Gould and Joyce (2011) states that the primary responsibility of the project manager is to configure the project team, schedule the job, and set up a cost-control system. Sommerville (2010) further states that the function of a project manager includes communicating, planning, organizing, coordinating, controlling, motivating and forecasting.

Although the project manager's role in the construction process may vary from company to company and from project to project, the key project management responsibilities includes the following activities according to the Project Management Institute's Body of Knowledge (PMBoK, 2004): Identifying requirements, establishing clear and achievable objectives; balancing the competing demands for quality, scope, time and cost; and adapting the specifications, plans, and approach to the different concerns and expectations of the various stakeholders. McKeon (2012), further support the above activities, where stated that the key responsibilities within project management is creating clear and attainable project objectives, building the project requirements, and managing the triple constraint for projects, which is cost, time, and scope (McKeon, 2012). Project managers often talk of the triple constraint, which is also referred to as the iron triangle, see Figure 1, when managing competing project requirements (PMBoK Guide, 2004). Each side of the triangle represents a constraint, and one side of the triangle cannot be changed without affecting the others (Maylor, 2010). The time constraint refers to the amount of time available to complete a project, the cost constraint refers to the budgeted amount available for the project and the scope constraint refers to what must be done to produce the project's end result. The discipline of project management is about providing the tools and techniques that enable the project team to organize their work in order to meet these constraints.

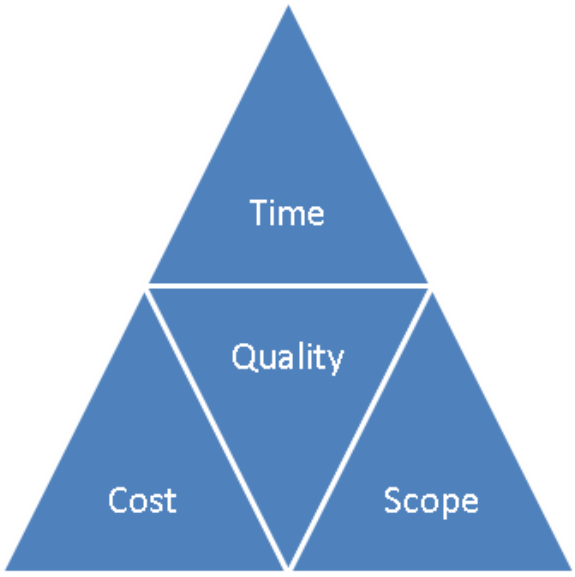


*Figure 1 The iron triangle (after Maylor, 2010).*

According to McKeon (2012), the project manager is the glue that holds the job together. However, being a project manager requires a lot of different skills. A project manager does not only manage the project team, but also leads the team by leading by example as well as gaining trust and respect through motivating, coordinating and maintaining morale (Sommerville, 2010). Nevertheless, they must also possess and utilize a range of other relevant skills while leading the team to successfully deliver the project. The project manager must therefore be able to recognize what skills are required and apply them accordingly, to suit their current project role requirements. Furthermore, the practice of project management is constantly changing to meet the business demand as well as responding to new and innovative technologies (McKeon, 2012). Moreover, managing any construction project requires talent in the art of building and maintaining strong relationships and the specialized skills that can only be gained from experience (Jaworski, 2006). However, according to Sommerville (2010), in a project context, each project is normally seen as unique and therefore the project manager must recognize what skills are required and apply them accordingly. Furthermore, according to Winch (2010), the problem with managing construction projects is the lack of information required for decision-making. In order to keep the project rolling, decisions have to be made before all information required for the decision is available. Decision-making in construction is therefore about robust decisions, rather than optimal decisions.

Nevertheless, like every other profession, project management in construction has its share of workforce issues. According to McKeon (2012), the most current among them is a lack of trained and experienced project managers to fill the growing void caused by increased numbers of construction projects as well as the need to replace those people who are retiring. Last but not least, the project manager is given responsibility for the overall task. However, this does not remove responsibility from everyone involved for ensuring that all the actions are undertaken effectively, efficiently and on time (Radosavljevic & Bennett, 2012).

### 2.1.4 Project management responsibilities according to CMAA and PMI

According to McKeon (2012), the Construction Management Association of America (CMAA) performed a study in 2006 that resulted in ten core competencies for project managers. The study consisted of a survey where project managers *"were asked to rank 120 common project responsibilities according to both their importance in construction management work as well as the frequency in which the respondent actually engaged in these activities".* Of the 120 common projects responsibilities, the following ten broad areas fell within the top ten:

- **Project management planning**
  In project management planning the project team is composed and the project's basic purposes, goals and criteria of performances are determined. The project manager should define the project requirements as part of the project management plan, which should include the project scope, budget and schedule.

- **Cost management**
  Cost management involves planning, estimating, budgeting, and controlling costs so that the project can be completed within the approved budget. It consists of cost estimation, cost budgeting, and cost control. The project manager provides ongoing cost management in order to make sure that the budget is being followed.

- **Time management**
  Time management is the processes required to accomplish completion of the project on time. The responsibilities related to time management consist of ensuring that the project team develops a project plan as well as a schedule to both plan and monitor time on the project.

- **Quality management**
  Quality management is crucial to any successful project, and it is the project manager's job to make sure that quality is inherent of his or her basic service. Quality management is assuring that the project will satisfy the objectives for which it was undertaken.

- **Contract administration**
  If there is a dispute during a job, the contract usually serves as the arbitrator. Therefore one of the most important aspects of being a project manager is the administration of contracts, since the contracts detail all parties' tasks and responsibilities.

- **Safety management**
  Safety management should be a collaborative effort. However, project safety should be considered a process that is elevated above other issues and resolved in a timely manner.

- **Program management**
  Program management may be considered an expansion of traditional construction project management services.

- **Sustainability**
  Sustainability is here to stay, and project managers are in the forefront of the movement. The project manager's main job is to establish sustainability goals and objectives. The project manager should also establish and regularly review sustainability goals and standards.

- **Risk management**
  The goal of risk management is to understand the risks involved in the project and mitigate and manage them, if possible. A risk management plan should be developed and include risk identification, risk analysis and risk management.

- **Building information modeling**
  Since the Building information modeling technology is evolving, the project manager must always remain up to date with building information modeling.

The Project Management Institute (PMI) on the other hand, has divided the project management responsibilities into different knowledge areas. The PMBoK Guide have recognized 47 processes that fell into ten knowledge areas that were frequently reoccurring in their typical projects. The knowledge areas that have been developed from both PMI and CMAA are in many areas similar, although some of them distinguished from each other. Below follows a description of the ten knowledge areas that have been defined in the PMBoK Guide.

- **Project Integration Management**
  The processes and activities that are needed in order to identify, define, combine, unify, and coordinate the various processes and activities within the project management process groups.

- **Project Scope Management**
  Scope management is about ensuring that the project includes all the work required, in order to complete the project successfully.

- **Project Time Management**
  Same as in CMAA.

- **Project Cost Management**
  Same as in CMAA.

- **Project Quality Management**
  Same as in CMAA.

- **Project Human Resource Management**
  Human resource management is about organizing, manage, and lead the project team. If a project manager can´t manage and develop a team, he or she will have a very hard time delivering a successful project.

- **Project Communications Management**
  Being an effective communicator is essential to being an effective project manager, since the majority of a project manager's time is spent communicating, both orally and written. Communication management is

required in order to ensure timely and appropriate planning, as well as the ultimate disposition of project information.

- **Project Risk Management**
  Same as in CMAA.

- **Project Procurement Management**
  Procurement management is necessary in order to purchase or acquire products, services, or results needed from outside the project team.

- **Project Stakeholder Management**
  Stakeholder management requires an identification of all people or organizations that is impacted by the project. Furthermore it consists of analyzing stakeholder expectations and impact on the project.

Figure 2 shows the knowledge areas within project management according to CMAA and PMI and is not organized into any specific order.


*Figure 2* *Knowledge areas within project management according to PMI & CMAA.*

## 2.2 Standardization

In order to increase the efficiency within organizations, many companies focus their development on standardizing processes and procedures as well as material parts in the assembly line. The focus of the report is to study a company that is already moving towards a structured project development and it is therefore important to study the concept of standardization. The chapter does also conclude some basics around knowledge transfer, which is related to standardization.

### 2.2.1 The history of standardization within construction

Improving the construction industry has been on the topic for a long time. Edum-Fotwe et al. (2004) mentions three reports that received extensive attention within the UK construction industry. They brought technological and managerial innovation into the construction business. These reports were the Emmerson report in 1962, Latham report 1994 and Rethinking construction by Egan in 1998. They all focus on the improvement of the construction industry, the latter ones i.e. Latham report and Rethinking construction specifically emphasize that the industry should learn from the manufacturing industry (Cooper et al., 2004). Altogether they have contributed to an innovative new agenda within construction (Edum-Fotwe et al., 2004). They further mentioned, that the expected level of performance improvement the construction industry aim for is demonstrated through standardization of processes and components within the manufacturing sector. Therefore a focus on standardization can be seen as a key factor for improving the industry.

Alistair and Isack (2001) define standardization accordingly *"Standardization is the extensive use of processes or procedures, products or components, in which there is regularity, repetition and a record of successful practice"*. This thesis will focus on the processes and procedures exclusively related to the construction project manager role. Santos (2002) argues that the main focus of standards should be to limit problems occurring in the processes. Therefore, the standards should be designed with previously identified problems in mind. This will limit the waste occurring throughout the process. In order to further define what a standard should comprise Santos (2002) list properties that were originally formed by Imai (1997):

- They should represent the best, easiest and safest way to do an activity.
- They provide a method for managing knowledge through the preservation of "know-how" and expertise: with standardisation and the institutionalization of its content, the know-how stays in the company regardless of the comings and goings of employees.
- They can be used as a reference to evaluate performance.
- They provide a basis for both maintenance and improvement activities.
- They provide a basis for training, auditing and diagnosis.

### 2.2.2 Process standardization - Stage-Gate model

The concept of standardization was formed in the 80s within New Product Development (NPD), where the stage-gate model was introduced (Gudmundsson et al., 2004). This tool is presented by Winch (2010) as the most valuable management tool for managing the project life cycle. In particular with its focus on the earlier stage, briefing and design, where it provides the manager with a structured flow of

information towards a potential perfect state in the future. The model is designed for projects where technical development work is applied and the product is visibly different from previous products (Cooper, 2011). In this report NPD is viewed as the development of construction projects, which share many characteristics with product development. The model is based on dividing the development process up in stages where certain documentation is required in order to proceed into the next stage (Cooper, 1995). Cooper further emphasizes the importance of not cutting corners, the gates are supposed to ensure that quality is achieved and each stage is their own process that should be completed. Winch (2010) confirms this and stresses the importance of pre-defined criteria for each gate. The criteria for each gate should consist of the questions who, what and when. Examples of questions could be:

- Who should be involved in each review?
- What criteria need to be met for the project to go on to the next phase?
- When should the reviews be held?

The answer to these questions will vary throughout the project life cycle (Winch, 2010). Moreover, Winch explains that there are some further questions that need to be addressed during each stage-gate review:

- Is the project still on course to deliver the project mission?
- Is the project process well managed?
- Are the tasks for the next phase of the project clearly defined?

Cooper (1995) describes the stages to be the area of improvement, where a standardized process for each stage will support an optimization of the overall process, which will ensure that the project is delivered on time to the market (Cooper, 1995). Gudmundsson et al. (2004) explains that in recent years, some of the focus has shifted over to the product itself. Where standardizing parts, modules and interfaces is the main focus, which is also recognized by Wheelwright and Clark (1994). Although, all researchers do not share this view, as an example, Mital et al. (2014) describes a shift from the product over to the process, from stable institutions to temporary systems and from static organizations and technologies to flexible ones. This thesis focus on project processes rather than parts, modules and interfaces and therefore the literature studies will be focused on process improvements. Wheelwright and Clark (1994) who promotes a focus on parts do however mention the importance to focus resources correctly in the project development phase. An example is where a company initialized too many projects and never made sure to allocate their resources correctly. This resulted in failure to complete some of the projects on time, which brings light to the managerial responsibility in NPD.

