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Communication as a Factor Influencing Project Team Success in Delivery Projects

Authors:

Erik Olav Rindal

Magnus Gjærum Berge

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Abstract

There are many challenges to success, and in this thesis we set out to answer how and why project team success is influenced by communication in a project team in delivery projects. The thesis answers the research question with data from twelve informants working on delivery projects for a case company. Through these informants we gain insights into preferences, habits, and challenges to success in projects, communication in teams, and the effect of working in a digital environment. Our findings suggests a close connection between communication and success in the project team.

Project success and project team success is two different things and understanding this difference will aid professionals to accomplish success in projects. Communication skills is important for project team success through common goal-setting, delegate tasks, create engagement, motivate team members, and form social relations within the project team. To be able to do this, different communication methods must be used in different situations, as they differ in effectiveness depending on the context. The connection between communication type and communication context comes from the purpose of communication in a project team, which mainly is sharing information or forming interpersonal relations.

30% of the global economy is project-based and focus on project success and project management increases. Project success is traditionally measured through the Iron Triangle - cost, time, and quality. Project management as a profession has focused on tools for managing these success criteria, and research have been dedicated to find critical success factors for projects, as the failure rate is still not improving. Later years has seen an increased focus on leadership skills among project managers and soft skills such as communication. From our data it is clear that project managers and their communication skills must be seen in close relation to the project team, as the project team is the unit executing the project. Project managers and project team members work jointly to reach goals and objectives, and we found communication to be a central part of this process.

Norwegian Summary

Det er mange utfordringer når det kommer til å oppnå suksess, og gjennom denne avhandlingen søker vi å finne ut hvordan og hvorfor kommunikasjon påvirker suksess i prosjektteamet i leveranseprosjekter. Avhandlingen svarer på dette med data fra tolv informanter som jobber med leveranseprosjekter i caseselskapet. Gjennom intervjuene har vi fått et innblikk i preferanser, vaner, utfordringer til suksess i prosjekter, kommunikasjonen i teamene og effektene av å jobbe i et digitalt miljø. Funnene våre tyder på at det er en tett kobling mellom kommunikasjon og suksess i prosjektteamet.

Det å skille mellom prosjektsuksess og suksess i prosjektteamet kan hjelpe yrkesutøvende å forstå forskjellige måter å oppnå ønskede mål. Kommunikasjonsevner understøtter suksess i prosjektteamet gjennom å skape felles målsetninger, fordele oppgaver, skape engasjement, motivere team-medlemmer og skape sosiale relasjoner i prosjektteamet. For å få til dette må forskjellige kommunikasjonsmetoder benyttes i forskjellige situasjoner, fordi forskjellige kommunikasjonsmetoder er mer effektive enn andre avhengig av omstendighetene. Denne koblingen mellom kommunikasjonsmetoder og forskjellige situasjoner kommer fra formålet med kommunikasjonen i prosjektteamet, som hovedsaklig er å dele informasjon eller bygge sosiale relasjoner. Fokuset på suksesskriterier er ikke nytt, men prosjektarbeid blir stadig mer utbredt.

30% av verdensøkonomien er i dag prosjekt-basert og det fører til at fokuset på suksesskriterier og god prosjektledelse øker. Suksess i prosjekter har tradisjonelt blitt målt etter jerntriangellet - kostnad, tid og kvalitet. Prosjektledelse som profesjon har fokusert på verktøy for kunne håndtere disse suksesskriteriene. Mye av forskningen på emnet har også fokusert på å finne kritiske suksessfaktorer, siden andelen mislykkede prosjekter ikke ser ut til å reduseres. Nyere tid har økt fokuset på lederskapsferdigheter blant prosjektledere, og blant disse ferdighetene er kommunikasjonsevnen sentral. Fra dataen vår finner vi ut at prosjektledere og deres kommunikasjonsevne må ses i tett sammenheng med prosjektteamet, siden det er prosjektteamet som utfører prosjektene. Prosjektledere og prosjektteam jobber sammen for å nå mål og milepæler, og vi ser i dataen vår at kommunikasjon har en sentral rolle i denne prosessen.

Preface

The thesis is written as a dissertation of our master degree within project management. We started during the fall of 2021 with a project thesis to prepare us for the master thesis. Some of the theory we found there is used again in this thesis, as the project thesis is meant to be a guide and assisting the theoretical foundation. Specific work on the master thesis and cooperation with the case company started in the beginning of 2022, and is set to finish early summer 2022.

