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Coordination of Communication in Construction Projects

An investigation of how to coordinate communication from a project manager perspective

Master's thesis in the Master's Programme Design and Construction Project Management

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Abstract

Communication is viewed as an essential prerequisite for successful project-based management. However, the efficiency of communication in the construction sector is allegedly lacking. The non-homogeneous and temporary project groups make the communication in construction projects particularly challenging compared to many other project-based contexts. The purpose of this thesis is to explore how, from a project manager perspective, communication is coordinated in small construction projects, mainly at Company X. All interviews with project managers and observations were made at Company X, a project management company consulting for clients in construction projects. The project manager is one of the key individuals in a successful delivery of a project, responsible for managing the interests of multiple stakeholders and therefore this perspective is of interest. This thesis also investigates what problems exist with the communication and if there are any improvement opportunities. The method used for conducting this study was a qualitative method, which included a literature study, several interviews, different observations and informal conversations. The major findings from this study were that it does exist problems with the communication in construction projects. The main problems that were found are: *lack of communication*, *lack of time for communication, misunderstandings, juridical aspects* and *not learning from mistakes.* The thesis also shows improvement possibilities to make the communication more efficient. These improvements suggestions are to implement a general communication plan to the project or to implement communication network systems to make the communication more effective. Also, mapping stakeholders and dividing responsibilities in the beginning of the project is of importance for better communication.

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Göteborg, June 2019
Sally Lönnqvist Ekström
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1. Introduction

In this chapter, an introduction to the report and the subject will be made. First, the background of the subject will be described. Then, the purpose and research questions will be introduced. The chosen demarcations and limitations are also presented and general ethics will end this chapter.

1.1 Background

Communication within the construction sector is a broad and complex notion. The theory of communication includes many different parameters and might be difficult to approach. To simplify, referring to communication in this report means transaction of information between one or more transmitter and one or more receiver. According the theory of project-work, communication is viewed as an essential prerequisite to successful project-based management (Dainty, Moore & Murray, 2006). The construction sector consists of project-based organizations with mainly non-homogeneous projects. The construction projects themselves can be summarized in terms of their uniqueness, complexity, discontinuity and the project groups usually consist of people with different skills, knowledge and abilities working together (Dainty et al., 2006). This is what makes communication in construction unique and different from standard project communication. These unique parameters with construction projects make the theory of communication in construction projects of interest. To coordinate the communication in construction is a complex task, although it is of high importance for the project success.

The construction industry has a poor reputation for the manner in which the organizations and individuals communicate with one another (Emmitt & Gorse, 2003). Overall, the efficiency of communication in the construction sector is allegedly lacking. Within construction communication is performed daily and even so the development of communication techniques is moving slowly. Practical experience has shown that there is a general resistance towards introduction of new technology within the industry (Wikforss & Löfgren, 2007). The construction industry is one of the oldest industries and has well-established traditions, which makes change difficult. Handling change is quite problematic among the construction industry, where the sector has shown reluctance to implementing new ways of working (Dainty et al., 2006). Although, to achieve the most effective coordination of communication there is a lot to improve and new solutions to implement, change must be done.

In a construction project there is usually many different stakeholders included. Some stakeholders are the authorities, project planners, entrepreneurs, users, project client and the project manager (Newcombe, 2003). The stakeholders in the project teams vary in a diverse range. These stakeholders are expecting a different amount of communication and to be informed in different ways.

As mentioned, the communication in construction has a bad reputation according to Emmitt & Gorse (2003). Some of the reasons for the ineffective communication practices, is the organizational fragmentation and lack of integration between design and production processes (Wikforss & Löfgren, 2007) as well as issues regarding coordination, organization, planning, the use of specialists, standardization and contracting to mention some of the most important (Emmitt & Gorse, 2003). The fragmented and temporary nature of construction teams makes it difficult to organize the groups and strive towards the same visions and goals. The climate among construction groups might include different interests, where some of the sub-contractors might not be interested in the overall success of the project but only of their responsible project part. For example, a subcontractor seeking to maximize profit on their package of work may not work effectively with other subcontract firms whose packages interface with theirs if it is not in their personal interests to do so (Dainty et al., 2006).

The temporary teams are also commonly based on experts with different specialties, which contribute to difficulties of understanding each other. The contingent groups and different knowledge areas pose an inherent challenge for communication in the construction industry. This together with the high level of uncertainty that characterizes construction projects ongoing also increase the risk to undermine the communication channels necessary for project success (Dainty et al., 2006).

The project manager is often consulted to the project by the client, with the purpose of being the midpoint of communication and bringing the different stakeholders together (Dainty et al., 2006). The project manager has the key role in the construction project team, with the responsibility to balance the needs and decisions concerning all parties involved, to fulfill the aimed project success. The different personal interests among the stakeholders contribute to communication barriers and are a challenge for the project manager. An important cornerstone to a successful project in construction is a well-functioning communication flow and to have a communication strategy. To manage the communication is a challenge and of high importance for project success, therefore this subject is important to investigate.

1.2 Purpose and Research Questions

The purpose of this thesis is to explore, from the project manager perspective, how communication is coordinated in a typical construction project, and subsequently try to identify the problems that exist with the communication and what opportunities for improvement there might be. The questions that this thesis strives to answer are:

How is the communication in construction projects coordinated today?,
Does it exist any problems with the communication and is there any improvements to make the communication more efficient?

The communication context and situation will be studied by general interviews with different project managers working at one consulting company, here referred to as Company X. The empirical study also includes both general observations of communication as well as observations of the coordination of communication in one particular construction project. The thesis will consider both formal and informal information and communication with both internal actors as well as external actors. Based on the findings from both the literature review and the empirical study, the problems with communication will be presented as well as suggestions on how the communication should be coordinated will be formulated.

1.3 Demarcations and Limitations

This thesis is focusing on the coordination of communication from a construction project manager's perspective in the way that it will only focus on the communication between the project manager to the different stakeholders and not consider other communication that occurs in a project such as communication between the workers at the construction site. In this case, the project managers are mainly involved in the construction phase, working as consultants for the client. The construction projects that are investigated are about the same size and duration, for the ability to compare the results. The projects are facility-projects, either new constructions or reconstructions. The duration of the projects is between a few months to a year.

The thesis focuses on the coordination on communication, from the project manager with the involved stakeholders and does not study the area of knowledge management. Since the empirical part of this thesis is based on findings from only one company and the case study is conducted at the same company, the conclusion can not be seen as a generalized solution for how communication should be coordinated in projects.

1.4 Ethics

It is important to consider ethics when doing research and especially when conducting interviews and case studies, which is the case in this thesis. Since it does not add any value to mention the company name or name of the interviewees everything this is left out of the paper to make it completely anonymous. The interviewees were informed about the purpose of the interviews and assured that everything will be anonymous. The question of recording was also asked in beforehand and they were also informed that only the authors would listen to it and that the recordings would be deleted by the end of the project.

2. Theory

In this chapter a theoretical framework will be presented. Including general information about communication and specific information about communication in construction.

2.1 A general overview of communication

As long as there has been human existence there has also been communication. According to Agarwal (2009) approximately ¾ of an active human beings' life is spent communicating and it is essential to human existence. But the concept communication is very broad and complex, and it can have different meaning depending on the situation and context. Since communication is such a multidimensional and imprecise concept it exists several different definitions of the term communication (Dainty et al., 2006). It can have different meaning to different people depending on the situation, but the common denominator is that communication involves some kind of transfer of information between a sender and a receiver (Dainty et al., 2006). This is the fundamental but according to Agarwal (2009) the communication process actually has seven different components and these are: sender/transmitter, encoding, message, channel, decoding, receiver and feedback.
The sender is the one with information he or she wants to communicate and encoding is the process of translating the information into symbols or gestures such as speech, writing or nonverbal signs. Message is in which physical form the information is encoded, for example is speech the message when we talk, and the medium that the message travels through is called the channel. The receiver is as the name suggests the one receiving the message and he or she is responsible for decoding the message, which means interpret the symbols or gestures from the sender. The last but equally essential step of the communication process is feedback, which is the response the receiver gives to the messages and this indicates how successful the transaction of information has been

Another important component in the communication process is 'noise', and that is all interference that occurs between the sender and the receiver (Dainty et al., 2009). This noise has an impact on the efficiency of the communication process and could also cause problems in communication. The noise can arise anytime during the transmission of the message and it could be either literal noise or more abstract. In figure 2.1 below it is shown how the communication process looks when the noise component is combined with Agarwals seven key communication components.

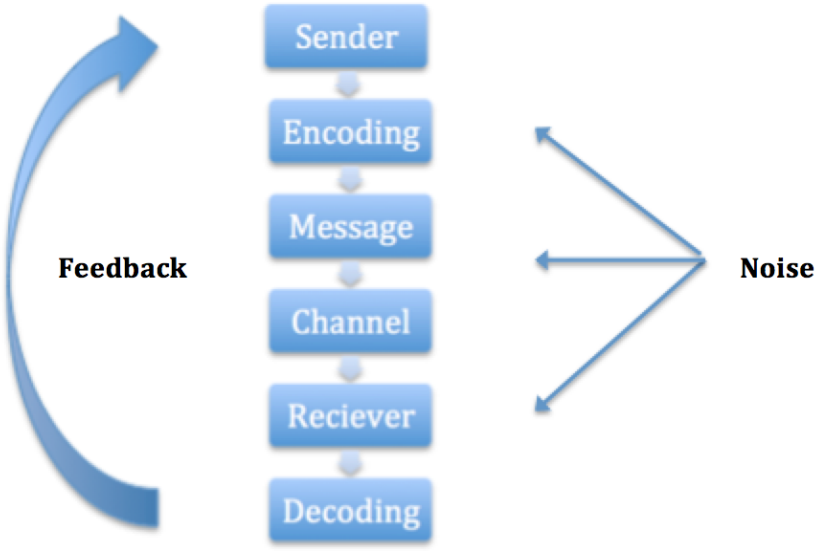

Figure 2.1. Model of the communication process (authors own model)

The literal noise is the interference that is caused by a noisy environment and it is easy to understand that this can have an impact on communication and more specifically the oral communication. Another, more important, form of noise is the interference that arises due to the length of the message chain, since all humans in this communication chain will filter and amplify the message. This phenomenon is also known as 'Chinese whisper' and it can result in that the end message differs a lot from the original message. This effect of this phenomenon gets bigger the longer the communication chain is since every person in the message constitutes a risk of altering the message. Another important source of noise is the impact that people's emotions can have on the communication. This noise can occur due to a lack of trust between the ones communicating which will lead to them letting their emotions impede on the communication and thereby making it less effective. The effect of this emotional noise is extra palpable in industries where human interaction is central, such as for example the construction industry (Dainty et al., 2009).