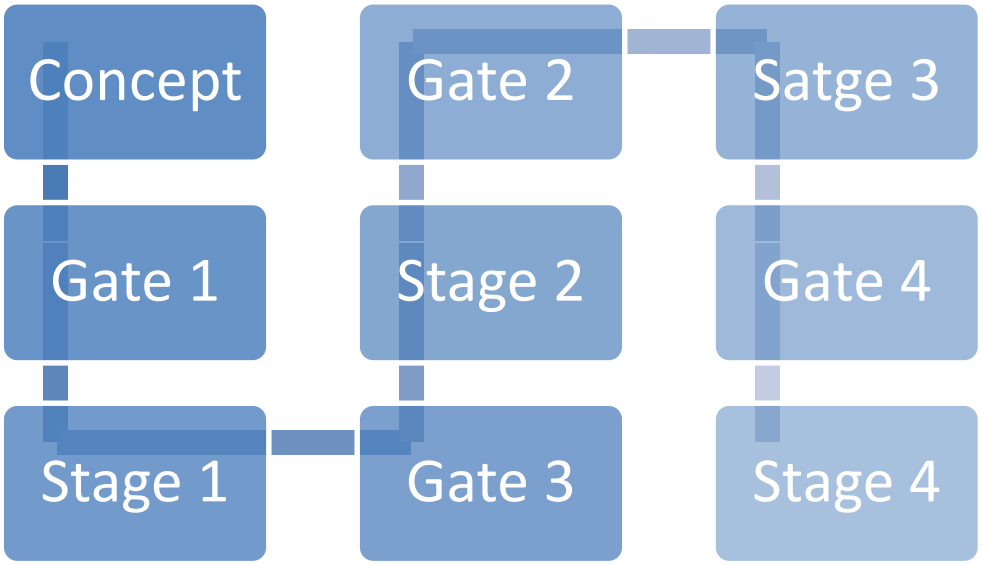


*Figure 3 Stage-gate model (Cooper, 2011)*

The stage-gate model is currently used in many companies and therefore of interest for further exploration. Maylor (2010) describes the stage-gate process as necessary and a fundamental discipline. The gates are developed in order to have control over the process where the project should be evaluated in the end of each stage. A decision on further activity is taken when all necessary documentation is provided, where either the project should proceed (Go), request for more information (Recycle) or stop the project (Kill or Hold) (Cooper, 2011). The gates may differ between projects and not all projects have to follow the customary procedure e.g. projects delivering to a contract are not likely to be stopped when problems arise (Maylor, 2010).

The gates are structured similar for all phases and consists of three main functions: deliverables, criteria and outputs. The deliverables are the information the project leader must bring to the decision point, and is the result from completed activities. Criteria refer to the set criteria, which the project is being judged against, does the project align with the business strategy and does it meet environmental, health and safety goals set by the company. Outputs consists of the decision (Go, Recycle or Kill or Hold), action plan for next stage and a list of deliverables together with a time plan for the next stage (Cooper, 2011). The decision whether to proceed or not is taken by the so-called gatekeepers, who is a predefined team for each gate. Gatekeepers usually consist of the leadership team of the business (Cooper, 2011). Cooper has developed the stage-gate model over the years, and are now more embracing where the five-stage model have been complemented with a next generation concept. Cooper (2014) introduced *The Triple A System*, which is suited for the more rapid business of today, it supports an earlier start where the stage-gate model can be introduced even if the product is less than 50 per-cent defined. This development changed the focus from financial go/kill criteria to more strategic criteria and therefore the model have become a better tool for the development team instead of only a financial lever (Cooper, 2014).

### 2.2.3 Knowledge transfer as standardizing

Something that has been on the topic for a long time is the use of existing process-oriented models and philosophies from the manufacturing industry in construction (Bresnen and Marshall, 2001). Brensen and Marshall do however list several obstacles that obstruct a clean-cut implementation of tested processes. First, the most frequently referred to is 'each project is different' which takes away the repetitive routine, which many processes thrive upon within the manufacturing industry. This further affects the benchmarking process where key performance indicators are not matching previous or future projects. Secondly, the fact that construction projects consist of a huge amount of different components and that projects is facing a cumulative nature makes it hard to disaggregate the processes and relate to specific management processes. Third, the project-based nature prevents knowledge transfer between projects where limited time and resources are accessible for cross-fertilization between on-going projects (Bresnen and Marshall, 2001). Further they argue that proficient mechanisms for knowledge transfer are scarce in many companies and lessons learned from one project to another are not commonly seen in the construction industry.

The amount of tacit knowledge within the business does not ease the transfer through documentation, which is presented as a proficient way to share knowledge (Bresnen and Marshall, 2001). They further recognize the complication with a changing team in each project where sub-contractors in particular change, with the result that the knowledge transferred between projects are significantly reduced. However, the trend is to strive for more partnering contracts where long-term cooperation can flourish a knowledge transferring thinking and in the long run benefit the organization (Segil et al., 2003). Brensen and Marshall (2001) do bring up the difficulties with such partnering where changing the existing culture proves to be challenging.

Lee (2000) points out that the willingness of people to share tacit knowledge depends on whether their organization is a sharing organization or not. This is pointed out in the article as the single most critical success factor for knowledge management. However, Shokri-Ghasabeh and Chileshe (2014) identified further obstacles for implementing a knowledge sharing system and the three most important according to their report are lack of employee time, lack of resources and lack of clear guidelines. Based on several empirical studies, a major part of the knowledge is tacit (Wah, 1999; Lee, 2000). Ungan (2006) argues that the most challenging part of transferring knowledge is obtaining the tacit knowledge from participants' minds and transmit the knowledge into documentation. Ungan (2006) suggest that companies should focus on documenting the best practice of each process in order to communicate it to all employees. Lee (2000) further describes that 90 percent of the knowledge is embedded and synthesized in the employee's heads.

Tacit knowledge can be divided into four categories, declarative (know-about), procedural (know-how), causal (know-why), conditional (know-when), and relational (know-with) (Alavi and Leidner, 2001). Procedural knowledge in combination with information is the two most important aspects to transfer knowledge between employees when a process is being standardized (Ungan, 2006). Ungan further states "The more knowledge is documentable the more likely it can be standardized". Transfer know-how into documentation is often an issue in contrast to information, which is quite easy to transfer into documentation. However, knowledge does not

necessary need to be communicated through written documents, where pictures, sketches and photographs likewise can facilitate understanding (Santos, 2002). These methods of communicating processes can further ease the objective to show co-workers the know-how processes.

### 2.2.4 Positive and negative perception of standardization

According to a qualitative study performed on 59 construction clients' representatives, the perception of the word 'Standardization' varied, where a major part of the interviewed clients' were descriptive, less than one in four were supportive and the rest of the interviewees were clearly negative (Alistair and Isack, 2001). Project managers who have a negative attitude towards standardization often consider increased standardization as a further erosion of their freedom to run projects their own way (Polesie, 2012). Polesie et al. (2009) further showed that a major part of the project managers do not consider some of the already implemented standards as standardization e.g. standard arrangement for material storage, standard documents describing the stages of project delivery as well as document handling. These were perceived as easements that reduced the burden of the manager role. However, these actions are according to literature part of the standardization concept and lean principles (Polesie et al., 2009).

Standardization is not easily implemented and is facing many difficulties, where Santos (2002) explains that implementation processes often fail due to poor participation from the employees. He claims that the lack of teamwork between top management and workers on site is the main reason for failure. Polesie et al. (2009) strengthen this view where they acknowledge that site managers do not want top management to be involved in their work unless they ask for help. They further conclude that the managers are not unwilling to change but that they want to evolve the processes from own experience. Polesie et al. (2009), therefore argue for a bottom-up approach. Alistair and Isack (2001) emphasize that all parties involved in the project process gain benefits from standardization, employees understand better from whom things are needed and when they are needed. This ultimately leads to fewer claims and consequently less unplanned costs.

Another view presented by Alistair and Isack (2001) is that the clients´ need to take on the responsibility to lobby for an increased standardization in their project. The industry is according to their study willing to use or at least increase the use of standardized processes and products. However, there are still 20% of the client's representatives who definitely not intend to increase the use of standardization (Alistair and Isack, 2001).

### 2.2.5 Innovation and freedom

Introducing standards within the construction industry often encounter resistance, where the project managers perceive that their freedom becomes more limited. The managers argue that there is a need for freedom in order to perform their tasks, this is due to that managers face projects of different kind and each project is unique (Winch, 2010; Josephson and Saukkoriipi, 2007). Nevertheless, in order to discuss the perception of freedom, there is a need for a definition of what freedom is for project managers. Polesie (2011) refers to Sandoff and Widell (2009), where they argue that freedom is connected to the concept of hedonism. Hedonism origins from the Greek word "hedone" which describes the feeling of enjoyment, pleasure and delight

(Sandoff and Widell, 2009). The standpoint of how to define freedom in this report is based upon Sandoff and Widell's work and will hereafter be referred to as:

*"Where there is compassion for work and if pleasure is sought for in contrast to pain, as well as if individuals are allowed to take on responsibility, they will perceive a feeling of freedom".*

Depending on the degree of freedom and autonomy a manager possesses, it contributes to the perception of the susceptibility to change. High degree of freedom encourages the manager to deal with the problem on his or her own (Krause, 2004). Further, Krause claims that granting a higher degree of freedom and autonomy motivates the manager to generate ideas, experiment with these, which in the end can result in better ways of performing their tasks. Polesie (2013) strengthens this point of view from the empirical study, which showed that managers who are allowed individual differences perceive their role to be free. However, entrusting the project manager with too much responsibility and especially in combination with low support constraints them in their work and the perception of freedom is reduced (Polesie, 2013). Something that is often forgotten is that standards is formulated by the organization as a best practice and all angles should therefore been carefully considered. They should promote the most effective way of performing a task, at least from the perspective of the people who drew up the plan (Kondo, 2000). However as Kondo further argues, one single standard in most cases can not represent the most efficient way of working for all employees e.g. forcing a left-handed to obey the standards formulated for right-handed is obviously not optimal (Kondo, 2000). Therefore, standards should not always be controlling, they should rather be seen as guidelines. Another issue brought up by Sandoff and Widell (2009) is the concern that managers who feel free at work might be more difficult to manage. When intruding their perceived freedom by standardizing a process they are in charge of, they tend to be reluctant (Sandoff and Widell, 2009).

Kondo (2000) brings up three items that standards usually consist of and their effect on freedom is discussed below, the following list is cited from his work:

1. Aim of the work;
2. Constraints on carrying out the work;
3. Means and methods to be employed in carrying out the work.

Freedom depends a lot on item two and three which limit the employees perceived freedom and are therefore of more interest. Item (2) is more dependent on rules and regulations while (3) are decided internally by the organization and therefore easier to process. Constraints in item (2) can according to Polesie (2013) increase the perceived freedom by managers. Where the managers' can focus on their important tasks instead of controlling and supervise the performance of other players. Kondo emphasize the importance of item (3) and divides it into two types: first one is training and manuals for beginners and the second one is work standards which provides experienced workers with tips and tricks as well as know-how information (Kondo, 2000). These two types of standardizations should be used as guidance according to Kondo (2000) and not as strict standards of how to perform the work. He further states that innovative creativity is indispensable for motivation and that freedom inspires the employee to be innovative. However, standards should be the minimum requirement of how to work and superior managers should encourage and assist their subordinates to improve and surpass these standards in order to perform even better (Kondo, 2000).

## 2.3 Process based business development

According to Radosavljevic & Bennett (2012), project management requires:

*"A coordination of a complex interplay of people, materials, components, tools, equipment and machines subject to variable performance in environments likely to interfere with planned progress. This in turn requires effective communication and efficient systems to organize the flow of the documents that provide the information needed by everyone involved in the construction project".*

It has been stated by Ljungberg and Larsson (2012) that almost every professional organization conducts some form of business development. They further claim that a process-oriented approach has been proved to be a feasible, promising and perhaps also a necessary way. The concept of processes is at a general level easy to understand and to assimilate. However, in order to achieve success and to move from words to action, it requires attentive work, as well as new knowledge and skills (Ljungberg & Larsson, 2012).

*"A process view – that is, looking at work in end-to-end terms – is important because cost, delays, errors, and inflexibility come from the connections between pieces of work rather than from the individual work piece themselves. To achieve levels of cost, productivity, quality, service and cycle-time reduction required today, you need to look at work horizontally... we can't overlay high-performance processes on a functional organization."* - Ljungberg & Larsson (2012)

The best way to describe the process and to present the purpose of the process, as well as the structure and the appearance is to draw maps. By describing the company's business by using a process map, the company can in an easily understandable way explain how the organization's various parts are related to each other and how they interact to create value for customers (Ljungberg & Larsson, 2012). The reality of which the organizations today operate in is complex, and many organizations have allowed their processes to become increasingly "overgrown". Working methods and procedures that once were quite logical, have after time been corrected and adjusted in order to adapt to the ever-changing conditions. These corrections are however often based on an internal and function-defined perspective that in many cases leads to that the operation no longer can be regarded as especially logically designed. Some routines and working methods may therefore only be consider as rational only from the perspective of a small part of the business. However, activities that are carried out within only a small part of the business will in turn affect activities in many other parts of the organization. Unless everyone understands the connection between the different activities, problems can arise. Furthermore, it is often only with process mapping that the relations between the activities of the various departments and functions can be discovered and fully understood. The complexity of processes often lead to that few individuals within an organization has a full understanding of how the processes within the organization looks like. Employees may have a good idea of their own small part of the business, but few can see the big picture. When the processes become visible, it is easier for each employee to see how their work fits into the big picture. The map can also be intellectually helpful for those who work in the process. The visualization of how their work fits into the process facilitates the understanding of the process of thinking in general. Persons who were previously sceptical of the process concept are often reversed when they see how this approach can be applied concretely to their everyday work (Ljungberg & Larsson, 2012).