We are both students at Norwegian University of Science and Technology (NTNU) and studies Project Management at the Department of Industrial Economics and Technology Management, with specialisation in Industrial Engineering. Erik Olav has a bachelors degree in electrical engineering from NTNU, and Magnus has a bachelors degree in military studies, electronics, and computer science from Royal Norwegian Naval Academy.

The process have been both educative and rewarding. We have learned about how a project manager can use communication to influence success, which is close to the topic of the thesis, but we have also learned how communication can be used to increase success in other aspects of our lives such as handling personal conflicts or explaining complex concepts. However, learning can pose a challenge, and we would like to thank the people that have been assisting us this period.

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Acronyms

GDPR General Data Protection Regulation.

MRT Media Richness Theory.

NCRD Norwegian Center for Research Data.

NTNU Norwegian University of Science and Technology.

1 Introduction

In rapid evolving global economy, organizations are using project-based approaches to constantly develop and keep up with changes in their environment. The competitive landscape of the 21st century requires corporations to quickly adapt to environmental changes and to constantly develop and implement innovations (Tyssen, Wald & Spieth, 2013). Tyssen et al. further write that one of the prevalent means of achieving organizational flexibility is through temporary organizations, such as projects or programs. Turner (2009) writes that 30% of the global economy is project-based, which is supported in a more specific study of Germany, Norway, and Iceland stating that one third of the total economy in these countries are project based (Schoper, Wald, Ingason & Fridgeirsson, 2018). . It is therefore clear to see the importance of project management both on a global and local scale. This increased focus on projects, demand a different approach to management than previously emphasized through the 60s to the 80s (Lloyd-Walker & Walker, 2011). Projects can also vary in size and category, and can be categorized into different types based on their nature. Payne and Turner (1999) writes that you could categorize projects into four types: engineering (type 1), product development (type 2), research and development (type 3), and systems development (type 4). Payne and Turner further say that these could be systematized in relation to well defined methods and goals for the different types of projects. Emphasizing that type 2 and type 3 projects do not have well defined methods, but type 3 does not have well defined goals either. Type 1 and type 4 have well defined methods, but type 4 does not have well defined goals. The point of this matrix is to show that project types which does have well defined goals are more likely to fail, making project management more difficult (Payne & Turner, 1999). Müller and Turner (2010) writes that focus has been shifting towards leadership skills in project management, rather than the project management toolbox traditionally used by project managers. Literature regarding project management give little attention to soft skills in project leadership, despite Müller and Turner's findings on competencies of successful project managers. Soft skills can be defined as *the ability and traits one possess which makes you understood, credible and effective in social settings where interpersonal relations are important to complete work in a team*, and is based on definitions by several authors who found these skills to be important for leaders in projects (Cimatti, 2016; Heckman & Kautz, 2012; Robles, 2012; Schulz, 2008; Yukl & Gardner, 2020; Zuo, Zhao, Nguyen, Ma & Gao, 2018). The role and importance of project managers and projects will be further explained in Chapter 2.1 Projects and Chapter 2.1.4 Project Manager.

Continuing on important soft skills for project managers; communication, flexibility, integrity, and teamwork is identified by Robles (2012). A study conducted by Henderson show a strong connection between project managers competency within two of the core communication processes, encoding and decoding of messages, and team members' satisfaction and productivity (Henderson, 2004). Henderson (2004) writes that project managers become more and more centralized in the organization due to the increased use of projects, and therefore also become what she calls "quasi-executives" with high responsibility and accountability, but minimum authority. Henderson refers to Barnard (1968) and his assertion that executives' primary task is to communicate. Extending on the line of project management and communication, Sithambaram, Bin Md Nasir and Ahmad (2021) writes that there is little agreement in literature on what constitutes project success, but writes that most projects fail due to lack of effective communication between stakeholders. Following this, it is clear that of the above mentioned soft skills, communication is the most important. Cleland et al. (1998, p.239) writes that "for decades, project managers have been trained extensively in technical, tactical, and strategic components of managing projects." It is just recently more attention has been given to the more non-technical aspects of project management, i.e. *leadership* (Cleland et al., 1998). Davidson (2003) points