Communication is, as stated earlier, basically about transferring information between different person, groups or organizations but the reason for doing it can differ depending on the situation and context (Dainty et al. 2006). The sender might want to influence the behavior of the receiver or it could be a pure request or exchange of information (Dainty et al, 2006). These reasons for communication belong to two different main objectives of communication, namely persuasion and information. Persuasion is about trying to influence or change the behavior of the receiver by expressing feelings, views and ideas and it includes motivating, suggestion, counseling and advice. Information on the other hand is about gathering or providing information and it includes education, training, order and instruction (Agarwal, 2009).

There are mainly two different types of models; they are either linear or cyclical. The biggest difference between these two is that the linear models do not consider feedback from the receiver while the cyclical do. Thus, the linear models are one-way communication and the cyclical models are two-way communication. The cyclical models are also called interpersonal or interactional models and are a development from the linear models (Rayudu, 2009). One of the first models of communication process was developed by Aristotles and was the first step towards a development of a communication model. This is a simple linear model with only three main components; *The speaker, The Speech* and *The Audience*. This is very basic and since then researchers has developed newer, more modern and complex communication models (Rayudu, 2009). Another important model of the linear communication process was developed by Harold D. Laswell. This model is based on five different components, which are formulated as five questions, and these used to analyses the communication process. These five questions are:

- Who?
- Says what?
- In which channel?
- To whom?
- With what effect?

This model focuses a lot on the behavior of the sender and all these questions are important to think about before starting to communicate to be able to make the communication more effective (Rayudu, 2009).

Since the linear models do not consider the response from the receiver, they have limitations in describing the communication process and as a result from this the cyclical or interpersonal models developed. These models build on two-way communication and thereby facilitates for effective communication. The earlier described model with seven different components of the communication process is an example of how an interpersonal communication model can look (Rayudu, 2009).

2.1.1 Communication channels and media

There are two different kinds of communication: verbal and non-verbal. Verbal communication is everything that is communicated through words and it can be both oral written. All else is called non-verbal communication and some examples are facial expressions, tone of voice, posture, eye contact and it can be done both consciously and unconsciously (Agarwal, 2009).

Everything that is communicated through words, both oral and written, is called verbal communication and all else is called non-verbal communication. Examples of non-verbal communication is facial expressions, tone of voice, posture, eye contact and so on and it can be performed both consciously and unconsciously (Agarwal, 2009).

Verbal and non-verbal communication can be used separately but more commonly they are used together, especially in face-to face communication. According to Agarwal (2009) only 35% of a message is carried verbally while the rest is transferred non-verbally, which speaks for the importance of non-verbal communication and especially the importance of the combination of the two types. As mentioned, the non-verbal communication can be performed both consciously and unconsciously and it can give either more or different meaning to the verbal message. When non-verbal communication is used right it will reinforce the verbal message, but it is handled poorly it could also become a noise and thereby hinder successful and effective communication (Dainty et al., 2006).

Communication can also be either formal or informal and both of these exist within an organization and are important in different ways. The formal communication is pre-defined and usually follows the hierarchy structure whereas the informal communication develops spontaneously and can thereby happen anywhere in the organization (Dainty et al., 2006). These two forms of communication have different strength and weakness and should thus be used for different purposes. The formal communication is good in regards of evidence of the communication since it is usually written, but one significant weakness is that it is time consuming. The informal communication on the other hand goes much faster but is usually oral and thereby rarely documented. If formal and informal communication is combined correctly the strengths from both can be utilized without the weaknesses affecting significantly (Dainty et al., 2006). Also the communication media, such as speech, written and non-verbal and so on, can be either formal or informal. The choice of formality depends on the circumstances as well as the aspiration of the sender. For example, is the written communication often more formal compared to talking, which usually is more informal but both of them can be of either kind. In the setting of a meeting the talking will tend to be formal compared to a face-to- face conversation or phone call where the talking typically is more informal (Dainty et al., 2006).

2.2 Communication in construction

In this chapter, the construction sector is viewed in more detail. The unique characteristics of the projects in the construction sector are investigated as well as the communication in construction. Communication forms, problems and involved stakeholders are also presented in this chapter.

2.2.1 Construction Project

Construction projects have certain unique characteristics in comparison to other projects, in particular the non-homogeneous project teams. With a variation of stakeholders and complex projects the communication aspect is especially interesting. The communication in construction is varying and it's facing problems. Further, the project organization and communication in construction will be investigated.

2.2.1.1 Project and Organization

The construction sector consists of project-based organizations with constantly ongoing complex projects, which makes project management highly in focus. The construction projects are in general continuing during a long period of time and have an extensive budget in comparison to the typical project in other industries. To focus on the parameters of *time* and *money* is therefore of high importance to achieve success in construction projects. To achieve project success can be defined as fulfilling the constraints of *cost and time,* it is surely a predictable reality that all project-based working is constrained by time and cost limitations (Dainty et al., 2006). The parameters of *cost and time* are usually referred to as *budget and project duration* among construction projects.

Construction projects have interesting characteristics in comparison to other projects. What stand out are mainly the specific, unique features of each product and the great complexity including numerous players from various institutions (Mahmoud-Johini et al., 2003). All construction projects are constructed on different locations and non is exactly alike the other. This is the reason why communication, collaboration and standardization in construction projects are more difficult in comparison to other contexts. In construction projects the process from start to finish includes many different stages. Parker et al (2012) highlight five distinct phases of construction projects, including *Initiation, Planning, Executing, Performance and monitoring* and *Closure.* shown in figure 2.2 (Parker et al., 2012). In these stages' activities such as procurement, projecting, tender, production and inspection is included. Creating the ability to coordinate these activities it is important with structure and great project management.

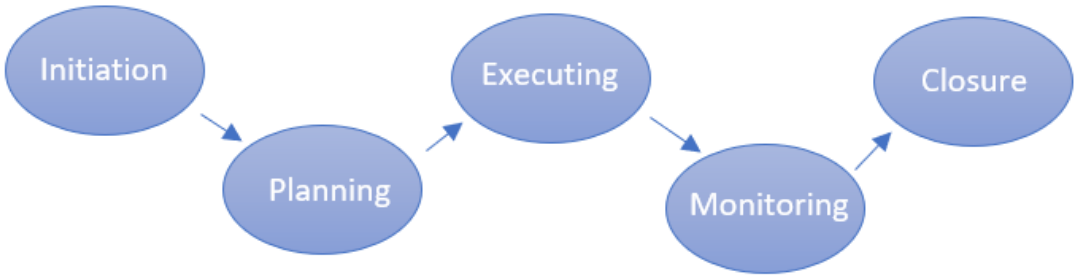

Figure 2.2. Construction phases. (Authors own model)

In the *Initiation* phase the feasibility of the project is determined. It includes if the project is profitable and reasonable enough to start up. If the project is initiated, then it is reasonable to expect that the project have a purpose to fulfill. The second stage, the *Planning* stage, includes creating the scope of the project, deciding the workload and dividing it. This means developing the project plan, developing scope requirements, creating the work breakdown structure, developing the schedule and required activities, developing budgets and costs, planning for quality, the human resources plan, communications plans, risk management and procurement (Parker et al., 2012). Creating the scope and the plan of the project means defining and clarify what is wanted by the client (Winch, 2010). In the planning stage, the

parameters *budget and project duration* are determined, and these are essential for project success. In the construction sector this stage is ongoing throughout the whole project. The scope of the project is usually difficult to define in detail and includes a lot of *uncertainty*.

Because of the uncertainty, continuous communication throughout the project is of high importance in order to enhance efficiency and avoid misunderstandings. The level of uncertainty in the project is impossible to predict in the planning phase and is usually shown in the *Executing* phase. In this stage, the project plan is implemented, and the success or failure of a project is determined (Parker et al., 2012). *Performance and monitoring* consist of processes to track and review the project's progress and performance when measured against initial planning specification (PMI, 2008). In the *Closure* the completeness of the project is stated out, including obtaining acceptance by the client or stakeholders, reviewing the handover of the project, recording project impacts and documenting lessons learned (Parker et al., 2012).

The common denominator for these five stages is *communication*. To concatenate the five different stages and striving towards the same vision and goals is relaying on communication. The communication takes shape by different forms during a construction project and it is important to create a communication plan to structure the project communication.

2.2.1.2 Communication, forms & problems

Communication is the function that integrates cost, scope and time to achieve a quality product and may be seen as having a foundation function to support all the areas in project endeavors (Zulch, 2014). While the efficiency of the construction process relies upon the quality of communication (Renault & Agumba, 2016), the high level of uncertainty and complexity increases the challenge in regard to communication in construction. Construction projects are unique, included complex and different characteristics, in comparison with other projects. The projects themselves can be summarized in terms of their uniqueness, complexity and discontinuity (Dainty et al., 2006). The construction projects consist of groups of people with different skills, knowledge and abilities, working together. These non-homogeneous constellations make the communication in construction particularly complex, yet is it hard to implement any general theory of communication to understand the process of communication in construction. The high degree of heterogeneous groups seems to have led to the development of a number of distinct "languages", which leads to misunderstandings between the involved parties (Emmitt & Gorse, 2003). The heterogeneous and temporary project groups are a subsequent effect of the changes in geographic locations for every construction project. With the changes in geographic locations come changes in project groups, with a number of actors from different institutions. The construction project teams vary from project to project and it is a rare occasion that the same project group is working together twice. New communication relations are therefore formed in every single project. These fragmented and temporary construction teams might lead to a climate in which people may not have a vested interest in the overall success of the project (Dainty et al., 2006).

Communication in construction can be described as both one-way and two-way focused. One-way media is a linear communication flow between sender and receiver, with no opportunities or intention for feedback. This communication is quick and concise. One-way communication medias can be letters, drawings or emails. Two-way media is a multidirectional flow of information from sender to receiver with numerous opportunities for feedback (Dainty et al., 2006). Two-way medias include meetings, telephone calls or conferences. The communication process usually includes several different forms of communication in one project. It includes performing phone calls, meetings and emails and the communication might be either informal or formal. Because of the industry's fragmented structure and culture, it has led to the creation of both formal and informal languages. The formal communication is usually controlled exchange of documents and is performed on one level, while the informal communication usually is interactive problem solving on another level (Wikforss & Löfgren, 2007).

The forms of communication are varying among different projects. A study made on 4 construction projects showed that *meetings* and *telephone calls* were the most commonly used methods in the projects in general (Dainty et al., 2006). The communication might be formal or informal in its form, either if it is verbal, written or electronic. Project meetings, project plans and reports, informal discussions, and formal presentations are considered appropriate ways of communicating (Chinyio & Olomolaiye, 2010).