# 3 Method

According to Bryman (2011), it is important to be familiar with the field of research. Therefore a literature review was conducted in the beginning of the thesis in order to develop a deeper understanding of the subject as well as to find out what is already known about the research field. The theoretical framework for this thesis has been divided in four categories, and the first subject that was addressed was the role of the project manager. The aim was to find out what project management is according to the literature, as well as what the role of the project manager consists of. The second addressed subject was standardization, where the aim was to investigate the concept of standardization as well as the concept of standardization in the construction industry. Furthermore, the subject of innovation and freedom was examined, this was done in order to find out the importance of innovation and freedom as well as how this is connected to project management and how this can be affected by standardization. Additionally, process based business development were studied in order to understand the studied organization as well as providing guidance of how to structure an operation system.

## 3.1 Data collection

For this thesis a qualitative study was chosen in order to establish a deeper understanding of the project manager's role and their opinions regarding process-orientated work-procedures. In qualitative research, interviews are commonly used in order to collect data. Therefore, semi-structured interviews with project managers were conducted within three regions of the case company in order to collect qualitative data. When performing qualitative interviews, there is a great interest in the interviewees' point of view. In order to acquire a more rigorous understanding, a semi-structured open-ended approach with follow up questions are preferred in order to encourage interviewees to further articulate their thoughts on the subject (Bryman and Bell, 2011). Furthermore, in semi-structured interviews, the researcher has a list of questions or fairly specific topics to cover, but the interviewee has a great deal of leeway in how to reply and the interviews tend to be rather flexible (Bryman, 2012). Moreover, multiple interviewees with managers executing the same task provide the report with a phenomenographic research approach, where the role is reviewed from several individuals' perspective (Åkerlind, 2005). Åkerlind (2005) further describe that a phenomenographic approach is when exploring the range of meanings within a studied group, with a focus on the group opinion instead of each individual´s perspective. The number of interviewees for a qualitative study varies between each study but as a guideline, Kvale (2014) recommend between 15 ± 10 interviews in order to reach a satisfying result. He do however emphasize that most studies use too many interviews and that the right amount is when the next interviewee will not contribute further to the research (Kvale, 2014).

## 3.2 Interviews

The project managers that participated during the interviews in our thesis were partly chosen by the case company who recommended nine available managers of which we randomly picked seven. This approach was chosen since the amount of time available for the project managers varied and in order to solve the logistics with travels, the managers in Stockholm were booked without any prior knowledge of their years within the company. Since there was more flexibility regarding time when interviews were performed with the project managers located in Gothenburg, the interviewees

were chosen by us. The questions were sent to the interviewees in advance, in order for the project managers to be able to prepare themselves before the interview. This was done in order to give the managers a chance to read through the questions beforehand, which intended to prepare them and result in better thought through answers. The interview study started with a pilot interview that was intended to provide an opportunity to observe how the interviewee interpreted the questions as well as providing us with more confidence prior to the actual interviews. After the pilot interview, the interview guide was evaluated and revised in order to make it better and more suitable for the remaining interviews.

The interviews varied between 45-70 minutes in length, and during the interviews one of us took notes while the other acted as the interview leader. Furthermore, all interviews were recorded after permission from the interviewees, and notes was taken both during and after the interviews, as recommended by Bryman (2012). The interviews were carried out in Swedish due to the nature that all participants had Swedish as their mother tongue, which leads to richer responses and a more limited risk for misinterpretations. In this study, all interviews were held during a short time period. Kvale (2014) argues that this have both benefits and consequences where the interviewers develop their knowledge throughout the process. If the interviews are done over a long period, the latter interviews often tend to be performed with a higher knowledge base and therefore not correlate well with earlier performed interviews. It also complicates the process of comparing the interviews in the academic process (Kvale, 2014). However, Kvale (2014) also brought up the benefits of gathering more qualitative data when the interviewer have time to analyse each interview before proceeding to the next. One other important aspects regarding the performance of the interviews is that the interviewers avoided using the words standardization and freedom in order to avoid biased answers from the project managers, which was recommended by Polesie et al. (2009). Instead questions concerning the interviewer's perceived need to do things their own way and how much company involvement they wanted were in focus. Furthermore, the answers are presented anonymously in this thesis, which intended to increase the chance of receiving more open answers from the interviewees. Although, this decision also has negative aspects since the respondents do not receive the same appreciation for their time and effort (Kvale, 2014).

The semi-structured interviews performed in this study are based upon questions similar to those that Kvale formulated, where he divides interview questions up in to nine types (Kvale, 2014). The nine question types are shortly described below:

1. Introducing questions - Show an interest in the interviewee
2. Follow-up questions - Getting the interviewee to elaborate his or her answers
3. Probing questions - Follow up questions to confirm statements
4. Specifying questions - What reaction did the interviewee have in a given situation
5. Direct questions - Short questions with yes or no answer, used in the end of the interview
6. Indirect questions - Ask about what people in general think about a situation
7. Structuring questions - Changing of subject
8. Silence - Give the interviewee time to reflect and think for a moment
9. Interpreting questions - Make a statement that the interviewee have to take a stand point on

Furthermore, the following guide that is presented in Figure 4 developed by Bryman (2012), have been used in this thesis regarding how to formulate interview questions.

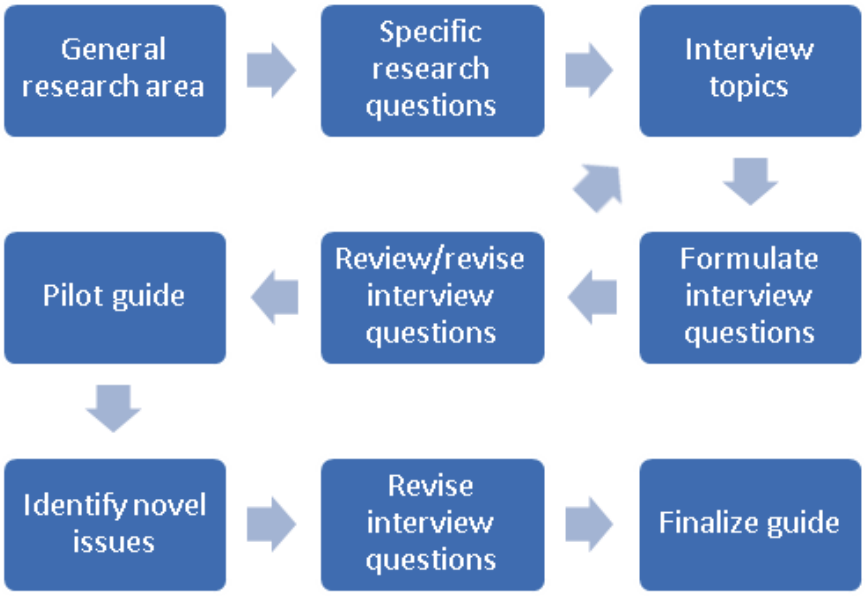


*Figure 4 Guide of how to formulate interview questions (after Bryman, 2012).*

Moreover, during the interviews, the project managers were asked to perform a shorter quantitative assignment where the managers were asked to rank 15 different responsibility areas. These fifteen responsibility areas have been established for the role of a project manager according to PMI and CMAA, which has previously been presented in the literature review, see figure 2. First the managers were asked to rank from one to five how they perceive the support they get from the existing operation system regarding each of the different responsibility areas, where one was considered low support and five was considered to be good support. Secondly, the managers were asked to rank from one to five how important they perceive a further development of a support function regarding each of the different responsibility areas, where one was considered to be not of importance and five was considered to be of great importance.

## 3.3 Data analysis

As mentioned earlier, all of the preformed interviews were recorded. During the data analysis, the interviewers listen through all of the recorded material and wrote down the context from the answers provided during the interviews. The texts were later translated from Swedish into English. The interviews were then comprised into one document where each question had their own title and the context of each interview was compared to the others. The text was analysed where the project manager's answers were compared to each other in order to find similarities and differences. Moreover, the result from the quantitative assignment was analysed. When the result from the interviews as well as the quantitative assignment was done, the discussion/reflection began, were the result was analysed together with the previous preformed literature review. Last but not least, a conclusion was made regarding the research questions that were stated in the beginning of the report, which further resulted in recommendations to the studied company.

# 4 Results/Findings

This chapter contains of a presentation of the studied company, which includes background information about the company, their work with structured project development, and also how the companies project manager's work. Furthermore the chapter presents the results from the preformed interviews regarding the aspects of the role of the project manager, the companies operational system, the different knowledge areas within project management and which of these that needs more support, as well as the aspect of innovation and freedom when it comes to structure the process of project management. These results are complemented with an assignment performed during the interviews.

## 4.1 The case of JM

JM AB is one of the Nordic region's leading developers of housing, who focus on development and production of new residential building and residential areas in attractive locations (JM 2013). JM was founded in 1945 and is one of the five largest construction companies in Sweden, and operates mostly in Scandinavia with a main focus on expanding metropolitan areas in Sweden, Norway, Finland and one small office in Belgium. In 2013, JM's total annual sale was approximately SEK 13 billion and the company had 2,200 employees (JM, 2013). JM Sweden consists of six regions that have been divided based on geographical location, and these regions are: East, West, South, Stockholm North, Stockholm South and Stockholm City.

### 4.1.1 Structured project development

What separate JM from their competitors is that the company owns their projects and the entire process, from acquisition of land through the development and construction process, until the building is finished, sold and throughout the guarantee time (Dahl & Nordgren, 2014). This is an important aspect for JM, which have created an opportunity for the company to take strategic decisions with a holistic view of the whole organizational processes (Dahl & Nordgren, 2014). In the beginning of 2000, JM took a strategic decision to start focusing on structuration of their organizational processes with an overall strategy that was named Structured Project Development, hereafter called SPD (JM, 2013). SPD has been an important focus area within JM ever since, and the development of SPD is part of a broader strategic process in which JM aim to standardize the overall production process in order to deliver more value to their customers. The main focus of SPD is to reduce the production cost while making the process more time efficient (JM, 2013). SPD consist of several operational strategies that cover several departments of the organization, and different strategic initiatives have been implemented over the years (Dahl & Nordgren, 2014).

*"JM 's project development is to be performed profitably and help create value for the owners. Effective and uniform process and components form the basis for JM 's ability to offer attractive housing at a low total cost".* (JM, 2013)

In 2003 the first step of SPD was realized and was presented under the name Structured Pre-Construction. This resulted in the adoption of uniform construction procedures at JM, which in detail controls the design of a line of components in JM's homes. The guidelines was developed with the requirement that the technical solutions should be tested within JM, contribute to a good working environment, to be problem free for both JM and their customers as well as to be overall cost effective

(JM, 2013). After Structured Pre-Construction, the work with Strategic Purchasing began in 2004. The goal was to create clearly defined components and sign long-term framework agreements that will be used by the entire organization in order to ensure quality and price among other things (JM, 2013). In 2008 Structured Sales was implemented and four years later, in 2012, Structured Project Design started in order to make the pre-construction more efficient (Grimberg and Hellström, 2014). In 2010 Structured Production was launched which was the most comprehensive project and consisted of three parts; a process orientation of the operational system, procedure descriptions supplemented with installation instructions, and a system for uniform scheduling (JM, 2013). Structured Production creates a unified way of working that ensures that the product is built in a certain way, which is well documented, and that the materials build in are the same every time. (Grimberg and Hellström, 2014).

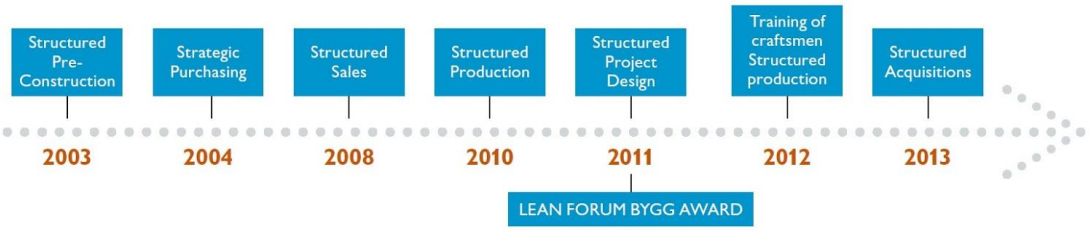


*Figure 5* *The development of JMs concept Structured Project Development (JM, 2013).*

JM is one of the first construction companies in Sweden that have attempted a large-scale implementation of standardized work procedures and is nowadays well known in Sweden for their way of work with development of their site production. In 2011, JM received the award of "Lean builder of the year" and is now a leading firm within standardization in Sweden (JM AB, 2011). Nevertheless, the work with SPD is an ongoing process, and not all departments have yet been involved in SPD (Grimberg and Hellström, 2014). JM is currently not using any structured process model for their project managers. However, this study is intended to provide JM with recommendations and suggestions, which will assist the development team in their work.