to the fact that a team is the backbone of every project, emphasizing that the project manager alone would not be able to execute projects. Cleland et al. (1998) writes that more attention have been given to the project team in project literature, but argues that it may need to be given even more focus. Especially since the trend to increase efficiency in organizations with scarcer resources seems to be continuing and project teams becoming a central stakeholder in project success (Atkinson, 1999; Cleland et al., 1998). The link between the project manager and project team is influenced by communication, and therefore needs more attention. Communication as a topic is probably one of the widest topics to engage in (Pooley, 2016). Pooley (2016) mentions that through history, communication have been viewed as an important part of areas spanning from psychology to science and technology. In an organizational context it have also been considered decisive for organizational effectiveness (Hargie, 2016). One of the sociological views is on micro-level communication, which is mainly focused around interpersonal and small group interactions (Pooley, 2016). This area is interesting when assessing project teams and we will further explain communication and its connection to projects closer in Chapter 2.2 Communication. The importance of projects and communication will be further explained below, before applying these to formulate our research question.

1.1 Importance of Research Question

We have mentioned two main topics of interest above; *project management* and *communication*. We will explain these concepts further to show the connection between them and why this field of study is important.

1.1.1 Project Management

Projects can be viewed as a temporary organization (Turner & Müller, 2003). Lundin and Söderholm (1995) writes that the general concept of a temporary organization includes having one, or few *tasks* to complete in a limited *time*, with a *team* of people, and at the end-state the tasks should have achieved some kind of *change/transition* from the original state. This is further elaborated with the point that *time* - refers to a linear time frame with a clear start and finish which is possible to plan and anticipate, *tasks* - refers to the main reason for establishing the temporary organization and is comparable to goals, *team* - refers to the establishment of interpersonal relations and how these teams can function through commitment-building, and *change* - claiming that something have to be achieved before the project can claim success (Lundin & Söderholm, 1995). Success in projects have traditionally been measured through time, cost, and quality (The Iron Triangle) (Atkinson, 1999). This has then subsequently led to the definition of the area *Project Management*. Atkinson (1999) writes that project management have been around since the 50s and 60s and is believed to stem from NASA's project to *put a man on the moon*. One of the many definitions referencing back to the 50s is applying a collection of tools and techniques to direct the efforts of resources (human and technological) toward the accomplishing of an one-time task within the restraints of The Iron Triangle (Atkinson, 1999). What is remarkable is that these criteria for success are still used to describe project management. Cicmil, Williams, Thomas and Hodgson (2006) writes that research around projects and project management have been heavily criticised for it's conventional view on project success. Cicmil et al. argues that projects is rather formed by interdependent actors who find shared meaning and direction through the process of power and conversational relating. Specifically meaning that stakeholders solve a purpose through conversational processes and power processes. If the definition of projects and project management are subject of critique, then project success could also be ripe for adjustment.

Organizations see the value in projects and are increasing the amount of resources used for projects like product development, process improvement, and building new services (Sausser, Reilly & Shenhar, 2009). To meet clients needs, organizations engage in delivery-projects to tailor solutions and provide additional services such as operational support (Mutka & Aaltonen, 2013). However, studies show that most projects do not meet the criteria for success such as The Iron Triangle. This has increased the popularity of studies on critical success factors in projects to find similarities between projects that fail. These studies identify several factors, but it seems to have little effect on project management practices (Sausser et al., 2009). This might be because of what Cicmil et al. referenced as conventional view on project management, a functionalist/instrumental view on projects and organizations (Cicmil et al., 2006). Atkinson (1999) refers to this view on conventional success criteria as the urge to try to do something right, accordingly with the last 50 years rhetoric on project management. These theories and studies centered around success criteria in projects and project management, without any effect on project management practices, can indicate that these success criteria are not a good measure for success. We believe this demands investigation into other factors, such as communication.

1.1.2 Communication

One of the fields we study as a factor for success in this thesis is communication. Communication is a wide topic, concerning many disciplines and spanning over several business areas, adopting different sides of communication. Our thesis focuses on the effect of communication, rather than why it is communicated. Zulch (2014) writes that communication style will vary from different projects and different leaders, but communication with people will always be important. Communication consists of information, sending of this information, and the reception of that information with an associated understanding of that information (Luhmann, 1992). Meaning that communication happens all the time as long as the prerequisites are met. Luhmann (1992) also say that communication is a closed system, emphasizing that you have to communicate to influence communication. von Danwitz (2018) conducted a study on factors influencing inter-firm projects and discovered that some of the most important factors for projects are communication and trust. The relationship between communication richness and project performance was important for understanding tasks while trust impacts creativity and satisfactory work relationships.