The construction industry has a poor reputation for the manner in which the organizations and individuals communicate with one another (Emmitt & Gorse, 2003). It is well known that the communication process within construction has large shortcomings and it is a common perception among project managers that the communication has flaws. The construction industry is one of the oldest industries and has well-established traditions, which makes change difficult. Handling change is quite problematic among the construction industry, where the sector has shown reluctance to implementing new ways of working (Dainty et al., 2006). Without change improvement is impossible. Practical experience has shown that there is a general resistance towards introduction of new technology within the industry. A case study showed that internet-based network to organize communication was not used and the information flow remained uncontrolled (Wikforss & Löfgren, 2007). One reason for this might be that handling problem situations in construction results in natural communication patterns that are dynamic, spontaneous and informal, because of the need of quick responses and information (Wikforss & Löfgren, 2007). The development of ICT has simplified the communication flow in many industries, where the construction industry lies behind. The resistance against new technology is one contributor to the problems with communication.

The complexity of the construction projects is another factor contributing to the problems with communication. The non-homogeneous structure of the project teams has contributed to the development of an intransigent workforce unwilling to embrace change (Dainty et al., 2006). The temporary relationships make it very difficult to build good communication networks and they also make it difficult to constantly improve the way things get done (Emmitt & Gorse, 2003). The temporary teams consist of stakeholders with different

specialties and in some cases different agendas. For the individual player, the smartest strategy may be not to communicate everything, not to have heard some piece of information, even to have suffered a slight misunderstanding (Wikforss & Löfgren, 2007). The lack of communication might be the winning of cost and time for some stakeholders. This may be one of the reasons why some participants are reluctant to communicate everything via networks. Also, conflicting interests could result in hidden agendas, usually leading to limited communication (Renault & Agumba, 2016). Because of the problems with the temporary groups, people are encouraged to work in partnership and developing long-term relationships, this arguably breaks down many of the communication barriers alluded to earlier (Dainty et al., 2006). Creating homogeneous groups and creating trustful relationships among the groups contributes to easier and more well-functioning communication.

What are the consequences of not coordinating the communication and strive towards a well-functioning communication? There could be different consequences such as stress among stakeholders, misunderstandings, uncertainty and risks. Even if some of these factors could be conscious, they usually appear as a result of bad communication. Although, an element of uncertainty always exists that has the potential to undermine the communication channels necessary for project success (Dainty et al., 2006). The high level of uncertainty is an important reason why communication is difficult to coordinate and plan in detail. Part of the learning process, handling the uncertainty, depends on understanding that when things go wrong, it is necessary to persevere until they are put right, not revert to old-fashioned ways (Chinyio & Olomolaiye, 2010).

2.2.2 Stakeholders

This chapter aims to investigate the different stakeholders in a construction project, their interest and the communication between them.

2.2.2.1 Involved Stakeholders in Construction

The list of stakeholders in a construction project can be large, but also quite small, depending on the size of the project. Involved stakeholders can be the owners and users of facilities, project managers, facilities managers, designers, shareholders, legal authorities, employees, subcontractors, suppliers, process and service providers, competitors, banks, insurance companies, media, community representatives, neighbors, general public, government establishments, visitors, customers, regional development agencies, the natural environment, the press, pressure groups, civic institutions, etc. (Newcombe, 2003).

The main stakeholders in construction can be divided into four categories; the clients (private and public sector), government (local and national), suppliers and subcontractors and anyone else affected by the built environment (Dainty et al., 2006). The center of communication is the project manager, see figure 2.3. All actors are not in need of communicating with each

other, it is in the role of the project manager to make sure all actors have the accurate information.

Figure 2.3. Communication flow between three main stakeholders. (Authors own model)

The Project Manager

The project manager is one of the key individuals in the successful delivery of a project, failure in project management will most likely lead to project failure. The project manager's role is to try and balance their decisions in such a way as to fulfill the needs of all parties involved (Dainty et al., 2006). The formal definition of a project managers responsibilities can be defined as: *"The planning, monitoring and control of all aspects of a project and the motivation of all those involved to achieve the project objectives on time and to cost, quality and performance"* (Fewings, 2013)

The project manager must be adept at managing the interests of multiple stakeholders throughout the entire project management process (Chinyio & Olomolaiye, 2010). Although, the definition of a powerful actor is seen as one with the ability to solve complex problems and manage risk for the client (Winch, 2010). The main goal for the project manager is to make the client happy, to become a powerful actor. To satisfy the client it is important to understand the needs and to do so, communication is the key. As a project manager it is important to adapt different communication strategies to different stakeholders. According to Weiss (2003), strategies and tactics developed to cope with stakeholders include:

- approach each stakeholder directly or indirectly
- do nothing, monitor, take offensive or defensive with certain stakeholders
- determine whether to accommodate, negotiate, manipulate, resist, avoid or wait, and see with specific stakeholders
- combination of strategies

The project manager is the leader of the team and acts on behalf of the client as well as trying to maintain an efficient project team (Fewings, 2013). The project manager is usually hired by the client, to act as intermediary between the client and the contractors. This means that the project manager is communicating with the contractors and suppliers on behalf of the client. The ultimate goal of construction project management is the full satisfaction of client's demands both in terms of functionality and budget (Koutsogiannis, 2017). Therefore, the communication between the project manager and the client is of high importance. The client

must be informed of how the project is going and if it is in line with the client's visions as well as the project manager must have full understanding of the client's needs. The project manager and the client must have a continuous communication throughout the project in forms of meetings, phone calls and emails.

As a project manager in construction the most common ways of communication are emails, telephone calls and meetings. The technology implementation of the construction industry has led to new abilities of communication, at all times and places. Although, it should be noted that face-to-face meetings are still the best way to communicate with construction project stakeholders (Chinyio & Olomolaiye, 2010). As a construction project manager, the daily workload includes performing communication activities. Communication activities such as engaging in conversations, listening to colleagues, networking, collecting information, directing subordinates, writing letters or transferring information through electronic devices such as telephones or computers (Dainty et al., 2006). A lot of time is consumed on writing documents and providing administration, as a part of the communication flow.

The project manager needs to plan, direct, organize and supervise the overall construction process as well as develop staff at the construction phases. This includes visiting the construction site to get the full picture of the construction. Appropriate and capable project consultants are indeed fundamental to the success of a project although this is not always applied on practical cases. The project manager must cope with the consultants and adapt the communication regardless their appropriateness. A project manager is the key person in the project team, and his or her capability and working style largely determines the way the other consultants operate, and to a great extent determines the fate of a project (Chinyio & Olomolaiye, 2010).

The Client

The client is the initiator of all construction projects. As the initiator, the client has a purpose and reason for fulfilling the project. The clients' requirements are in general vital to the project success as the project will success if the client is satisfied. Usually the client finances the project, determines the objectives and scope of the project and specifies the functions that the project outcome should satisfy (Chinyio & Olomolaiye, 2010). The client's needs must be determined, clear and structured throughout the project for the project manager and the contractors to achieve the goals. To accomplish all parameters the client can consult help, usually from the project manager.

In general, there exist two kinds of clients. These two are the public client and the private client. Private clients normally focus on the financial aspect and the economic returns of a project, while public clients need to consider the interests of the public. (Chinyio & Olomolaiye, 2010). The state can be considered as a public client, with the interest of the public to fulfill. Public buildings as schools and hospitals are usually initiated by the state as a public client. Common for these two clients are usually the lack of interest in the construction work. The interest is focused on project success, economically and functionally. Therefore, the client does not need to communicate with the contractors and only need sporadic updates from the project manager.

There are three different ways in which the contractor is picked, based on low-bid selection, best-value selection and qualification-based selection (Koutsogiannis, 2017). In Sweden there are certain rules for client procurement when the state is the client. In this case the contractors are selected based on lowest price rather than quality. This is called LOU (the law of public procurement). This means the quality might suffer, uncertainty might occur and the meaning of good communication increases.

In complex projects, the client appoints a project manager though whom the client communicates. In this case, the project manager will be a single point of contact for the client coordinating the design, construction and other (Fewings, 2013). The client does not want to communicate with the contractors directly.

The Contractors

The contractors, sub-contractors and suppliers are the other key internal stakeholders during the construction phase. During construction the main contractor will have a leading role (Fewings, 2013). Therefore, it is important that the requirements and visions from the client is made clear for the main contractor. It is the project manager's role to communicate and clarify the visions for the contractor. The main contractor has the responsibility of the sub-contractors and the construction work. If any problems occur, it is important that these are communicated to the project manager to avoid misunderstandings and failures of the client's requirements. Regular communication between the main contractor and the project manager is necessary to ensure project success.

Problems and uncertainty are in general unavoidable in complex construction problems, although some can be avoided. The contractors order the materials and equipment and in a boom the duration of deliveries might be long. The communication aspect in this problem is what the contractors need to know when to order. The communication in the beginning of the project must be clear and decisions must be made to have foresight of delivers. The client must have clear visions and a time frame to avoid this misunderstanding.

According designers and contractors in Sweden there exists a problem of underbidding to get work, relying on client changes and rework to make a profit (Winch, 2010). This is based on LOU, the contractor has to keep the price low to win the procurement process. This complicates the communication where the relation already from the beginning can be seen as dishonest. What is not included in the procurement is not the responsibility of the contractor. Therefore, it is important with clear accountability to ensure project success and to simplify the communication along the project process.

2.2.2.2 Stakeholder Planning in Construction – Implications for communication

According to Furnham (1997) informally defined groups are characterized by a spontaneously developed structure, which has dynamic qualities. The informal groups are in general not set up in forehand and have a natural composition. The informal groups have the

ability to change structure frequent, depending on the situation. Contrary to informal groups there is formal groups that have a planned structure which appears to be more stable in nature. Among construction, formal groups are dominating, and the project teams are usually composited based on different reasons. The formal groups, usually called the *project teams*, include different stakeholders.

All construction project teams contain stakeholders. Namely, all involved parties can be counted as a stakeholder. A stakeholder is affected in some way by the project achievements and has either an economic, technological, social or political influence in some way (Dainty et al., 2006). The general perception is that a stakeholder has a financial interest in a project, although Mintzberg (1995) reckons that stakes can have cultural or political origins too. It is reasonable to state that the different stakeholders have different interests and level of influence on the project. It is also argued by Milosevic (1989) that project stakeholders can be viewed as a network in which the actors interact with each other and exchange information, resources and results. This prerequisite that continuously communication between the involved parties occur.

All involved stakeholders have different specialties and interests that will contribute to the construction project. Since the stakeholders' interests often are interdependent, conflicts may arise in some situations. In a complex construction project, one stakeholder might have the focus on construction and utilize a site area, including cutting down all trees on it. On the other hand, a green group might point on the need to protect the natural environment. This situation demands clear stakeholder management to clarify as many risks and conflicts as possible, identifying the project goal and ensuring goal commitment among stakeholders in the implementation process (Leung & Olomolaiye (2010).