### 4.1.2 Project development phases at JM

JM's projects usually start with an acquisition of land. Usually the sellers are a municipality and the land development rights belong to real estate development (JM, 2014). In the beginning of the project a project manager at JM is appointed, who begins the dialogue and collaboration with the involved municipality to determine how the land can be used, as well as dialogues with other authorities. This leads to a new plan is created, this process can take anywhere from one to five years (JM, 2014). The second step in the process is aimed to develop an attractive design of the house. Where the first step is acquiring multiple design concepts from architects. When JM has approved the proposal from one of the architects, a pre-construction phase follows and other consultants gets involved, e.g. construction, foundation, electricity, ventilation, heating and sanitation, as well as fire and sound. It is the project manager together with the project design manager who holds the work together and reviews all documents provided by the consultants (JM, 2014). Moreover, a person in the purchasing department writes contracts for material and labor. A manager is

appointed who then carefully begin to schedule the entire construction. Next step is the sales start. Today, many people are buying their home in the planning stage. Drawings and sketches from the architect, together with material samples, house models and visits to the building site create a good image of the future dwelling for the costumer. JM only begin production when a certain proportion of the planned residential units are booked, this is a securement for JM in order to not end up with unsold apartments after completion of the project. Many of JM's teams has been working together for a long time, and the teams is often a well-knit groups that ensure that work on the site is safe and effective (JM, 2014)

### 4.1.3 The role of the Project manager at JM

According to JM (2014), the overall goal for the project managers is to deliver profitability to the company by running projects. Furthermore, according to Grimberg and Hellström (2014), the role of the project manager within JM is to have financial responsibility for the project and to lead a team of experts with various responsibilities towards a common goal. The project manager have to delegate the work among the project team consisting of a team of experts, and anything that is not delegated throughout the process, the project manager have to do himself/herself. Furthermore, the constellation of the project team varies throughout the project development process, since it depends on whose expertise is required at that specific moment in the project. Moreover, in the project development process, it is the project manager who has the last word on all decisions. It is he or she who decides over the project and they also make their own time plan for all processes and activities. However, there is no generic model on how the project manager at JM should work. As it looks like today, each of the project managers can perform their work in their own manner. Nevertheless, there are though some expectations on what they are supposed to deliver throughout the process (Grimberg and Hellström, 2014). To their help, they have human resources and the company's operational system on their intranet, which is a visualization of well thought through project development processes (JM, 2014). At different phases of the project development process, there are stage-gates where certain activities have to be finished before the next process can continue. The operational system contains of supporting and governing documents. A governing document has to be approved and signed in order for the process to continue i.e. a stage-gate document that contains criteria for approval. Whilst a supporting document can be an example of how a project schedule can look like (Grimberg and Hellström, 2014).

## 4.2 Results from the interviews

In order to answer the research questions that was stated in the beginning of this thesis, a case study has been performed at JM, were seven project managers within different regions of the organization have been interviewed. The interviews has been carried out in order to find out what the project managers opinion is regarding a structuration of their operation system, as well as their need for a better support function/tool in relation to the project managers process at JM. The results from the interviews are presented in the following section.

### 4.2.1 The project management role at JM

All of the interviewed project managers perceive that they have a relatively free role at JM, and that the role might be very broad in comparison with project managers at

other companies. Moreover, all managers' state that it is commonly known within the organization that the project managers have the overall responsibility in the projects from start until finish. Further it is described that the project managers at JM runs their projects as if they were CEO. Although, the project managers are responsible for the project outcome, they need the project team as well as the operation system to support them through the project. It is claimed that the project manager's bears this in mind and it influences the direction of their projects and the way in which the managers works.

Regarding the general picture of what a project manager at JM should accomplish with his or her work, the managers' perception differs to some extent, but in general they have the same goals. According to all of the managers, the main and most important goal is the financial accounting, where there are clear goals of what the project managers have to live up too. The project manager shall estimate and develop projections and calculations at a fairly early stage in the project. These will accompany the project managers throughout the project, and it is important that he or she follow these financial objectives that have been set up. The second most important responsibility, is managing the end-customers properly. One manager summarized it as follows:

*"To have the overall financial responsibility and furthermore being accountable to the end-customer is two most clearly stated goal by JM. It is about delivering successful projects."*

Furthermore, the project manager claims that the role may differ slightly from other companies, where a project manager at JM is responsible for the project for a very long time after the project is finished. They are financially responsible for all warranty issues during a ten-year period. This is a long period of liability where the project managers' in addition to this enters their projects early, where they are part of initiating projects. According to the manager it is an elongated but clear responsibility. Moreover, another project manager answered the same question:

*"The main objectives for project managers at JM is to create a successful project, which will be positive for JM as well as for the community for a long time. If the managers manage to create a project with good customer satisfaction index (CSI) as well as with good economy, then they will have a successful project."*

Further the manager claimed that:

*"If good CSI is achieved, it usually indicates a successful production phase, and if the production is successful, then the employees often have had a pleasant journey and steered the production in a good way".*

The manager also claims that if the production went smooth, the financial results are usually satisfying since the majority of the expenditures correspond to production cost. Last but not least, the project managers mentioned some other main goals that included handling the project team as well as follow and ensuring that they are working according to JM's operational system.

Regarding the questions if the managers perceive that their role as a project manager differs from the general picture, and if they have different focus areas, one project manager believes that his role looks the same as the role of the other project managers within JM. They are all assigned with projects and their task is to operate projects and make sure to run them through. In that sense there is not that much of a difference according to the managers. However, most of the managers are of the perception that

they are working in different ways within the organization, partly because they are different as people and partly because each project differs and the managers handle the issues differently, this because they all have diverse interests, priorities as well as strengths / weaknesses. The personal features are often related to where they put their focus in the project. One of the interviewed managers prefers to be involved in every part of the project and gladly digs into technical issues if there is time for it. In contrast, there are managers who do not want to get involved in issues unless there is a need, where one manager state *"the project team will solve the issues themselves"*, this solution works in most cases according to the manager. The manager who gladly digs into details motivate this by being part of smaller issues can influence the project outcome. Moreover, another manager further claims to see himself to be somewhere in between. He has the interest to dive into small details when needed, but he also wants to discuss and come up with solutions together with the project team. In other words, he sees himself as a team player that wants to involve the entire group. Moreover, he claims that it is harder to work in a similar manner as project managers compared to other roles within the company where the processes are shorter and more continuous from one project to another. Moreover, another managers claim that he tries to work as close as possible to JMs directions that are governed in the operation system, but he also tries work a lot with the group comfort in the project team. As a project manager he believe that he has the responsibility to be a good role model and lead by example, he therefore works a lot with soft parameters in order for people to thrive in the project. It is important for him that everyone should feel involved in the project, have fun together and talk to each other, and that everyone in the project team should feel comfortable expressing their thoughts. Furthermore, one project manager stated that there are different focuses in various projects. It may even vary throughout a project, what issues the manager has to dive into, where it depends on the various problems occurring. Each project has their specific problem area.

Last but not least, most of the managers claim that they think that the most fun part is to develop a project, in other words they enjoy the creative part of the role the most. Furthermore, they enjoy the process of ensuring that the project will be built and later on to see that the project take form and gets erected. According to one of the managers, there are many projects and ideas that do not materialize, this might be due to bad ground conditions, the municipality puts a stop to the plan or due to the financial problems etc. Although the project manager state *"it is to navigate in this landscape and to develop projects with all those difficulties that is very challenging but also very stimulating".*

- The project manager role at JM are perceived to be relatively free
- The project manager's main responsibility is to ensure a good economy as well as a good CSI in all their projects
- The creativity in the development phase is according to the managers the most inspiring part of their job

### 4.2.2 The project managers' responsibilities at JM

When the managers were asked if they could describe their areas of responsibility and what tasks they think are the most important as a project manager. One manager claims that the main focus in the project manager role is to keep a bird's eye view over the project process. This implies that the manager should not dig too deep in to issues on his or her own if there is someone else who can solve the problem. Apart from the bird's eye view, the project manager have two main tasks that he or she, by

themselves, performs in every project and these tasks are the project program and the financial plan for the project. The financial management include controlling different parameters and forecasts that the manager is in charge of, where the project manager have the total financial responsibility. These tasks are the manager solely responsible for, however there is support to find from both the project team as well as the financial division at the headquarters. Furthermore, another main task within the role is according to one of the interviewees to be a team player and try to get the whole team committed to the project. Another interviewee, consider the project manager role to be about leading the project team and make them work in the correct direction, this view further strengthens the argument of being a team player. Moreover, it is important for the project manager to ensure that all the important tasks are completed on time, and often these tasks are of the nature that they are not noticed until there is a situation when they have not been performed. The art of being a project manager is to be able to handle those situations and it is a project manager's job to keep track of all tasks that have to be completed. In other words, a project manager have a wide variety of tasks that has to be completed by himself/herself solely, and there is often a lot of work "behind the scenes" as a project manager. The project manager should in other words be able to intercept the tasks that have fallen between the chairs, while simultaneously try to get as little as possible to fall between the chairs.

Moreover, it was stated by one of the project managers that it is in the early stages of a project that the project manager has the greatest opportunity to influence the outcome of the project. The more experience the project manager has, the more knowledge the manager have regarding where in the project it is important to put the focus in order to positively influence the outcome. Furthermore, the project managers must always act as the link between the different members of the project team while at the same time being on the same level and talk with the team in order to solve issues. The project manager is, in other words, responsible for that the different activities/tasks will come together in time. One of the manager claims that the main tool, which guides the project manager through their projects are the stage-gates. The manager's job is to successfully reach each gate, and one manager describes them as small tests, with a reference to school where you pass examinations if the answers/conditions are right, e.g. financial goals, progress etc. According to another manager, the stage-gates are viewed as JM's spine and it is his/her main task as a manager to guide the project team through the processes, and further being responsible to reach pass the gates. The manager also state that project managers are responsible for the project throughout the whole journey, where the goal is to deliver a successful project both financially and with satisfied customers.

There are no unnecessary tasks that the project manager must perform according to one of the project managers. Since the project manager has the possibility to delegate most of the tasks to the project team, the manager by himself/herself choose what tasks he/she wants to perform or not, besides those mandatory, i.e. financial plan and project coordination. However, another project manager express that the project management role often consists of responsibilities that are less defined. This is mostly due to poor responsibility management where all unassigned tasks fall back on the project manager. These tasks are often small tasks that in many cases could be performed by someone in a secretary position. Such tasks often receive lower priority and are therefore stressed over on short time. As mentioned by one project manager, *"I feel that I become irrational in those decisions where I procure something for 20 million SEK in the morning and ordering coffee for a meeting in the evening, and this*

*result in less attention paid to the cost of these orders"*. The price of these items are usually not the main issue, rather the risk that those tasks fall between the chairs is an expressed concern. Furthermore, according to one project manager, the operational system in JMs organization is fairly large and consists of a large amount of information. Sometimes managers feel that there is an information overflow and there are some tasks that are assigned to the managers where the interviewed manager perceives it as, *"why should I do this*". However, in most cases the project manager decides for himself/herself what should be included in each project. Further, one of the other project managers expressed that there are some unnecessary documentation, e.g. documenting their completed meetings, not referring to minutes but that they have performed the meeting. Moreover, there is also a recurring problem with JM's financial forecast management, where some of the managers described an old fashioned system with a lot of unnecessary paperwork. The most critical manager described JMs financial system as an antique system where one has to sit and transfer information from paper to paper.