Bavelas, Black, Chovil and Mullett (1990) writes that communication is always subject to interpretation, or misinterpretation, especially if the communicating parties do not share a common model of what "good" communication is. In addition, situations where superiors and subordinates have a significant gap between them in expertise/knowledge and power, the communication is prone to misinterpretation. This also implies that how people communicate will be influenced by their experiences, knowledge, routines, and education regarding communication. Brent and Gigliotti (2019) writes that in order to understand communication and its effect, one must include a nuanced view of meanings and consequences, as well as interdependent factors of behavior and situations. These are referred to as invisible factors. What is interesting with these factors is that they directly affect what is seen as the basic goal or motivation behind communication in an organizational context: a purposeful outcome. Manata, Garcia, Mollaoglu and Miller (2021) found in their study that there is a strong correlation between goal alignment and communication in project teams, implicating that communication is important to establish common goals in the project. Luhmann (1992) writes that in its simplicity, communication seeks consensus, agreement. Leaders seek agreement among stakeholders in a project for their goals and it is also why factors influencing communication are of interest in this thesis. In simpler words, communication is happening all the time and is influenced by, and influences, everything. This make

our task of researching what factors in communication influences projects, to understand how and why communication influences projects.

1.2 Research Question

The literature is unclear when defining critical success factors, some mention The Iron Triangle and others mention the project managers' communication skills. We believe that communication skills are one of the critical success factors in projects, and in this thesis we will research why and how communication influences delivery projects, social bonds, motivation, project team success, and how project managers' role are dependent on their communication skills. We formulate this into our research question for this thesis:

How and why is project team success influenced by the communication in project teams doing deliverance projects?

1.3 Thesis Structure

Table 1 presents the structure of our thesis, giving an overview over the different chapters and what they include.

Table 1: Structure of thesis

1. Research Question	Why does communication in a project team influence project team success in projects where physical presence varies?
2. Theoretical Foundation	Presents relevant literature on the topics <i>communication</i> and <i>projects</i> with respective sub-research questions and presents literature with propositions based on our understanding and expected implications for the project organization.
3. Research Method	Presents and discusses our research method. How we achieved access to informants and how we structured our interviews. We also discuss how we coded the data, the possible ethical consideration regarding our data collection, and personal reflections upon the process.
4. Empirical Findings	Presents empirical findings from the conducted interviews.
5. Analysis	Analysis of propositions in relation to empirical findings to see if they are supported or not and why.
6. Discussion	Discussion of theoretical implications following the analysis of empirical findings.
7. Conclusion	Concludes the thesis on our research question, the implications of our findings, and limitations of our research.

2 Theoretical Foundation

The theoretical background provides an overview of key concepts addressed in this thesis and is important for the reader's understanding of these in both the project manager's and the project team members' point of view. This will shed some light upon what is already known in this area of research and we can develop propositions of our own to assess further in the research. These propositions will be used to connect our research question to theoretical concepts and help answer the research question through sub-research questions. Much of the research on these topics are conducted in other contexts or with another purpose for research and is therefore centered around a wide range of areas. Some is directed towards industries and project contexts, other is more focused on interpersonal relations and the cooperation between people. Other parts of the theory reviewed comes from a technological perspective but narrates a concept that is valuable and can be used to describe interesting points to investigate further. Common for the concepts and theories used is that they are assessed to be significant for the understanding of this thesis. They are also used to describe and understand definitions for further use in the thesis. Through assessing these concepts and theories, we narrow a wide area of research down to accurate propositions for our thesis, reviewing literature to better understand the connection between these topics. These propositions are connected to our research question through the sub-research questions presented in Chapter 2.1.7 Project Summary, and Chapter 2.2.9 Communication Summarized.

Below we will explain the topics *projects* and *communication*, and go further into detail on different sides of these concepts. These topics can be narrowed down to smaller topics that better describes what projects are, the different roles in the project organization that we study, and how success is tied to these. We also go deeper into motivation and trust, and their effect in the project team context. In communication we include interpersonal aspects of communication, informal and formal communication, how digital communication is interesting, and the link between communication and projects.