As mentioned earlier, the construction projects differ in size and are in general much bigger and more complex than other projects. This contributes to an increased number of stakeholders, both in the project team and outside of the team. Depending on the size of the project, a different amount of resources is therefore included. Construction projects handle both financial and human resources. The capital that finances the project comes from the client and its financiers. The human resources are supplied by the firms on the supply side of the construction industry, the entrepreneurs and contractors. Resources, equipment and materials are supplied by construction firms and firms outside the industry (Winch, 2010). Each project requires a number of human resources, the larger the project the more resources. The group of human resources is often called *the project team*. Most resource bases will be supplying resources to more than one project at once and can find themselves juggling resources between projects (Winch, 2010). This might contribute to ineffectiveness, time constraints and misunderstandings.

Stakeholders can be internal or external to the project team or project scope (Sutterfield, Friday-Stroud & Shivers-Blackwell, 2006). The internal stakeholders are included in the project team or providing resources to the project of some sort. External stakeholders are affected by the project but not directly included in the core of the project. Among these

internal and external stakeholders, the primary stakeholders can be defined as those with a closeness to the core business of the organization, else is secondary (Dainty et al., 2006).

As stakeholders have claims, rights and expectations, they must be managed in each project to avoid any of their influences that could be contrary to a project manager's objectives (Newcombe, 2003). Stakeholder management involves identifying and classifying stakeholders and it is up to the project manager to perform this identification, if aiming for project success. As mentioned, the stakeholders might not have the same interests. Therefore, it is important to acknowledge the most important stakeholders, the key stakeholders, to prioritize their interests. The goal is to identify the primary stakeholders and produce a communication plan to keep them satisfied. Nutt (2002) conducted analysis of over 400 projects to determine the cause of projects failure and concluded that half of the failed decisions in projects were due to a lack of engagement with stakeholders who had a vested interest in the outcome. As seen in *Figure 2.4*, the communication plan is based on the *power* and the *interest* of the stakeholders.

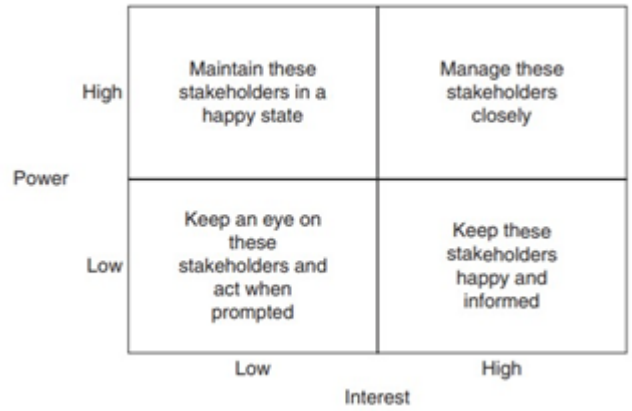

Figure 2.4. Management of Stakeholder Interests. (Chinyio & Olomolaiye, 2010).

To maintain the stakeholders satisfied it is important to understand the stakeholder's stake and expectations. It is vital to follow the stakeholder mapping process and to develop suitable communication strategies, for every stakeholder. Once the communication plan has been developed, the strategy relating to the *communication of 'who, what, when and how"* must be followed and the information flow planned for important stakeholders must be conducted. It is via good communication that differing stakeholder requirements can be addressed. The choice of which communication medium is the most appropriate will depend upon the nature of the information and recipient, and the outcomes desired from the communication. Monitoring the effectiveness of this communication effort, and providing essential data for corrective actions if required, is equally important (Chinyio & Olomolaiye, 2010). Problems and uncertainty caused by stakeholders that contribute to project failure include poor communication, inadequate resources, assigned to the project, changes in the scope of work, unfavorable news about the project in the press, and negative community reactions to the project (Chinyio & Olomolaiye, 2010).

3. Methodology

In this chapter the methodology used for conducting the thesis is presented. The chapter starts with introducing the company where the research has been conducted. Then, the research approach and researched method are presented, followed by the research design, which comprises a review of literature study, interviews and observations.

3.1 Company X

The empirical part of this paper is based on interviews and a case study on company X, which is a Swedish consultancy firm with focus on project management within the construction industry. Company X had an interest in investigating their coordination of communication and how to improve it, therefore the company was chosen for this study. The company has about 310 employees and 14 offices, whereas 12 of them are located in Sweden. Company X offers a number of services in different areas such as buildings, infrastructure, economy, inspections, energy, environment, installation and so on but the overall focus of the company is to plan and lead projects.

The vision of the company is to be the leading project management company on the market by being the first choice for both their client and employees. Company X has three key values that are meant to serve as a guide for the daily work and these key values are: cooperation, commitment and professionalism. In practice, these key values are intended to predicate that they are supposed to cooperate to solve problem, share knowledge and reuse smart solutions, as well as listen and understand the wishes and expectations of the customer and also be open and reliable in the relation with the clients and value the deliveries. The company is also ISO-certified; they have been certified with ISO 9001 since 1996 and ISO 14001 since 2001. The focus of ISO 9001 is on quality management whereas ISO 14001 focuses on the company's environmental responsibilities.

All observations collected for this thesis are drawn from Company X´s office in Gothenburg. This particular office is specialized to offer services within construction and environment. There are about 30 employees working at this office, whereas one third of them work with environmental issues and the rest with general construction. The employees within construction have different backgrounds but many of them have a practical background from the construction sector, or some other sectors closely related to construction. Company X's employees are mostly hired by a client to act as project managers or construction site managers in different projects but could also be hired to do other things, like inspections for example. The typical projects are small to medium-sized, including both construction and refurbishment endeavors.

3.2 Research approach

In general, research can be divided into three general approaches; deductive, inductive and abductive. Deductive research approach and inductive research approach has been the main options for a long time but recent years the abductive research approach have become rather popular (Bell & Bryman, 2015). In the deductive approach is a hypothesis based on existing theory developed first and then is this hypothesis tested through some kind of analysis and can be confirmed or rejected. The inductive approach is performed the other way around; here are the data gathering and analysis completed first and then relevant theories are developed based on this. Both of these approaches have some weaknesses and the third research approach is proposed to overcome these. The weakness of the deductive approach is that is not clear how to select the theory that should be tested and the weakness of the inductive approach is that there will never be sufficient amount of empirical data to build a theory. The abductive research approach is proposed to overcome these limitations by moving back and forth between theory and empirical findings to try to find the best explanation to the origin puzzle (Bell & Bryman, 2015).

For this thesis the abductive research approach was chosen because of the benefit of staying open to new findings throughout the whole process. Alongside this, we conducted our exploration by going back and forth between literature and empirical findings as the process unfolded.

3.3 Research strategy

Research can mainly be divided into two different types of strategies; quantitative and qualitative (Bell & Bryman, 2015). The choice of research strategy will affect which kind of research methods that will be used for data collection. Quantitative research methods are based on the gathering of numerical data whilst qualitative research methods are based on the gathering of data that contains written or spoken word and images. Basically quantitative research methods focus on measurement and tests whilst qualitative research methods focus on exploration and understanding. Some examples of qualitative research methods are case studies, participant observations and so on. These methods can give a describing explanation of a setting or practice (Nayak, 2015). Usually one or the other strategy is chosen for a report but there is also a possibility to combine them and use mixed methods research. For this thesis the qualitative strategy was chosen, which also is suggested by Bell and Bryman (2015) to be best suited for an explorative approach this thesis has. This strategy promotes for focusing on interviewing and observing what seems most appropriate for answering the research question instead of focusing on just the quantity of interviews and observations.

3.4 Research design

According to Bell and Bryman (2015) data collection is central for all research projects and it can be done using both structured and unstructured methods. To be able to answer the research question data needs to be collected and analyzed. In this report the data is collected through a literature review, interviews and a case study. More details about these different methods and how they been used in the report is described below.

3.4.1 Literature review

The theoretical framework is a main part of the report on which both the result and discussion is based. Establishing a theoretical framework, concerning the topic at hand, provides a knowledge base on which the research approach can be grounded on (Bell & Bryman, 2011). To create a theoretical framework for the study a literature review has been conducted. The literature review is essential as a foundation for the subject as well as for the authors to get knowledge and understanding about the topic. Therefore, the literature review was conducted at the start of the report writing and followed throughout the writing period.

The literature review is based on scientific articles, journals and books. The academic search engines that was used for finding the relevant literature and conducting the literature study were the Chalmers Library and Google Scholar, both based on the database SUMMON. The articles and books were found by using the english keywords: *communication, construction, coordination, stakeholders, and project management.* At first, the main focus was at finding detailed sources about communication in construction and communication in general to get a understanding about the subject. The most relevant articles and books were chosen based on the title and the number of citations, for further investigation of relevance. As a second step, the abstract, introduction and conclusion were read to evaluate if the literature was of relevance for the study. When concluding the relevance the books and articles were read in detail and used as references for the theoretical framework. The literature review was conducted between January 2019 and May 2019.

Reliability, replicability and validity are presented as criteria for assessing the quality of business research (Bell & Bryman, 2015). To ensure that the theoretical framework is reliable and used as a valid base for the discussion, a diversity of references has been used. Literature with different authors, from different countries and published at different years to broaden the perspective and strengthen the reliability of the theoretical framework.

3.4.2 Interviews

In this study, five interviews with project managers at Company X were conducted as to offer a basis for our exploration. The interviewees were all chosen based on their job title as (senior) project managers in construction. During the writing of this report, the majority of time were spent at the office were the interviewees work and a trustful relationship were

developed between the interviewers and interviewees. As a complement to the interviews with the project manager's, interviews with one public client and one property manager were also conducted. These interviews investigated the communication from different perspectives and their communication to the project managers. All of the interviews were designed to be semi-structured. Semi-structured interviews means that the interviews are prepared and structured in forehand but with room for flexibility, where the interviewee has the ability to develop ideas and speak widely about the subject (Nayak, 2015) The semi-structured interview allows the researcher to keep an open mind and not strive towards a specific statement with demarcated questions (Bell & Bryman, 2015). Therefore, all interviews were based on a semi-structure with the purpose to give the interviewees the freedom to explain their thoughts and think freely. This approach provided the interviewees with the freedom to focus on areas of particular interest and expertise, occasionally moving away from the prepared questions, and the interviewers had the possibility to respond with questions to get more depth according relevant areas. See the complete interview sheet in *Appendix I*.

The questions were sorted into three general themes parts, were the first theme consisted of information about the report and general questions about the interviewee. The second theme included questions about the interviewees' projects and communication with involved stakeholders. The third theme was focused on communication medias, forms, problems and improvements in construction projects. All the interviews were recorded on a mobile phone device and the answers to the questions were summarized afterwards, the result of this is presented in Chapter 4.1.