According to most of the interviewed managers, the administrative burden has grown over time, *"there is no secret that the administrative burden is growing and has grown a bit too big over the years".* The project managers perform a large amount of administrational work e.g. protocols, meeting minutes etc. These documents are considered to be important and part of their effort to lead and direct their project team. Although, according to some of the more experienced managers, this has grown during the last ten years, partly due to the operational system and also due to the process documentation requirement. One of the managers believes that there is too much documentation, which do not bring much value or can be viewed as business critical to motivate the amount of time it consumes. Moreover, many of the interviewees believe that there are other employees who could perform some of the work, such as an assistant project manager. However, it is stated that this role has disappeared in recent years since many got stuck in the role without getting a promotion. Nevertheless, some of the manager believes that the assistant project managers should be reintroduced. Where they believe this role would be a good educational start where an assistant project manager has some responsibilities and can perform administrative tasks and latter take on more responsibility. This would make the step into the position as project manager smaller and more manageable. According to one of the manager, an assistant project manager can also contribute with unburdening the project manager. Hence the project manager can focus their time on more important tasks. This is further supported by several of the interviewed managers. One manager argues that it is important for new project managers to perform everything by themselves in the beginning, in order for the managers to work through a project and test everything by themselves. Although, he further believes that for those who are slightly more experienced do not benefit as much from performing the administrational work. The manager further believes that that a young talented assistant manager could perform the administrational work at least as well, or even more efficient. Furthermore, the manager perceives JM's organization to be too flat and they should reintroduce an assistant project manager role. The manager has supervised assistant project managers earlier and it has only been positive experiences from these employments. The project manager can then instead, with his or her experience, pursue more projects, while at the same time offer the assistant project manager training and decrease the step into the role, which the manager considered a very good exchange.

According to all interviewed managers, it is the superior managers in the different departments who puts together the project team and appoint the best fit for each of the roles. However, the project managers often have a say regarding the team constellation, especially in Region West where the region offices is quite small and they know who they are working better or worse with. All of the interviewed project managers in the region claim that they usually end up with the same constellation. According to the interviewees, there are both pros and cons of such structure, most of them see it as an advantage since it simplifies the process and ensures that everyone know what responsibilities each team member usually has. A consequence of such structure is the lack of individual development that could be thrived in changing teams regularly.

In contrast, according to the interviewed managers from the two regions in Stockholm, Stockholm North and Stockholm City, they claim that when a project turns up, a construction manager is assigned and then the rest of the project team takes form over time. One of the manager perceive this processes as frustrating to some extent where he is not able to influence the constellation of the project team, but he also understands that it is not possible to work "Lean" if everyone should be involved in choosing the allocation of resources. Moreover, another manager claims that the project team varies and that he is constantly working in different setups. Each project is a temporary constellation with the focus to erect a building and the manager claims that project teams are supposed to work accordingly. The manager argues that it have to be the project that is in focus and not the project team, everyone should be replaceable. However, the manager believes that there is a point in continuity since the project team lose a lot of experience when people are replaced, but they should always be prepared for changes.

In the two studied regions in Stockholm, they try to stay together with the same project teams as much as possible, but according to one interviewee, this is something that cannot be taken for granted. Furthermore, the manager believes that it is good to have teams that are stuck together but it is equally important to bring in new blood as it can become stagnant if the team work together for a long time. The manager prefers if the team change slowly and not all at once. Changing the team members can bring in new fresh views and opinions that can result in more efficient ways of performing the work. However, one of the managers thinks it is a bit exaggerated that everyone should be able to work with everyone. Although the organization should be able to replace some people in the teams, nevertheless it can also deteriorate the project team where experience of working together is lost. One manager states *"in a new team, it is difficult to ensure that everyone is doing the tasks that I think that they're going to do"*. Moreover it is seen as time consuming for everyone to find his or her role, and reconcile that everyone is on the same path.

Last but not least, according to one of the project managers, the distribution of tasks among the members in the project group depends on the degree of control the project manager requires. The manager states that it depends on how much the manager feel comfortable of controlling other people's work. The project manager simply has to adapt to how his or her members in the project team work. Some group members do not want the project manager to interfere in their work if they feel that they have control and deliver on time, while some others want the project managers help and jointly discuss their way to a decision. Furthermore, the manager claims that sometimes he/she may step in and do things that must be done when other members in

the project team do not have time, or vice versa, team member's supports the manager in his/her tasks.

- Project managers in the case company are required to have a bird's eye view over their projects as well as to be the spider in the net
- The administrative burden has grown over the years and have become an issue for the project managers
- The project team constellation is formed differently within each region, project teams are reoccurring in the same shape in smaller regions and people change more often in larger regions

### 4.2.3 Perception of operational systems by the project managers

All interviewed manager's claims that the operation system is a valuable tool for the organization, they do however mention that it need some work before it can work sufficiently. Only one manager claims that he is totally satisfied with today's project manager chapter. Although, the managers all agree that the system is supporting their work by providing them with standard templates and documents for their manager role. As one managers stated *"we do not have to reinvent the wheel in every project".* Further it eases the work for the managers by providing them with a list of the project requirements throughout the project.

One of the project managers emphasized that the operation system should align the project team in order for all members to work in a uniform way. This is also current between projects when the team members should expect the project process to be similar in all projects. However, most of the senior managers interviewed claims that they barely use the system, which complicates this uniformity. Even though not all the managers are using the operation system, all of the interviewed managers use the stage-gates. These stage-gates are the tool for creating uniformity between the projects at JM. All managers claim that they fulfil an important function of providing checklists of what needs to be done for each stage-gate in the project. One manager stated, *"The stage-gates is the spine of JM".* Although, this is just one element of the operation system and a common reason for not using the rest of the operation system is the view that it has become too big and impermeable. It was stated during an interview that "*it is easy to add information but harder to erase*", which result in an ever growing system.

One of the project managers states, *"There are several things that we as project managers do that is not described in any operating system at all"*. However, this is considered as a good thing according to another manager who claims that only the business critical documentation should be shown in the system. The manager claims that cleaning out everything that is not business critical will provide the managers with a more manageable system and make it easier to find important documents and information. Some of the managers have acknowledged the tool where all employees have the opportunity to contribute in the development of the operation system by sending in suggestions for improvement to the central administration in Stockholm. One of the managers claims that it is crucial for the development that every manager takes its responsibility and share valuable information that can improve the system.

None of the project managers have showed any major constraints towards introducing a further developed operation system for their role. Some of the managers points out that it is important to not make the operation system governing in a way that can bring constraints to creativity and innovation in early phases of the project development.

Additionally one project manager acknowledged the difficulties that could occur if a manager neglects doing part of what is stated in a new system due to old habits and creating uncertainties for his or her co-workers. However, the most interesting constraint mentioned by a manager is that if the system describes the process too thorough there is a risk that it provides the managers with a false sense of security. Some managers might work strictly according to the scheduled process and not think their decisions through. Further, some of the managers mention a concern about losing the flexibility which according to one of the interviewed managers has significantly decreased over time at JM. There is a risk that the managers lose their motivation, which thrives upon being a leader, and not just following directions.

The operation system is used slightly different depending on how experienced the manager is. The senior managers mainly use the system to pull templates and documents needed in their projects where junior managers on the other hand, use the system more frequently in order to control the process of their projects. One junior manager states that he is using the system several times a week. The main reason why senior managers do not use the system regularly is their experience where they claim to have most of the information in their head. However as one of the senior manager's states, *"there is always a risk of forgetting things in the projects when you keep all the information and stages in your head".* The stage-gates within the already structured chapters of JM's system are therefore used by most of the senior managers even though not as frequently as the junior managers.

The gates provide the managers with checklists, which are used as a tool to make sure that no tasks are forgotten, and therefore prevent delays in their projects. One of the managers believes that he is using the operation system more than others because he is familiar with it from his experience as an accountant. This proves that it can benefit the project managers if they have thorough insight of where everything can be found and how the system can be used. Another manager point out that he is constantly communicating to his team members that they have to work according to the system. Where the manager believes that it is important to work in accordance to the company's will.

The most frequently used chapters by all project managers are the project manager chapter and the sales chapter but due to the overarching role of the project manager they also need to use other chapters such as production, management and support, and the project design chapter. The projects team members do usually control their own processes and the managers do not need to be managing their processes. However, the manager's role is to have control over all processes and therefore needs to have an insight in all chapters at some point.

All project managers regularly use the stage-gates and their main purpose is to use them as a tool to make sure that nothing falls between the chairs. They point out all the documentation that is needed in order to proceed into next phase of the project. One manager say that if you meet the requirements of the gates then you know that you at least have provided the minimal amount of information for proceeding into the next stage. The manager points out that this is a good tool for both new employees and more experienced managers. Further he describes that the gates can be used early on in the project, where they form an objective and plan for the work that needs to be completed. The manager is not using the gates strictly as a planning tool but they can assists in the scheduling work. Another project manager emphasize the importance of audits, they can be seen as a tool for the organization where they make sure that all project managers work in a uniform way.

Last but not least, the already process-oriented chapters of JM's operation system are considered clear from a few of the interviewed manager's perspective, where these managers were referring to the production chapter. However, many of the manager's state that the already process-oriented chapters are unstructured compared to what is believed to be the optimal way of structuring them. One manager describes the chapters as sluggish. The manager argues that there are too many steps to find the information desired. Therefore, a more visual system would be beneficial in the manager's opinion. A coherent view is that the distribution of responsibility is beneath contempt throughout the whole system. One of the managers points out that the distribution of responsibility should be clearly connected to the operation system in the future. Another problem with the existing system is that the project managers at JM generally do not consider themselves fully acquainted with any chapter of the operational system since they need to jump back and forth in the system at different stages in the project. This militates against spreading out chapter three on all the other chapters, which were mentioned to be proposed by some managers in the development group.

- The operation system is used unequally between the managers where some use it every day and others use it once in a while
- A future development should only contain the information that is business critical, and a better search function is necessary in order to make better use of the information in the system
- The project manager's at JM perceived the stage-gates as a great tool
- There is a risk of defining the process too through where it can decrease the creativity within the role
- There is in general a positive attitude towards developing the operation system

### 4.2.4 Possible development of JMs operational system

This chapter have been divided in sections that are handling the key topics that were discussed during the interviews. The topics that are discussed in each of these sections can be reflected back to the research questions that are stated in the beginning of this report.

#### 4.2.4.1 Freedom and innovation

The project manager role at JM is considered to be free to a large extent. This freedom is a necessity in order for the managers to be creative and innovative in the development process according to the interviewees. The managers emphasized this during the interviews as one of their core standpoint when discussing a future development of the project management chapter at JM. The coherent view is that a future operational system at JM should not limit their freedom, they are requesting a supportive tool in their daily work, which guides them through the process and not a governing operation system. One of the managers stated during the interview that *"the operational system has to be designed in that sense where the project managers are able to perform some of the work more freely, but still comply with the operational system",* which supports the common view of creating a supportive tool for the managers. Further, the project manager pointed out that there is some parts in the system that needs to be controlling, for example the stage-gates. This argument is strengthened by two other managers who claims that an operation system at JM need to be governing to some extent where they realize that larger organizations have to be more governed than small ones.

Nevertheless, creativity is encouraged at JM and the company have according to one of the interviewees already come a long way in the process of standardizing the work where decisions is not needed to be taken in every project e.g. design of the technical parts and assembly instructions. One manager brings up the example of the exterior wall components that are predefined for the whole organization. According to one of the project managers, this contributes to a more creative environment where time can be spent on increasing customer value. The time saved through standardizing certain things in the process can lead to better prepared construction plans, more thought through gardens and further functional features desired by the end user.

There are several ideas concerning what should be included in a new operation system at JM, where many of the managers have mentioned that they believe that the existing system is too comprehensive with too much information. However, one manager turns the question around and asks what should not be included in an operation system. The managers claim that there is some information that cannot be stored in an operation system *"there is no system that tells you how to solve a problem, the system can only provide guidelines for the managers"*. This differentiate the project manager role from the project designer according to the interviewee who claims that the designer have thorough instruction of how to handle the procurement of the contractors etc. A common view from the project managers are that the responsibility of solving the upcoming situations such as problems and uncertainties in their projects is the main source of perceived freedom. The act upon these problems and uncertainties are the main factor for pushing the project forward which is commonly known to be the project manager's main purpose in their projects. The managers therefore claim that the processes between the gates should not be controlled by any system.

Flexibility was a recurring subject throughout the interviews where all project managers request a flexible work environment where they can make use of their expertise to come up with creative solutions. Today, these exempts need to be motivated by the project manager and signed by a superior with higher up in the hierarchy. This have led to that many of the project managers find the deviation process to be too complicated and therefore avoid using some of their creative solutions. The effect of this is lowered creativity and less flexibility in the project manager role, which in the end can prevent the managers from introducing obvious improvements that could benefit the customer and the organization. On the other hand, it is good that it takes some effort in order to work outside of the standards, where one manager states *"the project manager has to rethink the solution once more".* However, the manager does claim that the decision paths could be shortened. There is also a risk that the project manager role at JM will become less attractive over time if they are too governed by an operation system.