2.1 Projects

Gällstedt (2003) writes that projects are being increasingly used in the organisational world, and is used to increase performance and deliver a competitive advantage to the organisation. Projects have been defined multiple times, but not a single one has gotten a general acceptance (Kuster et al., 2015). Andersen, Grude and Haug (2009) defined projects as a temporary organization which focuses on delivering a change. Cleland and Kerzner (1985) wrote that a project is a temporary organization that achieves a certain purpose by using allocated resources, consisting of both human and non-human assets. Common for these two definitions is that a project is a temporary organisation, which makes the project manager the chief executive of this organisation (Turner & Müller, 2003). Barnard (1968) writes that a chief executive needs a system for communicating, be able to delegate tasks and responsibility, have experience and imagination, and good interpretation to formulate tasks, purposes and goals of the project.

In most projects there is a project team with the project manager as the team leader. Davidson (2003) writes that the basic work unit of projects are project teams and they will make sure the project is completed, either through executing tasks or by telling others to do their tasks. After completion of a project, it is important to measure the performance. Good performance and project success are often tightly coupled, but to decide if a project is successful or not, can also depend on the point of view the deciding part has. We will define projects as *temporary organisations which has a defined purpose and longevity*.

2.1.1 Project Success

Project success was traditionally defined as a project which is completed on time and within agreed cost and scope, but today those points are criteria for project management success and is often referred to as The Iron Triangle (Kerzner, 2015). However, many projects have been judged on other criteria where a project may be deemed as a success for some and a failure for others, meaning that project success is depending on what perspective one has (Pinto & Mantel, 1990). Atkinson (1999) proposes the Square Route Model to determine the success of a project, which will be used in Chapter 2.1.3 Project Team Success, to see how success in a project team can be measured. It has the traditional Iron Triangle, but also includes other aspects such as organizational benefits, information system, and stakeholder community benefits as part of the success criteria. Müller and Turner (2007) writes that even though different projects need different management styles, it is often neglected to question whether these different projects should have the same success criteria or not. Wateridge (1995) found in his study that the project manager and all other parties should agree on the success criteria and what factors that affected those criteria early in the project. A management style should then be chosen to match the criteria to increase the chance of success (Wateridge, 1995).

From the theory there are many different success criteria that focus on everything from environment concern and happiness among employees to profitability and delivering to specifications. The most interesting one yet, is one of the four criteria of Morris and Hough (1987), which states that a success criteria is that a project can be terminated efficiently if it is cancelled. Reflecting on this we think this criteria is reasonable in complex projects where risk and uncertainty is high (Thamhain, 2013; Williams, 2017), but might be a waste of resources in low complexity projects with less risk and uncertainty as there should be little chance of having to cancel the project due to unforeseen circumstances. This reasoning is supporting Müller and Turner's results of different success criteria for different projects and industries. The most influential success criteria is team satisfaction, and older more experienced project managers has higher emphasis on this (Müller & Turner, 2007). The importance of project manager and teams, and the effect project teams has on project success, is also highlighted in Imam and Zaheer's research. It found that project success is affected both directly and indirectly, through increased trust, cohesion and knowledge sharing, by implementing shared leadership in a project team (Imam & Zaheer, 2021). Shared leadership is also mentioned in Chapter 2.2.7 Digital Communication, and from Hoegl and Muethel's research we believe that the project manager is the main responsible for enabling shared leadership, but the project team is also central for reaping the benefits and make a project succeed.

Proposition 1. The project team and the project manager are the two main contributors to project success.

2.1.2 Project Team

As mentioned in the previous paragraph, the project team is central to project success. Thomas, Jacques, Adams and Kihneman-Wooten (2008) writes that the project team is responsible for controlling and executing the project plan so that the project is finished within agreed time and budget. They also write that the project team is responsible for making necessary adjustments to the project and project plan to meet the project goal if a shortcoming is discovered (Thomas et al., 2008). To have a high performing project team, the project team members has to be motivated and inspired Peterson (2007). How to motivate project team members will be examined in Chapter 2.1.5 Motivation.