3.4.3 Observations and informal conversations

The original plan was to follow one of Company X's projects and the project manager of that project as a case. The project in question was a reconstruction project where office space would be turned into school facilities and the communication between the involved stakeholders, such as the project manager, the client, the contractor and the property manager, was supposed to be studied. Due to lack of communication between the stakeholders and different time delays this case study did not turned out as planned. The project was still followed but it did not generate sufficient result to use as a central part of the empirical study.

Because of the problem with the case study other methods had to be used to gather empirical data. By having the benefit of sitting at company X's office when writing the thesis empirical data could also be collected by small everyday observations and more importantly informal conversations with the employees as well as attendance at different meetings. This research method is called participant observation and means that the authors can observe and learn about the studied subject by joining the group or organization in their own environment (Guest et al., 2013). Besides from being in the environment there are two other key elements for successful participant observation and that is to spend enough time interacting and also to build a relationship with the participants. This builds a trust and acceptance, which facilitates for observing and having casual conversations with the participants acting as themselves.

Another benefit of participant observation is that it enables the researchers get to know what kind of questions to ask and how to ask them (Guest et al., 2013). This, in combination with the literature review, facilitated for putting together the interview questions for the semi-structured interviews conducted for this report.

In the casual conversations the employees told a lot of stories about different projects and the impact that the communication had on them. By attending different meetings, such as construction meetings, department meetings and other internal meetings, the importance of how the communication is handled could be observed. Findings from these informal conversations and other observations together with the findings from the planned case study constitute the base for the second part of the results in the report.

By using different methods, such as interviews, observations and casual conversations, the subject could be studied from different points. This is called triangulation, which means that several different methods or data sources are used to develop a broad understanding of the subject (Carter et al., 2014). Besides from getting a comprehensive understanding of the subject, the use of triangulation also helps to validate the empirical results since the subject is studied from different points. There are four different types of triangulation and these are: method triangulation, investigator triangulation, theory triangulation and data source triangulation. In this thesis was the method triangulation used, which means that several different methods of data collection is used to investigate the same subject. This type of triangulation is often used in qualitative studies according to Carter et al. (2014).

3.4.4 Reflection of study

The study has combined different methods for the ability to present a reliable result. Although, only a few interviews have been conducted and therefore the interview results might not be seen as general results. The interviews combined with the case study makes the result more reliable. The study has been conducted at Company X and therefore the result should be seen as valid for Company X and should not be applicable to a random company. The conducted case study included an observation of an ongoing project. The main goal was to focus on this project, although due to lack of communication from the contractors, communication issues among the project that lead to delays, it was difficult to present the project as central for the result.

4. Result

The following results are from an empirical study based on both the case study of company X and also interviews with mainly employees at company X but also clients that the company works with. The findings from the interviews are presented first, followed by the observation findings.

4.1 Interview Findings

This chapter aims to summarize the conducted interviews and document the findings. A total of seven interviews have been carried out, following the same question structure. How the interviews have been performed is described further in Chapter 3.4.2. Five of these interviewees were project managers and the first three parts of this chapter will analyze these interviews. The five interviewees that these three part are based on are all active representatives as *Project Managers (PM)* at company X. The focus is to describe the general perspective on communication from the role as a project manager, and not the individual, and therefore the interviewees will further on be referred to as PM1, PM2, PM3, PM4 and PM5. The last part (4.1.4) focuses on the last two interviews, one with a client and one with a property manager. These are two stakeholders that some of the project managers works with and will thereby provide another point of view of how the communication is perceived from their perspective. To make also them anonymous they will be referred to as P1 for the client and P2 for the property manager. All interviews were performed in Swedish and the following citations have been translated.

4.1.1 Involved Stakeholders and Stakeholder Communication

According to the interviewees, there are a few main stakeholders involved in a construction project. To identify the essential stakeholders is vital for project success. After identifying the stakeholders, a stakeholder communication plan should be developed. This is confirmed by PM5 that is stating that *"It is important to identify which stakeholders that are involved in the project, that they receive the correct information and that their role is clear, so they don't expect to influence everything"*. The interviewees were asked to identify the stakeholders involved in their projects, with whom they communicate and their relation to them. All the interviewees mentioned an important communication with the client. The relation to the client, the project owner, is of high importance for project success. *"The clients are important, the clearer they are with what they want the easier it becomes to be project manager" (PM4)*. The company where the interviewees work is involved in projects with both public and private clients. PM5 mentioned a difference between public and private clients, where public clients have a principle of public relation and private clients might make their own rules. According to PM3, working with private clients makes the work both easier and quicker. Although, PM1 mention an uncertainty when working with new private clients,

where completely new relations might occur where public clients often have framework agreement with contractors.

PM1, PM2 and PM3 mentioned that the amount of communication towards the client completely depend on the client. PM3 stated that some clients are confident in their role and with the relation to the PM and some client might have a need for checking constantly. *"The better relation, the less communication is needed" (PM1).* If the relation to the client is staunch, then the communication flow is trustful and more unstructured. The main contractor is another stakeholder of high importance. PM4, PM1, PM2 and PM3 state that the main contractor is equally important to communicate with as the client to achieve project success. The amount of communication is decided similar as with the client. *"Is there a main contractor you work with continuously and trust, silence is a good thing. Is it quiet – everything floats! If there is a new contractor, you will have to communicate daily and get updates." (PM1)*

Another stakeholder involved in the project is the subcontractor. PM1 and PM4 mentioned a continuous communication with the subcontractors, but PM2 and PM3 had the opinion that the communication with the subcontractors should occur through the main contractor. According to PM2, it is important to only communicate with the accurate person in the communication plan, otherwise it can become messy so the communication should follow the responsibility chain. Although, PM3 mentioned that it is important to communicate and collaborate in the design phase, the planning stage, between the different actors such as pipe layers and electricians. It is important to delegate a design manager during the design phase to combine the subcontractors.

The end-users of the project are also included as a stakeholder and are mentioned by all the interviewees. *"At a school there are principals and teachers with strong opinions. A client with needs and end-users with requests has to cooperate and communicate." (PM4)* All interviewees agreed about the importance for the client to understand the needs of the end-users. The client is responsible of *cost and time* but must fulfill the purpose for the end-users. *"A lot of the communication is linked to time management and financial control." (PM5).* Although, the quality is important for the end-users. The end-users are the responsibility of the client even though the PM often have to communicate and handle the end-users by themselves (PM2, PM3).

4.1.2 The process and planning of communication

Telephone calls, emails and meetings are the three main forms of communication according to all five interviewees. PM4 usually communicate through emails and meetings. PM5 prefer using emails and formal writing communication, such as protocols. The communication can be both formal and informal through all these channels, but the general perception is that the concept of meetings usually is formal. PM1, PM2, PM3 agrees that telephone calls are the best way to communicate with the motivation that it is easy and quick, although emailing is

the dominating communication channel. *"I usually call, it is a lot of mailing. There can be so much irritation and many people express themselves so wrong when writing. Many people can write much more when they're not face-to-face." (PM3).* PM5 also talks about misunderstandings when emailing in an informal manner and the difference in language. In construction there is a unique language at the construction site that differs from the academic language and therefor clarity is more important (PM5).

PM4 is of the perception that formal meetings is the best channel for information and is skeptical to the increasing use of telephone calls. *"You don't make any important decisions by telephone, you have to be able to go back and derive to the information." (PM4).* The problem with communicating using telephone is that the information is not saved or documented. This is a common denominator by all the interviewees, although that communicating by telephone is described as easy and preferable in general. If something important is determined by telephone, you must ask them to email what we have agreed upon, must always be written for juridical reasons. (PM1, PM2, PM3, PM4, PM5). All interviewees agree that you always should be able to derive to important agreements in writing. This includes agreements made during site visits and meetings. *"If you talk about something at construction site, you ask them to write an email about it, get it confirmed." (PM3)*. In summary, everything in construction is following contracts and agreements. Trusting relationships can not be presumed, everything must be documented. *"If it is not on paper you can say definite no, we have not agreed on that." (PM1)* As mentioned in the literature review, documentation and administration is a great workload for project managers and is time consuming. Although, in Gothenburg there is clear documentation and protocols to follow to make it easier (PM3).

The planning and coordination of communication differs among the project managers. PM1 talks about knowing the needed amount of communication by experience and that the communication is quite flexible. The planning of communication is done in the beginning of the project. *"If you are uncertain of an entrepreneur in the beginning you can decide that you are heard weekly, for example, that you want a report every Friday." (PM1)* PM2 is of the same perception, that you get a feeling about the needed amount of communication during the project. PM2 mentions that the communication must be continuous, although there must not be too much communication. Communication is time consuming and it should be clear. PM3 does not agree with this statement. "*Clarity is important, you can never have too many meetings or reconciliations." (PM3)* Although, PM3 agrees with "feeling" how much communication is needed. PM4 agrees with planning the communication in the beginning of the project, but more structured. "*One tries to lay a structure, early. If you know that "the project starts here and ends here" then you plan meeting in between, even what should be achieved. It is incredibly important. If problems arise, then you must change the structure. Deadline is usually the most important for the client. You must present it like "here we shall be ready, do you see any obstacles?". (PM4)*

The planning of communication is the same as producing a communication plan. PM5 mentions the importance of implementing a communication plan the planning stage of the

project. It is even more important in larger projects with many stakeholders. *"Most often we consultants get to present a proposal of a communication plan. They can be varied in their layout." (PM5)* There does not exist a general communication plan, not at the company where all the interviewees work, and the client does not present communication plans either. PM3 states that she presents a structured communication plan in projects where there is risk for problems. The communication plan might include weekly letters with updates, continuous meetings and to whom the communication should be sent. In the communication plan the different roles and responsibilities are stated (PM3). *"Clearly who should communicate with whom. Should I be responsible for X? Then I need to communicate with Y." (PM2)*

The base structure in the different projects is the same, *"the process is standardized how to handle buildings in Sweden" (PM4).* According to the interviewees, there is always a start-up meeting and after that there is meetings every week or every 14 days, depending on the project size and complexity. *"The more stakeholders that are included, the more often you need to have meetings." (PM1)* The number of meetings therefore depends on the project size and the constellation of the project team. The client is the main actor to communicate with and continuous meetings will have to be held with the client. "*The building meetings are legally important meetings, where the client and the main contractor are at the center. The idea is that conflicts should be resolved at meetings and not out on the "construction floor", it should be documented." (PM4)* Spending time on the construction site, making site visits and have meetings with the main contractor is a main part of the communication as a project manager according to the interviewees.

4.1.3 Problems and improvement opportunities with communication

All interviewed project managers experience some or more problems with the communication within construction projects. PM1 mentioned two great problems with the communication and all the others mentioned some of them as well. The first is when **there is no communication**. This could be based in that "*The client cannot decide, or the contractors do not communicate about obstacles / changes. (PM1).* PM4 states that it is important that the client knows what he/she wants, if they do not communicate their needs then nothing can be done. Some public clients do not understand the need, their task is to order the construction and finish it, although they are not the end-user (PM4). PM5 also mentions the problem with lack of communication.