- The managers request a supporting tool rather than a governing
- The operation system should not limit their freedom further
- There is a homogenous view among the managers that standardization benefits the organization – do not have to reinvent the wheel in every project
- Our findings is that there is a thin line between enough or too much

#### 4.2.4.2 A more manageable operation system

One of the managers provocatively claimed that 80% of the content in the existing operation system should be cleaned out in order for the last 20% to be manageable. Further he stated that this might be an overstatement but it is worth looking into what is needed and what can be left out. This view is strengthened by another senior

manager who argues that the system should only contain the most necessary information in order to make it manageable. The manager's view is that an operation system should only contain what is business critical, and the problem solving should be tackled as they occur in projects.

However, the operation system will most likely continue to grow or at least stay the same size, and some of the managers therefore requested a better search engine to make it more manageable. If the system had a well-functioning search engine where the managers easily can find what they are looking for, then the expressed concerns with an expanding system will most likely decrease. One of the senior managers believe that he would use an improved system more frequently in order to double-check activities which would assist controlling the project process.

- An extensive operation system requires a well-functioning search engine
- It is important that all information within the operation system is business critical

#### 4.2.4.3 A better supporting tool

Regarding the question of what kind of supporting tools the project managers wish to have in a developed operation system, many of the interviewed managers claimed that they want to see a future operation system where the project manager chapter can be viewed as a timeline. A timeline, that visualize the project manager's role, would be beneficial for everyone in the organization, where they can view the project activities and how they are connected to the big picture. But for most it will support the project managers in their daily work by providing them with a tool where all documents and stage-gates can be found easily. One of the managers mentions that a process map similar to the other chapters would be a good tool. However, the overlapping activities, which a project manager is facing, can complicate the structure of such map. This alternative has also been turned down by several other project managers who request a new visualization which gives a better overview than the process-oriented maps used in the other chapters.

In order to make the system easier to navigate through, one of interviewees requested that a new operation system should have different levels. A visual view where the managers easily can find the most commonly used documents and templates. This should according to the manager be complemented with more thorough information, which can be achieved by exploring the visualization further. This view is strengthened by several managers who state that a visualization of the operation system would be a valuable asset for the company and not just for the project managers. It would also benefit the organization if other functional groups could achieve a better understanding of the whole project process. Such system design would provide senior managers with a cleaner system where they can find their commonly used documents easier and provide the junior managers with explanations of the processes that can be achieved by exploring the system further. All project managers emphasize that a developed version of the operation system need to be designed for both experienced managers and new managers. However, as one project manager mentioned, there are some limitations to a system of this size, where the employees must be able to grasp all the information.

Furthermore, an interesting observation by an interviewee is to imitate the invoice system at JM where a "timeline" can be followed which is signed off on in order to proceed. This would, according to one manager, give a visual view of the process and also provides the team with a positive feeling every time they can check something

off. This would also provide JM with an overview over all their projects in a percentage of completion. The final product, when turned over to the housing association, would be shown as 100% and internally give a feeling of accomplishment to the team. These signatures could be connected to the stage-gates and signed off by the project manager or the district manager.

Last but not least, most of the interviewees mentioned an issue with the responsibility distribution in the operation system and at JM in whole. They all think that it is very important to make sure that this document becomes clear since it is stated to be one of JM´s most important documents.

- It is important to ensure a functioning responsibility distribution scheme within the organization
- The idea of introducing electronic signatures in the operation system was presented by one project manager as a good way to overview the project process
- The operation system should be designed to provide the project managers with a big picture/bird's eye view over the project process – a timeline/visualization over the project would be beneficial
- It is important that the operation system is designed for both new and experienced managers

#### 4.2.4.4 Assistant project managers at JM

Moreover, one of the interviewed managers argues that the people who are developing the operating system should bear in mind how a new employee at JM would like to be introduced, for example what tools are necessary for him or her. This is further supported by most of the managers, where they emphasize the importance of a system developed in order to provide guidance for the new managers. However, two managers state that it is important to only employ experienced people with many years of experience for the project manager role. They argue that the role is complex and experience from the industry is crucial in order to manage to control a project and bring it forward, they therefore claim that an operation system should only contain documents and templates. They underpin this argument by requesting assistant project managers who can develop their skills in order to become project managers. However, assistant project manager is something that has been requested by most of the interviewees. The manager's claim that an assistant project manager role would be an asset for the organization, they can grow into the role of being a project manager by supporting the project manager. They can besides learning from the senior manager also perform administrative work in order for the project manager to concentrate on extended value adding tasks.

### 4.2.5 Knowledge transfer between project managers at JM

One of the interviewed senior project managers were strongly critical to the phrase knowledge transfer, where the manager argues that there are plenty of talk but no action. Further, the manager argues that many attempts of introducing knowledge transfer failed due to lack of interest from the staff. The common view among the managers is clear, where one interviewee claimed, *"They only produce documents that are stored in some archive"*. It complicates further attempts of introducing a system when the attitude is clearly negative. The manager believe that the main reason for the low interest is the fact that project managers never work together on a project, and therefore only share their knowledge through corridor chats with their co-

workers. According to the interviewed project managers, the same error can be committed in many projects and much knowledge and experience is lost along the way. All interviewed managers claim that knowledge transfer do not exist in a structural way, instead it takes place from face to face, where the managers ask for advice of those who have been through the same situation before. All of the interviewed project managers agree on that the supporting company culture benefit their internal knowledge transfer and they agree on that the culture promotes openness, where they never hesitate to ask their co-workers for guidance or suggestions. One manager argues that the culture has significantly changed over the years, and only because of the improved sharing culture, the manager believes that they come a long way. The manager does however criticize the organization for not using any knowledge transfer system on a regional level. Another important issue is the lack of overlapping employee time when managers retire or leaving the company where a lot of knowledge is lost. The manager believes that organizations in general are afraid of bringing on costs of employing new co-workers early on and therefore a huge amount of valuable knowledge are unnecessary lost.

JM institutionalized feedback meetings in the end of each project in order to share experience, where employees have the possibility to share their thoughts. They are supposed to work as a discussion forum for sharing thoughts and insights from the project with the project team. However, the manager claim that this process only produces documents that are seldom used in future projects. Another manager although believes that it is important to perform these meetings very carefully and that all members should be involved. It is stated that some project managers just gathers the papers where everyone from the project team have written down their opinion about the project, but the manager believes that it is important that everyone in the project team are part of the discussion where opinions are shared. The project managers have started with project management days where all the project managers at JM meet during a couple of days to discuss general issues. This is perceived to be a good start, although it is in the start-up phase. Nevertheless, according to one of the managers, it is not easy to transfer experience. It is difficult to teach someone else without them having to live through it and make the mistakes themselves. This view is strengthen by a fairly new manager who argued that walking besides a senior project manager is the best way to learn how to work, and he further argues that *"Doing it by yourself is the best way to learn"*. Furthermore, the project managers are working very individually, and the manager further claims that there do exist a certain amount of prestige. The managers want to go their own way, which is linked to their ambitions and ideas. According to the manager, this is the joy of the job that must be retained, however, it is also stated that it is nice that there is a structure to work from. Last but not least, it is desirable among the managers to start working with an assistant project manager. One of the main arguments for this is that when an experienced project manager leaves the company, his or her knowledge is not transferred to a new talent, which leads to non-existing knowledge transfer within the company. This becomes a big problem when many project manager's leave at the same time and the company loose extensive amount of information and knowledge rapidly.

- The project managers claim that today's knowledge transfer within the organization is beneath contempt
- The managers expressed that the company constitute an open culture, which according literature is a beneficial environment for knowledge transfer

- The project managers in the case company do never work together on their projects and they do therefore not share their knowledge in everyday work
- Most of the interviewed project managers asked for an assistant project manager role to support their work as well as providing a better knowledge transfer between new and more experienced managers

### 4.2.6 Interview assignment

During the interviews, the project managers were asked to perform an assignment. They were asked to rank the 15 different responsibility areas for project managers according to PMI and CMAA, see figure 2 on page 9, on a scale from one to five. First they were asked to rank from one to five how they perceive the support they get from the existing operation system regarding each of the different responsibility areas, where one was considered low support and five was considered to be good support. Secondly, they were asked to rank from one to five how important they perceive a further development of a support function regarding each of the different responsibility areas, where one was considered to be not of importance and five was considered to be of great importance.

One of the conclusions that was made regarding this assignment was that many of the project managers was very carefully when grading each of the different responsibility areas, this since some of them was afraid of using high numbers as five or low numbers as one. For example, when one of the project managers stated that it was important to develop more support in a future operation system regarding one of the responsibility areas, the manager still only graded it with number three on a scale of one to five. Therefore, the results from the assignment can to some extent be misleading. We have therefor chosen to present the different responsibility areas below, divided after the interviewed project manager's perceived need of a further development of these responsibility areas. Thereafter, the responsibility areas that do not seem to need a further development according to the interviewed managers are presented.

In today's operation system, many of the project managers consider that the support they receive regarding the project management planning is not sufficient, and about half of the project managers perceive that in a future operation system, the support for the project management planning should be further developed. Furthermore, the support regarding the project scope management is also seen as mediocre according to many of the project managers, and the development of a further support regarding this was considered as necessary by the majority of the managers. Moreover, the existing project risk management is considered by several of the managers to be sufficient; however, there were some of the project managers who expressed special requests on a further development regarding risk management in order to get JM to work even more with this. Regarding sustainability, the majority of the managers consider this to be something that JM works a lot with, and that there is enough support in the operation system regarding this. However, some of the managers expressed that they would like JM to try to work even more with this, for example working towards certifications etc. Nevertheless, of all the different project management responsibilities, project communication management is seen to be missing the most support in the operating system, and the project managers wish to get more support from the system regarding this in the future.

Regarding the support from the current operation system that the project managers perceive as enough and that is not considered to need any more support was among others project time management, project cost management and quality management. However, there were mixed views on a further development of more support regarding quality management. Regarding safety management, the support from the operational system is considered adequate by the project managers, and the same applies for project resource management. The existing project procurement management as well as contract management was also considered to have god support from the operation system, and additional support regarding these two was considered not to be of importance in the current situation. Regarding support for managing the customers, the project manager believed that there is enough support for this in today's operation system, and that it is not so important with increased support regarding this. Last but not least, support regarding BIM is not relevant to JM according to the managers, and program management was furthermore considered to be difficult to define according to the managers, which made many of the managers to skip this area.

- The interview assignment highlighted four areas within today's operation system where the project managers require more tools and support
    - Risk management
    - Communication management
    - Project management planning
    - Project scope management
- The project managers further emphasized that the case company should work further with sustainability in their projects

# 5 Discussion

In this chapter, we will discuss the results from the interviews together with the preformed literature review in order to draw conclusions as well as to present recommendations for the studied company in the end of the report. The discussion has been divided into three sections structured according to the research questions that were stated in the beginning of this report. Finally, the last section reflects over the circumstances of the chosen method, where it presents strength and weakness in our study.

## 5.1 Research question 1

***How do project managers perceive process oriented activities or other structured working methods considering their need for freedom/individuality and creativity?***

All of the interviewed project managers perceived that they have a relatively free role at the company, and most of them were positive to a development of the project management chapter in JM's operation system. However, the manager's view upon what changes and what information the new chapter should include differed. Although, a coherent view among the managers is that a new chapter for the project manager role should be designed to be an aiding tool for the manager's, where they all fear a change into a governing operation system, which will limit their flexibility. The managers claimed that they should have the flexibility to work in their own preferred way as long as they delivered their projects successfully. This standpoint contradicts JMs idea of a process-orientation, where a majority of the employees are following a more or less strict governing model. JM implemented a process-orientation of the organization in order to predict, control, and achieve the organizational goals with an aim to decrease waste. This raises the question of why the project manager role should not align with JMs overarching goal of working in a unitary way. Is the role unique in that manner that it cannot be structured?

In the work by Grimberg and Hellström (2014), several project managers at JM argued that their own process should be a creative process and therefore individually designed. The manager's further stated that all problem solving require some degree of freedom, and that an operation system rarely is useful in this process. The managers also mentioned that an operation system could limit the manager's freedom of taking action in certain situations, where the manager's often referred to situations occurring within the early phases, where creativity is described to be most valuable among the managers. The interviewees argued that project managers should have the possibility to modify the design beyond JMs standard in some cases in order to build more suitable houses. An example is where one manager proposed a cheaper house on a lot where JM spent too much money on purchasing the land. The project manager was denied when he proposed the plan. JM as an organization did not allow him to do such changes to the JM-concept, which in this case could have saved the organization money according to the manager. The manager perceived this as a limitation and believes that creativity and freedom is important where all projects are unique to some extent. Design limitations similar to this one are the project managers biggest concern, where many managers perceive that the flexibility have decreased over time. Therefore a critical voice is raised among the project managers where there is a fear that a development of the project manager chapter may restrict them further in their job. On the other hand, the literature describes standardization in another way where it rather provides the managers with a reference for evaluation, which can further be

lead to a standard for training, auditing and diagnosis. The literature further emphasizes the improvement process, where the standards are supposed to encourage or assist the improvement processes at the company. Santos (2002) describes standardization as the process of identifying problems occurring throughout the project and finds the best solution and shares it with the organization. However, the project managers at JM are limited in their perspective and views standardization as means for the company to control their work. Therefore, many of the managers stand critical to an increased standardization within the company. The managers claimed that their creativity and expertise is important in order to co-create attractive projects for the end user in collaboration with the architect who shares this responsibility. This view does not contradict an increased standardization where in JMs case, standardization with focus on administrational work should be in focus rather than controlling their work procedures.