Pollack and Matous (2019) writes that a team's performance can be improved by having better team processes and project delivery can be improved by social processes (Calamel, Defélix, Picq & Retour, 2012; Thomas et al., 2008). By implementing team and social processes the team members can develop a common understanding of goals and tasks, which in turn can improve team integration and performance (Pollack & Matous, 2019). Securing high performance in project teams are key to success, as not only traditional projects such as construction or development use project teams, but also new projects like change projects, election campaigns and transferring technology concepts (Thamhain, 2004a). In this age of more complex projects, both in scale and population, it is important to have good project team leaders, which Thamhain (2004a) describes as one that have both the technical and social competence.

The factor that has the strongest correlation between work environment and project team performance is fulfilling professional esteem needs, such as having challenging, stimulating work environments and have goals that can result in accomplishment and recognition (Thamhain, 2004a). This is aligning well with the goal setting motivational theory presented in Chapter 2.1.5 Motivation, which states that people are more motivated by having hard, but achievable, goals. Some of the strongest barriers to project team performance are "[a] unclear project objectives and directions, [b] insufficient resources, [c] power struggle and conflict, [d] uninvolved, disinterested senior management, [e] poor job security [and f], shifting goals and priorities" (Thamhain & Wilemon, 1987, p.133).

Proposition 2. Project team performance is closely related to challenging, stimulating work environments and getting recognition for the work done.

2.1.3 Project Team Success

Now, linking project team to project success, we will examine what project team success is with regard to both the team members and the external organs. Success in a project team can be measured both in a organizational view through organizational learning and efficiency, and in a stakeholder view through personal learning and professional development, based on Atkinson (1999)'s square root model mentioned in Chapter 2.1.1 Project Success. Davis (2014, p. 196) writes that project success in a project team is linked to "level of cooperation (Barclay & Osei-Bryson, 2010; Cooke-Davies, 2002), project mission (Pinto & Slevin, 1988) and successfully reaching the end of the project (Munns & Bjeirmi, 1996)". These three point are influenced by the project manager, and Aga, Noorderhaven and Vallejo (2016, p.808) writes "Even if the project team is high-performing with the right capabilities, it will not be successful in the absence of effective leadership Burke et al. (2006)".

The importance of the team's leadership is also highlighted in Fedor, Ghosh, Caldwell, Maurer and Singhal (2003)'s research, which found that team leadership and organizational support has a significant effect on project team satisfaction. Generating knowledge is also important for project members and their perception of project success (Fedor et al., 2003). Within project team success we have two factors. The first one being the team members' satisfaction of the project process and delivery. The second one being external validation through the project team's performance, which is tied to the delivered product or service and whether it meets the project organization's or customer's expectations or not.

Proposition 3. Project team success is relying more on processes, development and satisfaction than the traditional cost, time and scope.

2.1.4 Project Manager

The project manager is in addition to being central for project team success, also considered to be the most important person in a project team, as even a high performing project team would most likely fail if the group lacked effective leadership (Burke et al., 2006). This is part of the reason for the large quantities of literature and research of project managers. Peterson (2007) writes that the project manager should study and learn from each of the team members what is their personal motivator, and use that knowledge to increase their motivation and performance. We would argue that to increase learning and studying, the project manager needs to be good at communication. As mentioned in Chapter 2.2 Communication, high communication skill makes it easier to see, listen, interpret and understand each team member's transmitted information.

The importance of communication is also highlighted through theory that says the most demanding project challenges often are human related and not technical problems (Thamhain, 2004b). Gillard and Johansen (2004) writes that a successful project manager is a person who has devoted a lot of time and effort to train their communication skills. The project manager has to excel in oral presentation skills, form interpersonal relationships and handle verbal and non-verbal communication, but also acknowledge and adapt to the context of the communication (Gillard & Johansen, 2004). Anantatmula (2010) found seven people related project performance factors a project manager can access, where we will focus on those most relevant to this paper as visualized in Table 2.

Table 2: People related project performance factors

Anantatmula's selection (2010)	Our selection
Create clarity in communication	Communication
Define roles and responsibilities Communicate expectations	Motivation and success
Establish trust	Trust
Employ consistent processes Facilitate support Manage outcomes	

Now that we know what the project manager should improve, the next step would be to examine how to get there. Zaccaro, Rittman and Marks (2001) refers to Tannenbaum, Smith-Jentsch and Behson (1998)'s prescriptive theory when writing that a project manager should be listening to ideas from others, focus critique on the task and not the person, share self-critique, encourage the team to evaluate themselves and that critique should contain something specific that would improve the matter at hand. They also write that a project manager should incorporate discussions around teamwork processes and task work, give credit when improvements are made and use previous prebriefs when assessing following debriefs. This will lead to a better performing team, and a project manager that incorporates this information sharing and support is the cornerstone of project team success (Fedor et al., 2003; Tannenbaum et al., 1998).