The second problem is **lack of time for communication**. *"Communication requires time, most have too much going on at the same time and cannot find the time required for communication." (PM1)* PM3 mentions that the most project managers have about 5-6 projects ongoing at the same time. This is a general problem, where the clients usually have even more projects at the same time. Specially when there is a boom, everyone has too much to do and the contractors do not have to compete for the projects. All the involved stakeholders have too much to do, and the time for communicating is limited. *"Getting engagement from everyone can be a problem, many actors just see a task as a task." (PM4)*

When the time for engagement is limited, the focus is on performing the task to approval and not more. Writing protocols and emails in time is important to get the information written and juridical, although there is often not enough time for this (PM5).

Other mentioned problems with the communication in construction are when the communication is not written (PM1), misunderstandings (PM5) and that you do not learn from mistakes (PM2). *""This has happened before" is a standard comment about problems. There is no well-functioning system for following up projects and no adequate preliminary investigation is done, by comparing with similar projects, to avoid the same problem. Simply, communicate about shortcomings to avoid them in the future" (PM2).* PM5 mentions that there has been follow-ups on some earlier projects, but it is not done anymore. By not following up, how can the same mistakes be avoided in the future?

All the interviewees mentioned some possible improvements with the communication. "*When the communication is structured and regular, this is when it works the best. Important to be as open and honest as possible". (PM5)* Communicating about problems, being structured and clear when communicating is important factors for well-functioning communication. Spending more time on the construction site seems to be another way to improve the communication as a project manager according to PM1, PM2, PM3. *"You should be more at the construction site. Some are hiding a little in the office. Communicate eye to eye is the best." (PM1)* As stated in the literature, eye-to-eye communication is he best way to communicate and this seem to be a general perception among the interviewees as well. In general, the perception is that everyone has too much to do and the stakeholders need more time dedicated to communication.

PM5 was positive to focus on the opportunity to implement a standardized communication program, where all the involved stakeholders in a project communicate. PM4 also mentioned working with a standardized program, not fully focused on communication, such as BIM, to coordinate all the stakeholders from the beginning and avoid misunderstandings. Although, some project managers seemed skeptical to this. *"There are so many aids today, most of the responsibility for well-functioning communication is at the individual level." (PM1)* PM2 and PM3 also mentioned the individual responsibility; it is up to the project manager to make the communication function. The project manager has the responsibility to create a communication plan and coordinate the communication.

4.1.4 The Client & Property Manager interviews

In total, one interview with a client and one interview with a property manager have been conducted. The client works at a public company and the property manager at a private company. The public client is usually involved in the complete construction process, from the pre-study of the construction, the projecting, tendering and construction. The client gets the full view of the project and is usually communicating with all involved stakeholders. *"The boss from LS, own order manager, contractor, mainly construction manager / project*

manager, the end-users, the consultants, more or less everyone." (P1) The client is involved in projects with a duration between 4-7 years and is usually involved in around 5 projects at the same time.

During the *initiation* and *planning* phases of the project, the client is working with specialty consultants and the end-user. The end-users should be responsible for providing the client with a *needs description.* Although, the client mention that they might not know all their needs from the beginning where some uncertainties might exist. The end-users should although sign the building-plan and understand what is going to be done and not be able to make major decisions during construction. When handling communication, the client mentions a communication plan. *"We have a communication plan that is general, which we work after when we have larger projects. Where you decide how the jargon should go and when to inform what." (P1)* P1 work at a public company and therefore the planning of communication is more focused on the society and not so much the involved construction stakeholders.

The property manager is involved in the studied school project and has in that project a bit different role than usual since the client has signed the contract with the contractors themselves. In this project the property manager works almost as a spokesperson for the contractor and thereby becomes an intermediary between the contractor and the clients project manager. P2 says that normally they are acting as a client and thus the ones signing contract with the contractor and that the ways of working differs from this project. Since P2 works at a private company they can freely decide which contractor to work with and thus build a tight and trusting relationship with them. Because of this P2 does not consider having all decisions in writing as important as the interviewed project managers. *"If the contractor calls and asks me about some carpet or painting or something I just get over there and give them an answer on the spot" (P2).* In the school project P2 has noticed that there is a higher requirement on written documentation. Although P2 can understand the need for written documentation since they in normal projects are very careful with the documentation towards the tenants in case there would be some disagreements about prices etc.

The interviewed property manager is involved from the signing of the contract until the project is finished and thereby has a lot of communication with the contractor during the production phase. P2 also has some communication with the tenants, both in the form of design meetings in the beginning of the project as well as continuous communication during the project with updates or if something comes up. In the school project P2 feels that the communication becomes more complicated since there are more actors involved. *"It is hard because the contractor asks me as usual but this time I do not have any answers since I am not the client so the communication goes from the contractor to me and then I have to take it to the clients project manager who in turn has to take it to the client depending on the question" P2.* Despite this P2 believes that the communication works well but that all decision might take a bit longer time.

"In the production I have chosen that the construction project manager takes all the email conversation and then we have reconciliations if there are decisions that I need to take."(P1). The client always wants to be informed, but not involved in every action. P1 is responsible for the building documents and if something is wrong with them, the client has the responsibility to clarify. Otherwise, decisions made should follow the documents. P1 says the amount of communication is about trust and the relation to the project manager. Although, P1 always make sure to follow-up when delegating tasks, to make sure it gets done.

Since the property manager is mainly involved in the production phase a lot of focus is on the communication with the contractor. *"I believe that it is important to be available on the phone when the contractors calls and has questions about something, so I always think that when they call it is an important call so they can move on with the project" P2.* The communication with the tenants on the other hand is something the P2 believes can be improved. A suggestion to improve this communication that P2 has is to implement more structure and planned meetings also during the production. *"I have been thinking a lot of improvements and how to make the tenants feel like they are involved and knows what is going on and do not have to worry about time and so on" P2*. In the school project, where the arrangement is bit different, the client/tenant is invited to all construction meeting and thus more involved in in the project during the production. P2 thinks that this makes this project a bit better in regards of communication with the tenant/client but does not believe that this is the answer for their usual project.

To improve the communication in general with the stakeholders, P1 thinks it is important to be a bit assertive. People have a lot on their table and they have to be reminded and motivated to perform their tasks. Also, be sure to understand the task clearly. "*It is easy that something that is clear to me is unclear to anyone else. I have learned that when someone asks me a question, I usually translate the question into my own words, repeat it and see if I am right, to know what I answer." (P1)*

4.2 Observation findings

This chapter aims to summarize all important observations, including findings from informal conversations, made at company X during the writing of the thesis. The focus of this study was to observe the coordination of the communication from the project manager's perspective and also the consequences of the communication.
This chapter is based on the authors' own observations, therefore this chapter also includes implications and perspectives from the authors, which will be further developed in the discussion.

4.2.1 Communication Plan

While conducting this case study it has become clear that many projects would benefit from establishing a communication plan from the start. The project managers at company X have told several stories about when things have gone wrong in different projects and many of these problem could probably been avoided by the help of a communication plan.

One example of a project with communication problems was told by one of the project managers. It was a small reconstruction project of a hospital department, no major changes were supposed to be done so it was a rather simple and easy project. One part of the project was to adapt the doorframes to new hospital beds, which normally would not be a problem, but due to poor communication the completion of this took much longer than expected. The problem here was the lack of communication with the end-users, which in this case was the hospital staff. The new doors were ordered before checking with the end-users how big they were supposed to be. After this was discovered the end-users was asked about the right measurements and new doors was ordered but also this time the doors were too small. Yet again new doors had to be ordered and this time it finally ended up correct but this was five months after the expected finish date. This is a good example of how wrong even the simplest things can get if there are shortcomings in the communication. This project did not have a communication plan and the end-user was not included as an important stakeholder. If a communication plan had been set up from the beginning, all stakeholders and their needs and responsibilities would have been mapped and the problems could have been avoided.

Another story told by one of the project managers was where the PM got hired in an already started and existing project. The PM quickly realized that the communication did not work at all and decided to establish a communication plan. This way everyone knew who was responsible for what and when and how the communication would take place. After the plan was established the communication started to work again and the project could proceed as planned. This shows the importance of a communication plan and also that, even though it was not established until later on in the project process it is still effective and made a huge difference.

This way of working, namely not implementing a communication plan or other kind of coordination of communication until something goes wrong, seems to be very common. Many of the project managers at Company X has said or implied that they just “go-with-the-flow” in regards of communication. First when problems start to arise, for example that some involved actor does not communicate, some kind of communication strategy is implemented. The strategies that the PMs then implements can include for example requirements on weekly communication and reports or more site visits to control that the process proceed according to plan. These actions usually fixes the problems but one PM told a story of a project where the communication problems had grown so big that the project barely could progress at all. The PM was hired by the client to manage the project and make sure it would get back on track. By the time the PM got involved it was already numerous of conflicts between the involved actors and no one communicated properly with anyone. The PM made an honest effort to try

to solve the conflicts and implement some kind of communication plan to manage the situation and project. But since the situation already was so infected the PMs actions was useless and the PM then choose the leave the project. If the PM had been hired from the start and then also established a communication plan from the beginning the problems would probably never occurred or if they had occurred anyways they could have been handled directly.

The studied school project does not have a communication plan and there is no plan to establish one but it could have been helpful if it had been done, especially in the beginning of the project. This since one problem that occurred in the beginning of the project was that the different persons involved from the client had different opinions about the project. This made it difficult for the PM to know who was responsible for what and whom to listen or talk to. If a communication plan had been established from the start the stakeholders would have been mapped and it would be clearer for the PM what responsibilities and needs all important stakeholders had.

Since most of Company X projects include the same type of stakeholders and are about the same size it is reasonable to believe that a template of a standardized communication plan exists. When asking about this it is stated that neither Company X or their clients have a standardized communication plan, thus the PMs have to create a unique communication plan for every specific project they feel the need for one. The lack of such a template could be a barrier for why the already very busy project managers does not establish a communication plan from the beginning in their projects.

4.2.2 Decision Making

Related to the problem with the lack of communication plan another problem was also detected and that was the question of who has authority to make decisions. In construction projects there are constantly decisions that has to be made and usually the decisions also has to be done rather quickly. For this to be possible it is important to know who has authority to make different decisions. If this is not clear it could arise problems when different stakeholders in a project has opinions that contradicts each other. Thereby it is important that everyone in the project knows who can make decisions and also what authority they have themselves.