However, if JM intends to take the standardization one step further, it becomes relevant to ask the question of how much creativity and freedom does the project managers need at JM? Is creativity and freedom not needed in JM's business concept of structuring the project development process, or is it crucial to deliver a product in line with the customers' expectations?

In relation to this, the literature stated that a standardization of an activity should represent the best, easiest and safest way to perform the activity. This is already under development at JM where the stage-gates have been introduced and is used on a regular basis. The stage-gates which is a governing tool enforced by JM is not perceived as an obstacle, rather it is promoted as one of JMs best tools. This strengthens the findings from Polesie (2013), where interviews performed with construction contractor project managers foretold that some governing rules actually were perceived as beneficial for the managers. The managers understood that these standards were means for encouraging them to work in a similar way. However, they did not perceive these standards to limit their freedom, rather it provided them with a framework to work within (Polesie, 2013). This view is also apparent at JM where the stage-gates can be viewed as a framework in which all employees have to work in accordance with. The project managers at JM had a coherent view where they appreciate that they can find valuable information within the gate-documents. These documents in combination with several standard templates save the managers time and effort of writing up new documents or rewrite old ones for each project. It also eases the work when all managers work with the same generic approved documents. The time saved throughout the projects can be spent on more thorough investigations and design work within the project development phase. Polesie (2013) further highlights that it is important to balance the amount of freedom, where too much freedom in combination with low support from superiors can be stressful and transform the freedom into a burden. Therefore, we believe that an increased standardization through providing the project managers with supporting tools will benefit the organization. The focus should be on administrational work rather than regulated processes in the project development phase where the perceived freedom is most essential according to the managers. With above mentioned background, there are indications that the manager's would not mind losing some of their flexibility as long as they can be flexible and creative in their focus areas.

Further, there was an interesting view presented during one of the interviews where the manager perceives a risk of creating a thorough process-orientation of the project manager's chapter. The manager acknowledged the risk of new managers acting

according to a system instead of weighing solutions against each other in order to find an optimal solution in the situation. This argument is strengthened by the literature where Krause (2004) and Polesie (2013) concluded that a high degree of freedom motivates the employees to deal with problems on their own. Further, Polesie argued in the same article that a significant element of perceived freedom is related to the allowed individual differences between manager´s. This view is additional strengthened in our study where all managers had a strong opinion upon structuring the manager's work and they claimed that each manager have their own preferred process for delivering a project. Therefore, allowing freedom to a certain degree is most likely going to benefit JM in both keeping their staff as well as creating a creative work environment, which can provide the organization with smarter solutions in the future. Kondo (2000) additionally states that a standard procedure does not always fit all staff, he brings up the simple example of enforcing left-handed people to obey the standards formulated for right-handed. This view strengthens the view of providing the project managers with an assisting tool rather than governing documentation of how to perform their work.

The literature review brought up the issue with employee participation, where many attempts of implementing standardized work procedures fail due to lack of interest from the involved parties. Therefore, Polesie et al. (2009) concludes that a change have to be developed through a bottom up approach where the involved managers participate in the development phase. This method is in progress at JM where several managers are appointed to discuss a future development of the project manager chapter. However, we acknowledge a risk of using a bottom up approach, where the result can be influenced by old habits and end up with close to no innovation brought into the process. The risk of such outcome is plausible in JMs case where the attitude towards a process-oriented change is clearly negative among the interviewed managers. Our opinion is not necessary pro a process-orientation but there is a risk that the involved managers turn down ideas before they are evaluated.

Last but not least, an interesting observation was made during the interviews that contradict the literature, which was the fact that the managers at JM did not see any problem with superior managers assigning the project team. Where Polesie (2013) argues that there is a connection between choosing your own team and perceived freedom. However, most managers claimed to work within similar teams in most of their projects with only a few changes. Although, the managers who mentioned that there team is changing between each project did not have any issues with this. One manager stated that it is developing the organization if team members are changing and that project managers should expect their team to change. They work in a project-oriented business that is based upon temporary structures. The managers at JM do not have any liability for their team members similar to a superior manager, which could be one reason why they are less concerned with the team compilation. However, some managers had a concern with the structure of being responsible for their teams process but not for the team members themselves.

## 5.2 Research question 2

***How applicable/needed is a structured model/support function for the project manager´s role within construction regarding their working routines?***

As mentioned earlier in the literature review, today´s project managers are integrators who are responsible for integrating the required resources, knowledge and processes, from the projects beginning to the end. According to our opinion, this is well in line with the responsibilities of JM´s project managers, who have financial responsibility for their projects, responsibility to lead a team of experts, and furthermore in charge of delegating the work among the experts within the project team. In other words the overall goal for the project manager is to deliver profitability to the company by running successful projects. The managers confirmed this view where all project managers described their role as having the overarching responsibility for their projects from initial plans until the house is handed over to the customers. The project manager's role can be compared to the CEO's position in a company applied on a project. Nevertheless, in order to assess, coordinate, manage and control all personnel and processes in the project, the project managers require tools to perform their work. According to JM, the existing operating system in combination with the responsibility distribution scheme should work as the overall tools for the project managers. However, both of these tools have flaws that need to be fixed.

The results from the interviews showed that there is no generic model on how the project manager at JM should work. As it looks today, each of the project managers can perform their work in their own way. This understanding was coherent between the managers where most managers perceived that they were working in different ways than their colleagues. This is partly because they are different as people and partly because each project is unique. Moreover, according to some of the managers located at the Stockholm office, the project teams have a new setup in each project and the project manager can therefore never expect the same team twice. As one manager stated, *"each project is a temporary constellation with the focus to erect a building and the project manager should therefore act accordingly".* The manager's view is that the project should be in focus and not the team, everyone is and should be replaceable including the project manager him or herself. However, although each project member is replaceable, replacing team member can deteriorate the project team where experience of working together is lost. It can therefore be concluded that the operation system should align the project team in order for all members to work in a uniform way. This is according to us, one of the benefits of a further development of the project manager chapter. It should align the project process so that the project team members can expect the project process to be similar in all projects, even though the project manager varies.

Moreover, another reason for developing the project manager chapter is the importance of ensuring that all tasks are completed on time. The project managers are ultimately responsible for the project process and thereby also responsible for checking that all-important documentation is provided at each gate. Some unperformed tasks can cause major delays to the process and therefore also contribute to major costs. A future development of the project manager chapter therefore needs a well-functioning supporting tool, which will make sure that no tasks fall between the chairs. One manager stated that there is a lot of work *"behind the scenes"* in the role, and the project manager should be able to intercept the tasks that have fallen between the chairs, while simultaneously try to get as little as possible to fall between the

chairs. Many of the interviewed managers asked for a tool in a future project manager chapter where both the manager as well as the project team can get an overview of the whole project. This should according to most of the managers reduce the risk of task being uncompleted at the gates, hence lead to fewer disturbances throughout the projects. This view is further strengthened by Ljungberg and Larsson (2012) who argues that a process map of the organization can both increase the overall understanding of each team member's role within the project as well as visualizing when all information is needed. Unfortunately, according to the same authors, operation systems easily overgrows, which results in employee dissatisfaction and a reduced usage of the system. This is correlating with the results from our interviews where a clear dissatisfaction was shown towards the size of the existing operation system including the already process-oriented chapters. This undermines the overall purpose of an operation system where instead of being a helpful tool it becomes an obstacle for the employees. During the interviews, only two out of seven managers considered themselves fully familiar with the whole system, both were part of the development group. Ljungberg and Larsson (2012) recognized this issue in their work and therefore recommend implementing a system, which is easily overviewed but still thorough enough to be useful.

All interviewed managers' claims that the operation system is a great tool for the organization, they do however mention that it need some work before it can work sufficiently. The managers all agree that the system is supporting their work by providing them with standard templates and documents for their manager role. As one managers stated *"we do not have to reinvent the wheel in every project".* Further it eases the work for the managers by providing them with a list of the project requirements throughout the project. However, one of the project managers states, *"there are several things that we as project managers do that is not described in any operating system at all"*. This statement contributes to the existing view that JM still need further development of their operation system, where they want a structured model/supporting tool for their role.

The main reason why senior managers do not use the system regularly is their experience where they claim to have most of the information in their head. However as one of the senior manager's states, *"there is always a risk of forgetting things in projects when you keep all the information and stages in your head".* With this statement in mind, an operation system that can be used as a checklist would be beneficial for all managers with various experiences. Nevertheless, another perspective that was brought up by most of the interviewees is the issue with defining a process for the project manager role, which is described as broad. The literature further acknowledges the complexity of the construction project manager role, where Jaworski (2006) explains that most people got struck by the width and complexity. Project managers at JM are not an exception where they participate throughout the whole project and their core tasks include administration with municipalities, project development, financial responsibility, sales activates and various project administration. The managers argued that this broad range of work is the main reason why they do not think a process-orientation of the project manager chapter is suitable. They claim that their work do not follow a certain process, there are many tasks that are independent and cannot be expressed in a process-oriented map.

## 5.3 Research question 3

***How can such a model / tool be framed and used?***

Findings from earlier research performed within the subject of process-orientation shows that the best way to describe and present the purpose of a process, as well as its structure and the appearance, is by drawing maps over the processes (Ljungberg & Larsson, 2012). According to us, the findings from the literature support the project manager's opinions, where they wish to see some sort of visualization/timeline over their process. All of the interviewed project managers stated that one of the most important responsibilities as a project manager is to keep a bird's eye view over the project process, since the project manager is the only one who has a business related interest in seeing the whole picture. This statement is well in line with what has been concluded from the literature and we therefore claim that a supporting map over the process is to be preferred. By describing the company's business by using a process maps, the company can in an easy and understandable way explain how the organization's various parts are related to each other and how they interact to create value for the customer (Ljungberg & Larsson, 2012).

Furthermore, according to McKeon (2012), the project manager is viewed as the key player in construction projects, and people are often struck by the complexity of a construction manager's job, and the fact that they are involved in almost every detail of a project. The construction manager is the glue that holds the project together and supervises the construction process from conceptual development through final construction, making sure that the project gets completed on time and within budget. This is well in line with the role of a project manager at JM, which according to the interviewed managers has control over all processes, and the project manager therefore need to have an insight in all the different areas of the project organization. However, the existing operation system is according to the interviews impracticable, where there are too many steps in order to find the desired information.

Another issue with the existing operation system is that the project managers do not consider themselves fully acquainted with any chapter where they need to jump back and forth in the system in different phases of the project. According to us, these findings militate against spreading out the project manager chapter on all the other chapters, which is a solution that has been proposed in the development group according to involved managers. Instead, we suggest a more visual project manager chapter, which is further supported by the interviewed managers in this study. An introduction of a structured model/supporting tool, which provides the project managers with a bird's eye view of the project process with a timeline are therefore, from our perspective, a vast reason for introducing an improved project manager chapter. Such structure of the project manager chapter would provide the managers with an understandable map of how all activities within the project are related to each other and how they interact. By mapping the process, the team members can understand the process and they get answers to questions such as: why does each process exist? What is my role in the project? How does my work contribute to the value creation? Who do I work with and how? How can the process be improved? (Ljungberg and Larsson, 2012).

Moreover, the gates in the operating system are considered to be a great tool by all of the managers, which are further supported by Winch (2010). He describes the stage gates as the most valuable management tool for managing the project life cycle, and it

provides the manager with a structured flow of information towards a potential perfect state in the future. According to the managers, the gates are supposed to ensure that the quality is achieved and each stage is their own process that should be completed. However, according to Winch (2010), the criteria for each gate should consist of the questions who, what and when, but according to the authors of this thesis, the question of who is missing in today's system. According to JM, the responsibility distribution should work as an important tool for the project managers, although, this is not the case as of today. A coherent view among the project managers is that the distribution of responsibility is beneath contempt throughout the whole system, this is an urgent issue for JM where the responsibility distribution is one of JM´s most important documents. We therefore claim that it is important to spend resources in order to make this document functional, and there is also a request from the interviewees that the distribution of responsibility should clearly be connected to the operation system in the future.