Proposition 4. A well performing project manager is (A) sharing self critique, (B) establishing trust, (C) forms interpersonal relationships and (D) manages the different aspects of communication.

2.1.5 Motivation

As mentioned in Chapter 2.1.2 Project Team, motivation is needed for having a high performing team. Motivation is contributing positively to the tasks the team is doing by increasing engagement and delivering enhanced outputs (Sekhar, Patwardhan & Singh, 2013). Two of the most known motivational theories are Maslow's and Reich's motivational models. Another well known model is Herzberg's "Two-Factor" or "Motivator-Hygiene" theory which is dividing motivation into two themes, one called hygiene which is relating to the environment around you and monitors dissatisfaction and the other theme is called motivator which is relating to achievements and accomplishments, and is often connected to satisfaction (Fisher, 2009; Lewis, Packard & Lewis, 2011). The theories presented so far can be categorized as content theories, while the last theory we will present is a process theory called goals theory (Fisher, 2009). Goals theory as describes it, is based on tailoring the organizational goals to objectives at lower levels down to personal objectives and goals that will contribute to the organizational goals. After more reading it can also be called goal-setting theory of motivation. Lunenburg (2011) writes that individuals that are given concrete, challenging tasks perform better than those given non-challenging, non-specific tasks. How hard or easy a challenge is, is relative and must be adapted to the individual or group that is going to do the task, as the tasks has to be possible to complete, be accepted by the individual or group and have someone review their performance and give feedback (Locke & Latham, 2002; Lunenburg, 2011).

When an individual is faced with a challenge that may be to challenging or on the edge of what they are capable of it is important to set the right goals with the individual to secure their performance (Earley, Connolly & Ekegren, 1989). The goals should be formulated in a "give it your best" or general way and not be a specific performance goal as suggested earlier, as a specific performance goal can lead to performance anxiety and hinder the individual of finding any solution (Earley, Connolly & Ekegren, 1989; Locke & Latham, 2002). Earley, Connolly and Ekegren (1989, p.25) writes that tasks that can have reduced performance outcome if given precise, hard challenges are "(a) performance is primarily a function of strategy rather than of task effort; (b) there are many available strategies; (c) the optimal strategy is neither obvious nor readily identified; and (d) little opportunity to test hypotheses retrospectively exists (go back and retry a strategy)". The lack of performance in these situations are argued to be caused by a specific, hard goal which is resulting in more time spent on finding the best strategy, while a "give it your best" goal results in the individual learning more about the task as less time is spent figuring out the best strategy (Earley, Connolly & Ekegren, 1989).

Earley, Connolly and Ekegren (1989) uses a three level hierarchy model to differentiate the tasks and how goal setting method improves performance. Task content is at the first level, where increased effort usually gives increased performance. The second level is task strategy, where an increased performance is related to the strategy used. A specific, challenging goal is advantageous in both of these levels, especially in level two as a specific, challenging goal is increasing the search for the best strategy (Earley, Connolly & Ekegren, 1989; Earley, Connolly & Lee, 1989). Where this search for strategy becomes detrimental is in level three of the hierarchy, where the strategies are too many to try all, not possible to try and fail strategies repeatedly, the best strategy is not easily identifiable or the strategy is the main contributor to performance. Earley, Connolly and Ekegren (1989) calls this third level as the meta-strategy, where the strategy is to learn about the task.

Proposition 5. Line managers, project managers and project team members are more motivated by challenging, applicable tasks than unchallenging ones.

2.1.6 Trust

We define trust based on Gambetta et al. (2000) 's definition that trust is the belief a person has to another person or group doing a certain action in a beneficial or satisfactory manner, so that he or she considers to cooperate with said person or group. Mayer, Davis and Schoorman (1995) also defines trust as an expectation of a certain action, but he involves that the trusting person is voluntarily vulnerable to another party and that trust involves risk. Trust can also be reflected in the amount of freedom one have, as more freedom often includes more options challenging the satisfactory outcomes. However, with more options available the likelihood of finding a new solution increases. In addition to increased freedom, trust can also increase cooperation because people are more willing to engage with each other which in turn increases project success (Bond-Barnard, Fletcher & Steyn, 2018).