The story in the previous chapter about the infected project where the PM choose to leave is a perfect example of when the unclearness in authority caused big problems. It was a large school project with many different principals and a client involved. This was a partnering project so all important stakeholders was supposed to have their say in the project and the architect was invited to a design workshop with everyone. However, during this workshop it became obvious that there were too many contradictory wishes and requirements on the project and not enough information about who actually has the power to decide. This lead to

lots of misunderstandings and dissatisfaction and the client could not make any decisions and when the construction was supposed to start there were still no decisions made. By this time the PM chose to leave the project since there was hopeless to try to coordinate the project and the communication when the client themselves did not know what they wanted. This example shows the importance of the client themselves knowing what they want and also that they must know which other stakeholders that should have the possibility to influence and make decisions about the project. There should be clear to everyone from the beginning who has authority and not, otherwise it could end up like this project.

Another example of when the unclearness of power and authority was also mentioned in the previous chapter. This was in the studied school project where it, especially in the beginning, was confusion about who has the authority to make decisions. This led to some minor discussions because the different involved people from the client did not agree on some things and the PM did not know whom to listen to. Depending on whom from the client that the PM talked to there was different answers and orders and everyone seemed to believe that they had the right to make the decision. This problem might have been caused due to that the education company has grown a lot in a very short time and have thereby not yet established clear guidelines on who has authority to make what decisions. The problem that causes for the PM can be avoided by in the beginning of a project establish who has the power and authority to make certain decisions. This way everyone knows who is responsible for what and if there is an issue, they also know whom to turn to.

4.2.3 Communication practice in meetings

During the case study several meetings have also been attended and observed. There have been many different kinds of meetings, such as project meetings, construction meetings, department meetings and so on, and both the time and the level of formality has varied. When talking to the project managers it seems that most of them agree that meetings is a good form of communication. At meetings all concerned stakeholders is present and questions and issues can be dealt with directly and it also provides a check up on the status of the project. Even though the project managers seem to prefer meetings they sometimes experience that some other actors, mainly the contractor, is not as positive to them.

A general observation made at these different meetings is that it is good to have a set agenda for the meeting and also that someone should be responsible for taking notes. In meetings where this was clear from the beginning things went smoother and all relevant issues was discussed and handled according to the protocol. On the other hand, in meetings where there was no set agenda the issues was brought up whenever someone at the meeting recalled them and the meeting thereby became a bit more messy and was more time consuming. All project managers also agree that it is very important to have all decisions in some kind of written form so they can be referred to. If no one is responsible for taking notes there and instead everyone makes their own notes of what they believe is important there is a risk of things getting missed.

Another observation from the attended meetings was that it is important that the meetings are adapted to the purpose of the meeting. Things that should be considered are for example where the meeting should take place to who should attend. Meetings can be held at different offices or at the construction site and who should be present depends on what issues or matters that should be discussed. This leads back to the importance of knowing the agenda for the meeting in beforehand since that implies what is important and who needs to be present. Generally is everyone involved in the projects very busy and it could be hard to find time that fits everyone. Because of this it is extra important that the meetings contribute to the progress of the project, one hour of a well handled meeting could save a lot of time emailing or calling but a poorly handled meeting could just be a waste of time where nothing gets decided or resolved.

An example of how meetings could be adapted to the purpose was observed in the studied school project. In one of the earlier meetings when the bid and contract was supposed to be discussed the meeting was held at an office and only the most important actors, such as the client, the PM, the contractor and the property company was present. This environment facilitated for a good meeting where drawings and computers easily could be accessed. The problem here was that there was no set agenda and the participants had not read the documents provided by the PM beforehand. This made the meeting a bit unorganized and not as effective as it could have been. Another meeting where the contractor wanted to review the blueprints to know what to demolish was held at the construction site with the contractor, the PM and the client. The benefit of having this meeting at the construction site was that the blueprints could be compared to the actual building and because of this several errors could be detected. Since these errors were detected before the actual demolition and construction had begun a lot of time and money could be saved.

4.2.4 Relations

The construction sector is very dependent on humans and human behavior and this is also something that became evident during the case study. Both from own observations and thru stories told by the project managers it could be concluded that projects and especially the communication in them is dependent on relations between different actors. Since all humans are unique are also all relations unique and have to be handled in different ways. The project managers adapt their communication to the specific actor depending on what seems best suited for the specific actor and situation. All project managers seems to agree that all relations are individual and thus should also the communication be handled in different depending on the person and the relation. If there is a client or contractor that the PM has a previous relation to they probably know how the communication should be managed but with a new actor this could take time figuring out. Because of this the project managers prefer establishing long time relationships with the clients and contractors and continue to work with the same group as much as possible. Although, the LOU can many times prevent this, as the contractor with the lowest offer will usually get the contract even though another

contractor might have better functioning relationships and higher quality. One way of counteracting the lack of established relationships, since this consultancy firm usually works with standardized projects, is by documenting results and lessons from previous projects and adapt them to new projects and actors. This way several communication mistakes might be avoided.

In the studied school project examples of both new and old relationships could be found and how that affected the project. The property company and the contractor had as mentioned earlier already an established relationship but the client and PM had no previous relationship with them. At the meeting where the bid and contract was supposed to be discussed the contractor presented their bid as a sum and not what different part it was made out of and how much each part was budgeted for. The client then requested to have the specified calculation and the contractor replied that they would provide it the next day. The contractor did not provide it the next day and it would actually take several weeks before the client and the PM got the specified bid. Since this was a new relationship for the PM it was hard to know how the contractor handled their communication and that the problem with lack of communication would occur again. When the contractor finally provided the specified bid the PM and client found some posts that they wanted to have revised to lower the price and asked the client to provide a new updated bid. Once again the contractor stopped communicating and also this time is would take a long time before they provided the updated bid. This problem with lack of communication could be explained by the boom as it makes contractor firms very busy and the lack of time is obvious. An earlier established relationship between the PM and the contractor might have favored the communication between them or at least the PM would know of the problem with lack of communication. Because of these delays there was still no signed contract with the contractor in the beginning of April when the project was supposed to start. But because of the good relationship between the property company, which is responsible for all construction in the building in question, and the contractor the demolition could start in April even though the contract was not signed yet. This shows the importance of having a good communication and relationship with the involved actors.

5. Discussion

In this chapter a discussion of the result in relation to the theoretical framework will be conducted. The basis for the discussion will be the purpose and the aim of the report, which was to investigate how the communication is coordinated in a construction project, from a project manager perspective. The aim was also to examine what changes could and should be done to make it more efficient. The construction projects are unique in form of their complexity. As presented in the theoretical framework, the non-homogeneous project groups, the size and the different geographical positions of the projects contribute to an unordinary project environment. Therefore, investigating the coordination of communication in the construction sector is of interest and it is incomparable to other projects.

During the literature review, the case study and the interviews a lot of interesting findings have been made. The discussion will further on be divided into four parts were the main findings will be presented. The first part investigates the problems with communication that have been found and why the problems exist. The second part states the importance of identifying stakeholders. The third and fourth part investigates implementing a communication plan as well as other possible improvements to create a well- functioning coordination of communication.

5.1 Problems with communication

A distinct common denominator when comparing the theoretical framework and the empirical study is the perception that communication among construction projects is known for not being well functioning. Challenges regarding communication are often being related to delays as well as budget overruns. A number of problems have been found and these are strikingly similar regardless of looking at the current literature, the results from formal interviews, or the informal stories and observations. The main problems seem to be: *lack of communication altogether, no time for communication, unclear responsibilities, unstructured communication coordination, misunderstandings, not learning from mistakes and juridical problems when communication is not written.*

It seems to be difficult for the client to understand the needs of the project and communicate these to the project manager. It is important that the client understands the needs of the project, for the end-users, especially when the client is not the end user. Not only understanding cost and time management but also quality. For the client, the most important parts for project success are usually the cost and time constraints and in a construction project, according to Dainty et al. (2006), this means budget and delivery time. Questions regarding scope and quality are not equally important for the clients and therefore it is important to communicate the needs in an early project phase, either the initiation phase or the planning phase, as Parker et al. (2012) states. If the client does not communicate with the end-users then the uncertainty might increase when constructing the project in the execution phase and the project manager will have difficulties to coordinate the project. The

understanding of the scope is a part of the planning phase, according to Parker et al. (2012). This is reflected in the results of the interviews were all the project managers emphasize the importance to involve the client and the end-users in the communication already at the early projects stages in order to clarify the needs. This is also shown in the observations, one PM described a hospital project that was affected by problems, as a result of not involving the end-users from the beginning. It is reasonable to state that projects with undefined needs is difficult to execute and usually something goes wrong.

Although, this might be connected to the heavy workload that the clients need to handle, consisting of many different projects. The observations showed that the involved stakeholders often have a lot to do. Winch (2010) confirms that most stakeholders will supply resources to many projects at the same time. With a lot of projects ongoing it might be difficult to devote the time needed in the planning phase and really understand the project needs, as well as having time for communicating. With many ongoing projects at the same time, the time spent on administration increases for the involved parties, including the PMs. It might be difficult for the project manager to spend a lot of time on the construction, when handling many projects and administration. This limits the possibility to communication face-to-face, which is a better alternative according to the literature and our findings. Decreasing the workload might be difficult without calculating with more working hours on each project, with marginal for communication.

Although, the procurement law called LOU predicates the PM and the contractors to keep the price lower and therefore not calculating with enough working hours among the projects and instead take on more projects. The interviewed public client was skeptical to the LOU. Demands have to be made during the procurement process, although it is not easy when following the LOU, and long-term relationships are difficult to create. In another case, when there is a boom, the contractors and the PMs might not have to compete about the projects. The importance of good communication decreases and they don't need to be quick in communication, they are still assured the project. This might be better in the perspective that they don't need to keep the price low with the help of dishonesty. As mentioned in the literature, all stakeholders have different agendas. Not communicating might acquire from hidden agendas, such as a contractor might not want to reveal all details to remain competitive. These agendas prevent an open and honest communication.

When looking at how to communicate, face-to-face seems to be the best one according to Chinyio & Olomolaiye (2010) and the interviews. Although, documenting the communication is important in a juridical perspective. All communication that is related to the project must exist in written form. Otherwise, it can be stated that certain communication and decisions not have been made. In that matter, telephone calls and face-to-face communication is not completely reliable. It might be effective, but afterwards it must be documented and confirmed in writing. Otherwise, it can be used against the involved stakeholder. The interviewed PMs seemed to have no trust in the contractors and told about cases where the communication not had been documented and it had been used against them. A problem with communication in construction is therefore the juridical aspect, everything

must be written in the end. Although, according to Dainty et al. (2006), non-verbal communication might hinder successful communication when handled poorly. The written communication must therefore be clear and transparent to avoid misunderstandings.