Last but not least, a project based nature often prevents knowledge transfer between projects and project managers. The fact that tacit knowledge is not easily transferred through documentation complicates it even further, as well as the possible changing of teams in each project, which makes the knowledge transferred between projects significantly reduce (Bresnen and Marshall, 2001). Nevertheless, Lee (2000) points out that the willingness of people to share tacit knowledge depends on if their organization as a sharing organization. The findings from the interviews show that JM already has a great benefit where the interviewed project managers all agree on that the company has a supportive culture. They argue that this culture already benefit their internal knowledge transfer. Furthermore they all agree on that the culture promotes openness, where they never hesitate to ask their co-workers for guidance or suggestions if they have a problem. We believe that JM already has come a long way. However, during the interviews it was clear that there is a lack of overlapping employee time when managers retire or changing company. Imai (1997) acknowledge this issue as one out of five features that are important for standardizing the organization where he explains one feature of standards as:

*"They provide a method for managing knowledge through the preservation of "know-how" and expertise: with standardization and the institutionalization of its content, the know-how stays in the company regardless of the comings and goings of employees"*

It is therefore of great importance that JM puts in an effort regarding knowledge transfer between project managers. Nevertheless, according to Santos (2002), knowledge doesn't necessary need to be communicated through written documents, where pictures, sketches and photographs also facilitate understanding. We therefore claim that the process-oriented system practiced at JM actually is one way of transfer knowledge where it consists of a visual IT solution where the employees can find support for their function. This is also complemented with document handling within the same system.

## 5.4 Reflections over the method

We chose to perform a qualitative study by interviewing seven project managers instead of doing a quantitative study where a questionnaire would have been sent out to all project managers within the case company. This decision was made since the authors believed that they would get a better understanding of the project manager role by having an open ended discussion with a few chosen managers. Moreover, the answers were believed to be more thorough if the managers were allowed to speak freely. Where, a quantitative study could have provided us with more data but with less background information, which was necessary in order for us to understand the role and its complications. Moreover, the knowledge and understanding of the topic became greater as time went by, which can benefit the opinion of the interviewee's that were interviewed last. Although, we tried to deal with this risk by performing all the interviews during a shorter time period, where the time between the first and last preformed interview did not reach over three weeks. Our impression is that we chose the most efficient and beneficial method for collecting data. Our understanding increased significantly both concerning the role of the project managers as well as comprehensive knowledge of the company structure where the operational system is central. Although, a lesson learned is that you cannot spend too much time on formulating interview questions where it is very important that they do not become misinterpreted by the interviewees. This occurred to some extent, especially with our short exercise that did not provide us with a satisfying result.

The literature study was performed previous to the interviews in order for us to gain a better understanding of the subject. Although, the study had to be complemented with an additional chapter to cover the subject of process based business development where this became central during the interviews.

Last but not least, the literature review covers several areas connected to the results of the study, however some of the literature is written from a general perspective with little or no connection to the construction industry. The construction industry is characterized as project based and we therefore assumed that some literature discussing general project administration would also apply to the industry. Although, the construction industry is fairly conservative which can impact on how applicable the literature is to the reality of the business.

# 6 Conclusions and recommendations

In this study, the focus has been on investigating the possibility to structure activities for project managers within construction firms, while simultaneously consider their attitude towards such change, and furthermore explore their need for better support functions/tools regarding the process of their work. In order to investigate this possibility, a case study has been performed at JM where interviews with seven project managers have been conducted. Moreover, a literature review has also been performed regarding the project manager's role within construction, as well as standardization and process-orientation.

This chapter includes the author's conclusions to the research questions that were stated in the beginning of the report. The conclusions are based on the analysis of the literature review as well as the interviews with the project managers from JM. This chapter will also present recommendations for future research questions, which can be found in the end of this section.

## 6.1 Conclusions

*Research question 1 - How do project managers perceive process oriented activities or other structured working methods considering their need for freedom/individuality and creativity?*

The interviewed project managers at JM perceived that the administrational work has been growing over the years and that it have become overwhelming in some cases where it intrude their freedom and flexibility. Further, the administrational work sometimes distracts the managers from performing their core activity of managing the project process. It is therefore important to make sure that all administrational work is business critical, where tasks otherwise can be considered as waste and/or motivation killers. A focus area in the new system development should be to increase the efficiency in the administrational work rather than controlling the processes.

The operational system is further developed to ensure that everyone in the organization is working in a uniform manner. This is today enforced by the stage-gates that are designed to be a supportive tool for the project managers through the project process. The gates provide them with a framework with important information that ensures no tasks fall behind. The stage-gates can further be connected to the structuration of JM and are one of the governing instruments that the managers have to use. These documents are not perceived to constrain the managers, they are rather perceived to be useful in their work of managing projects. This view is correlating with the literature, which pictures the framework to minimize the uncertainties that often are perceived as stressful and time consuming. According to these indications, a further structuration of the administrative work would not necessarily be perceived as constraining for the project managers.

We therefore argue that an increased standardization through supporting tools will benefit the organization and also be accepted by the project managers. The focus in the future development should be on the administrational work rather than the processes in the design phase where the perceived freedom is considered essential. Though it is important to notify that a development cannot result in an increased administrational burden, rather it should optimize the administrational work to free up more time to pursue more projects or deliver better projects.

The interviews did also provide the study with a critical view of standardizing the managers work where it were mentioned that a standardization could in the long run limit the managers strive to come up with solutions by themselves. There is a risk that new project manager's fall into a false safeness where they do not develop the necessary critical thinking. This can result in less thought through decisions and problem of navigating through issues occurring along the way.

*Research question 2 - How applicable/needed is a structured model/support function for the project manager´s role within construction regarding their working routines?*

In order to assess, coordinate, manage and control all personnel and processes in the project, the project managers require tools to be able to perform their work. The project managers are ultimately responsible for the project process and thereby also responsible for checking that all-important documentation is provided at each stage-gate. However, it was concluded from the interviews that there is no generic model on how the managers should work, and each of the project managers can perform their work in their own way. It was stated by one of the project managers *"there are several things that we as project managers do that is not described in any operating system at all"*. Nevertheless, the most important responsibilities as a project manager is to keep a bird's eye view over the project process since the project manager is the only one who has a business related interest in seeing the whole picture. A future development of the project manager chapter therefore needs a well-functioning supporting tool, which will make sure that no tasks fall between the chairs.

Moreover, the operation system should align the project team in order for all members to work in a uniform way. It should align the projects so that the project team members can expect the project process to be similar in all projects, even though the project manager differs between projects. Last but not least, the project managers all agree that the existing system is supporting their work by providing them with standard templates and documents for their manager role. Further it eases the work for the managers by providing them with a list of the project requirements throughout the project.

*Research question 3 - How can such model/tool be framed and used?*

The operation system should be designed to assist the project teams within JMs organization in order to ensure successful delivery of their products according to the interviewed managers. Further, the operation system should assist all functional areas and align the organization to work in a uniform way. The existing operation system is not completely developed and the project manager chapter in particular still encounters many shortages when it comes to design and functionality. The conclusion is therefore aimed to summarize the findings in this study where the interviews are analysed with support from the literature study. The result shows many correlations between the case study and the literature. According to the literature, it was clear that the best way to describe and present the purpose of the process, as well as the structure and the appearance, is by drawing maps over the processes. This is well in line with the interviewed manager's opinion, where they expressed a need for a visual overview over their projects. They mentioned a timeline or similar visualization where the activities are connected to each other. This tool would support both the managers in their work with managing their resources as well as the project team where they can get an overview that will show how their work is connected and provide value to the overall project goal. The project managers at JM did however express a strong opinion against introducing a process-orientation similar to the

already restructured chapters of the operation system at JM, where they considered those overwhelming and too complicated to navigate through. Based on our interviews, we conclude that the method of organizing the project with detailed processes is not to recommend, instead it is important to focus on the bird's eye view over the projects different components. Moreover, the project managers mentioned the importance of solving the issues with the responsibility distribution scheme. Based on our interviews, we conclude that this scheme should be comprised into the operation system and thereby be available for all team members to access. Such system would eliminate uncertainties where all roles and responsibilities could be predefined in every project. Further it has been on the topic to introduce some sort of electronic signature system where the project process can be followed. The project team would with such system be able to follow the project process and also assist the project manager when reporting the overall process of their projects. Further, an observation throughout the interviews has been the lack of organized knowledge transfer between the project managers. Based on our interviews, we conclude that some sort of knowledge transfer should be introduced in the operation system where the operation system in itself can be viewed as a knowledge transferring network in which processes and important documentation is shared.

## 6.2 Recommendations

In this section, recommendations to the studied company are presented. The recommendations can be used as help for the company concerning how their operation system is perceived by the project managers today, and how the system can be developed in the future regarding supporting tools for the project manager's work. To begin with, recommendations regarding the operation system in general are presented, thereafter; recommendations regarding the future development of the project manager chapter are presented.

- **"JM's" operation system in general**

  The operation system and its supporting tools should be designed in a manageable way and thereby be useful for both new employees as well as for the more experienced staff. An operating system that can be used as a checklist is seen to be beneficial for all managers with various experiences. Furthermore, today's operating system is considered to be too big. The system includes too many steps, and according to many of the project managers, the system should be cleaned up and slimmed down. It should only contain what are business critical and pertinent requirements, as well as better search capabilities. Moreover many of the documents need to be update with more current dates since documents with too old dates raises questions. The system should work as a tool and not be perceived as a constraint, everything must work and not be a disturbing element in their daily work. Last but not least, the operating system should align the project team in order for all members to work in a uniform way. It should align the projects so that the project team members can expect the project process to be similar in all projects, even though the project manager differs between projects.

- **The importance of freedom/innovation**

  The view among the project managers is that a development of the project manager chapter should be designed to be an aiding tool in their project process. The managers as well as the literature are promoting an easement/optimization of handling administrational work. This will free up more time for the managers to

be spent on creative tasks. Further it would benefit the project outcome by allowing more time to be spent on smart solutions, which according to the managers adds value to the company and the customer. Freedom in the project manager role will further benefit JM with a lower staff rotation where the literature shares the interviewee's opinion that freedom creates a more inspiring work environment.

- **Creating a better overview through a process map**

There is a request when developing a new system that it should be easy to overview but still thorough enough to be useful. By using a map, the company can in an understandable and manageable way explain how the organizations various parts are related to each other and how each player add value to the customer. The model of using a map is both anchored in the interviewee's interest as well as the reviewed literature. The map should provide the project manager's with all necessary information in order to run their projects successfully, e.g. provide the manager with a bird's eye view of the project and its process, where they easily can locate the gate-documents which support project meetings, and a responsibility distribution for all processes. It is further expressed that the project manager chapter should not consist of too much information that it becomes unmanageable. The map should further not only support the project manager but also provide the project team with answers to the questions: why does each process exist? What is my role in the project? How does my work contribute to the value creation? Who do I work with and how? How can the process be improved?

- **A development of the responsibility distribution**

The responsibility distribution scheme is considered to be one of the more important documents in JMs organization where it supports both the project managers as well as the project team with clear roles in projects. However, the existing scheme is beneath contempt and none of the project managers are using it to its full potential. The authors of this thesis claim that it is of great importance to ensure that such tool is functional. It is further suggested that the responsibility distribution scheme should be included in a future development of the project manager chapter in the operation system in order for all team members to easily access the information. Such improvement would prevent tasks from falling between chairs in situations where it is unclear who are assigned to the task.

- **Introducing assistant project managers**

Most of the interviewed project managers requested an assistant project manager role in order to reduce the administrative burden and to liberate time in order to further focus on important tasks. The authors claim that by hiring assistant project managers, the company will enable a better knowledge transfer between junior and senior managers. The leap into the project manager role will be decreased and the valuable knowledge lost when senior project manager retires or leave the company will also be minimized. Moreover, an assistant role would increase the motivation of the senior managers, who might get the feeling of accomplishment when they have reached a certain state in their career when they are assigned with an assistant project manager.

- **Increased knowledge transferring between project managers**

At the current situation, JM is missing a functional and structured tool for knowledge transferring between project managers. However, most of the project managers perceive their role as prestigeless, with an open culture, where employees can ask for advice from their coworkers. Moreover, it does exist "project manager days" at JM, these have been introduced as a forum for knowledge sharing between the managers. However, the report does not reach further into this subject and there are no conclusions for how to structure an effective knowledge transfer at the company, but the authors acknowledge the shortage and therefore recommend JM to spend time and resources on this subject in the future.

## 6.3 Proposals for future studies

During this study, it became clear that JM is missing a functional and structured tool for knowledge transferring between their project managers. This report does however not reach any conclusion for how to structure an effective knowledge transfer between the managers, but we have acknowledged the shortage. In future studies, it would therefore be interesting to investigate the possibility to structure an effective knowledge transfer between project managers, and how they can start to transfer knowledge between each other in a manageable and useful way.

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