5.2 Identifying Stakeholders

Identifying stakeholders is important among construction, mainly because of the temporary project teams. Working with different stakeholders in different projects increases the importance of identifying the stakeholders in the beginning of the project and develop new relations continuously. The involved stakeholders are usually not connected through established relations instead they are involved in the projects based on competences, specialties, tendering and contracting. The amount of stakeholders in a construction project might vary a lot because of the complexity of the projects, therefore it is important to identify the stakeholders in the beginning of the project. Their level of importance should be based on their power and influence on project success according to Chinyio & Olomolaiye (2010) and thereafter the amount of communication to them should be determined. The amount of communication should include who should be informed about what, from whom and when, according to the literature. Leung and Olomolaiye (2010) also mention the importance of clarifying the project's goals and commitment to the stakeholders from the beginning.

The diversity of stakeholders is distinct, and therefore it is important with stakeholder mapping in the beginning of the project. Developing a stakeholder list will clarify the roles of the stakeholders and their responsibilities, which is described in the literature. As seen in the observation, for projects where the stakeholders not have been identified and included directly, problems have occurred during construction. Sometimes the end-users are important to involve at an early stage to understand the needs of the project. Although, in other cases the end-users should not have the ability to affect too much or too many unprofessional opinions might be involved and a decision cannot be made. The observations highlights two perspectives, one case were the end-users were not included and the construction went wrong and another case were too many opinions from the end-users lead to delays and impossible decision making. Therefore, it is important to determine the role and influence of the stakeholders in the beginning of the project. According to the interview with the client, the end-users should provide a need description before the construction phase start, although they should not have any rights to make decisions during the execution phase of the construction. It is important to make this clear for the end-users at an early stage.

Determining the responsibilities includes stating who should do what and when. This includes the decision-making aspect where dividing responsibilities is important to prevent that the stakeholders expect to influence all decisions. According to (Dainty et al., 2006) all stakeholders might not have vested interest in overall project success. It is therefore important to clarify responsibilities in case of hidden agendas and to ensure project success. This will most likely make the communication easier, where discussions about influence or responsibilities will be prevented. Stakeholder management is important to implement to

avoid risks and conflicts. When analyzing the observations and interviews, this stakeholder mapping to avoid risk and conflicts is usually not conducted and therefore the projects might encounter problems.

A general perception from the interviews and observations is that the better relation between the stakeholder and the PM, the less communication is needed. Who communicates with whom is usually clarified in the beginning of the project, although what to communicate about and how often is depending on the project and the stakeholder's relation to the PM. This makes the communication depend on the stakeholder relations and not on the actual project needs. In one specific project in the observations, the construction started before the juridical documents had been signed. This is based on reliable relations and trust. Although, who is responsible if something goes wrong? That is not clarified. Also, the communication seemed to have flaws, where the client had difficulties to understand the needs and the contractor avoided to communicate about their calculation. As mentioned in the literature the stakeholders might have different interests (Dainty et al., 2006). These individual interests might affect the communication and that happened in the observed project. Starting a project based on trust without juridical documents involves a risk. Documenting decisions and responsibilities is important in a juridical manner. This is mentioned in all the interviews, that written decisions is legal evidence and if juridical documents not exists, it might be used against the PM.

5.3 Implementing a Communication Plan

The interviews and observations have investigated how the communication is coordinated in construction projects. Neither Company X nor their clients have a standardized communication plan that is implemented in the projects, according to the interviews. Although, the interviewed client stated that they had a communication plan mostly focused on the society around the construction. The amount of communication and the structure of communication are usually determined by how the project is functioning. According to this, it is arguable if coordination of communication only is done when the communication is not working and not as a prerequisite to avoid problems with the communication during the project. Why are the project managers not implementing any communication plan or spending time on coordinating the communication? The reasons for this might be that they do not understand the importance of a communication plan, lack of time or trusting the relations to the stakeholders without a plan.

To make the communication more effective and structured, a solution might be to implement a general communication plan. Even though construction projects are unique and complex, as mentioned in the literature, Company X do work with similar projects from time to time. Their projects are usually around the same size and involve the same stakeholder titles, therefore implementing a general communication plan might clarify and ease the coordination of communication. The PMs then only have to follow the structure of the communication plan and adapt it to the specific project. The communication plan should

follow a structure, based on the findings, of who should communicate with whom, about what, how often and how. If someone is responsible for X they have to communicate with Y, as mentioned in the interviews.

A problem found is lack of time for communication, it is therefore important to follow the communication plan to manage the communication. Also, understanding that communicating is a main part of the project managers' workload. It is important to follow the planned coordination of communication. Some project managers seem to be able to communicate with the subcontractors and some only want to communicate with the main contractor. If the subcontractors regardless of this still contact the project manager, the communication flow is fractional, and the communication might become messy. The accurate information and workload might be maldistributed.

5.4 Possible Improvements

During the interviews, some improvement possibilities were presented. One of these improvements is implementing communication networks. In the literature, the construction industry is described as traditional and showing reluctance towards change (Wikforss & Löfgren, 2007). Therefore, implementing new ICT techniques has been difficult. Although, the interviewed PMs expressed a general positivity towards the implementation of new digital communication systems. These networks would provide a possibility of a more structured communication and in the future, this might be the main cornerstone in coordinating communication.

Another improvement to be made is clarifying responsibilities and needs of the projects. All decisions must be confirmed by writing to avoid juridical problems. According to the interviews it is vital to have all decisions in writing even if they are made face-to-face or by telephone. This involves administration, although documenting decisions and responsibilities is important. Not only documenting during the construction might prevent problems, but also documenting after the project is finished. According to Parker et al. (2012), documenting lessons learned is a part of the *closure* phase. Recording project impacts and documenting lessons learned is mentioned as a critical aspect for project success in the literature. According to the interviews, documenting lessons learned are not usually done. The projects are often unique, although at company X, some of the projects are quite similar. By documenting what has been functioning well among the projects and what uncertainties has occurred or in what way the communication did not work, it can be used in the planning phase of a similar project. The interviewees talked about the level of experience and that the individual has much to do with how the communication is coordinated. Documents and reflections can be used as experience, to guide a PM in the project. Documenting the communication is important to get an understanding of what is working and what is not.

Creating reliable relationships decrease the problems in communication according to the literature. Although, in construction projects it is difficult to create these well-functioning

relationships, especially when following the LOU. According to the client interview, LOU prevents the client from making some demands on the contractors. This might be something that will change in the future and other working-forms will be developed, to create a sustainable project environment, as in many other industries. Although, in general the communication will not always go as planned. Communication is affected by human factors and some individuals have difficulties with communicating. As the interviewed client described, it is important to be a bit assertive, but not in an offensive manner. When being assertive it is important to be thankful and motivating at the same time, telling the stakeholders what a great job they are doing and make the prioritize the project.

6. Conclusion

This thesis aimed to investigate how, from a project manager perspective, the communication is coordinated in small construction projects, mainly at Company X. The project manager is one of the key individuals in a successful delivery of a project, responsible for managing the interests of multiple stakeholders and therefore this perspective is of interest. This thesis also investigates what problems exist with the communication and if there are any improvement opportunities. All the interviews with the project managers and the observations were made at Company X and therefore the conclusions are based on the information from this company only. The findings have shown that the communication is in some way coordinated. The projects always include continuous meetings and communication through different mediums. However, the amount of communication that is needed and who should communicate with whom during the project is not always determined at the project start. Instead, a lot of the coordination of the communication is determined by how the communication is functioning and developing in the specific project. In a project with problems the communication is coordinated more strictly but not as a prerequisite to avoid problems but more as damage control.

This report has shown that there exist problems with communication in construction. The main problems with communication according to this research are *lack of communication*, *lack of time for communication, misunderstandings, juridical aspects* and *not learning from mistakes.* With different stakeholders involved and with many projects ongoing at the same time, it is important to clarify the needs and goals, to make sure everyone understands. Also, it is vital to state out the predicted amount of time spent on communication during the project, preventing that there is lack of time for communicating. Some of the problems might be prevented by implementing more structure to the coordination of communication. The communication is depending on the project manager, to adapt to the current situation and make suitable actions. Sometimes, being assertive as a project manager is important, not being afraid to communicate too much and making sure everything gets done.

Coordinating the communication in construction projects is a complex task because of the uniqueness of construction projects. The projects are not standardized and usually performed at different locations. This involves temporary project groups that prevent long-term relationships from being developed and also unique specifications for every new project. This makes the communication difficult to standardize, although by implementing a standardized communication plan and adapt in to the projects the communication might be easier for all stakeholders. Coordinating the communication must be used as a basis for the project. To clarify the expectations for the involved stakeholders and divide responsibilities. The coordination of the communication must include who communicates with whom, what should be communicated and how often. Although, uncertainties and individual factors will probably affect the communication plan. The complexity of the projects make it impossible to determine the exact level of communication in every project. However, to avoid problems, a standardized coordination of the communication could be made. This coordination should include identifying the stakeholders and creating a communication plan, shown in the

literature and the findings. The amount of communication thereafter will vary among different projects. Creating a communication plan is one opportunity for better communication.

Another improvement opportunity could also be to improve the ICT among the construction sector and implement network systems for the projects. The juridical aspect makes it important to have the communication in writing and for that case, a network system could be a solution to gather all important information and decisions at one place. The network systems might also contribute to decreasing the time spent on communication. All information and communication will be found at the same place and will be categorized, and the searching among hundreds of emails will not be necessary. The communication in construction is lacking due to several different problems. If the found opportunities to improve the communication would be implemented there might be a more effective communication in the future.

7. References

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Appendix

Appendix I - Interview Sheet Project Managers

Part 1 - Introduction

- *Present ourselves:* Our names are Sally Lönnqvist Ekström and Matilda Eriksson. We are studying a master called Design and Construction project management at Chalmers University.

- *About the thesis:* Our aim is to investigate the coordination of communication from a project manager perspective, how the communication is perceived, how it works and if there is any possible improvements.

- *Describe the interview:* Is it fine if we record the interview? It will only be listened to by us and will be deleted in June. The interview will be completely anonymous and you are very welcome to ask questions or refrain to answer. The interview will take about an hour.

- *Tell as a bit about yourself and your working experience. (education and previous jobs)*

- *For how long have you been working at Company X?*

- *What is your role at Company X? (title)*

Part 2 - Projects and Stakeholders

- *What kind of projects are you working with and what are your responsibilities?*

- *Could you please describe a common project and how the communication process looks like?*

- *Is there a standardized communication working-way among the projects?*

- *Which stakeholders do you communicate with in your projects?*

- *With which Stakeholders are you experiencing better communication, if there is a difference? Is this depending on the amount of communication?*

Part 3 - Communication

What is communication according to you?

How are things usually communicated among the projects, by which forms/mediums?

Which communication form do you prefer and which is the most used one?

How does the coordination of communication look like in an common project? Do you use any communication plan?

How does the communication work practical, compared to the planned communication?

What problems are you experiencing with the communication?

Do you have any example of a good/bad communication in a project?

Is there any improvement possibilities when coordinating communication, according to you?

What would these improvements look like?

Do you want to add anything?