Continuing on what trust is, Shazi, Gillespie and Steen (2015) writes that the perceived level of trust, also called trustworthiness, is relying on three aspects being ability, benevolence and integrity. Ability refers to the belief that the person or group has the right set of tools, skills and knowledge to do the task. Benevolence is the belief that the person or group wants to act in the trusting person's best interest, while integrity is the belief that said person or group acts according to agreed rules and norms. They found in their study that the ability is near irrelevant if benevolence and integrity levels are too low, which makes for this interesting proposition:

Proposition 6. A team member is rather selected on the basis of benevolence and integrity than on the ability to do the task.

2.1.7 Project Summary

In this chapter we have outlined how projects are increasingly used in the organizational world and how they can be seen as temporary organizations. We have explained how a standard project team is made up of a project manager responsible for the project and the project team, and that through this organization, the project manager needs a good developed system to communicate, delegate, and formulate goals and purpose to ensure project team performance (Cleland et al., 1998; Davidson, 2003; Gällstedt, 2003; Kuster et al., 2015; Turner & Müller, 2003). A natural extension of the definition of projects was to look at how project success have been defined earlier and typical success criteria in projects. Theory show that the traditional project management bases success on The Iron Triangle (cost, time, quality) (Kerzner, 2015). Other theories show that factors to include could be organizational benefits, happiness among employers, and profitability (Atkinson, 1999; Wateridge, 1995). Even so, theory presented by Müller and Turner (2007) show that team satisfaction was the most influential success factor. This points to the importance of looking closer at project teams and what constitute their success. Thomas et al. (2008) writes that the project team is responsible for executing the project to the agreed upon success criteria, and their performance is vital to achieve success. Team performance can be enhanced through social team processes to increase understanding in the team and through a stimulating work environment with challenging tasks (Pollack & Matous, 2019; Thamhain, 2004a). This is linked with project team success through factors such as team members' satisfaction in connection with project process and delivery, and through external validity connected to expectations to the team's performance as well as the level of cooperation in the team (Davis, 2014; Fedor et al., 2003; Munns & Bjeirmi, 1996; Pinto & Slevin, 1988). To lead this team effort the project manager is essential (Burke et al., 2006). To be able to lead effectively it is emphasized that the project manager should know project team members to be able to motivate and increase performance through good communication (Ananatmula, 2010; Gillard & Johansen,

2004; Peterson, 2007). Anantatmula (2010) found human factors such as motivation and trust to be connected to project team performance. This makes ground for our sub-research question which is looking closer at team performance factors affecting project team success.

How are the main project team performance factors affecting project team success?

The propositions presented through this Chapter 2.1 Projects, is presented again in Table 3. The first proposition, proposition 1, is about the main contributors to project success are based on theories regarding a wide set of success criteria in projects. Proposition 2 is summarizing that project team performance can increase if the team is working in an environment of stimulating challenges and accomplishments. Proposition 3 goes into project team success and that the old ways of defining success through the iron triangle is outdated by increased focus on process, development and satisfaction within the project team. Proposition 4 is describing a good project manager based on the theory in Chapter 2.1.4 Project Manager, and we have divided it into sub propositions to be more specific when it comes to analysing and look at the theoretical implications. Proposition 5 indicates that no matter the organizational rank one employee may have, the motivational concept of the goal setting motivational theory is true for that individual. The last proposition, proposition 6, is related to trust: more specifically to the selection of team members and that the most important factors for being selected is the person's intention to do good and being true to one's values. These propositions can be connected to the sub-research question by saying that trust, motivation, project manager and project team ties to performance in a project team, and that performance is affecting the project team's processes, development, and satisfaction. This makes a clearer connection between the main research question and the propositions.

Table 3: Project propositions

#	Proposition
1	The project team and the project manager are the two main contributors to project success.
2	Project team performance is closely related to challenging, stimulating work environments and getting recognition for the work done.
3	Project team success is relying more on processes, development, and satisfaction than the traditional cost, time, and scope.
4	A well-performing project manager is (a) sharing self-critiques, (b) establishing trust, (c) forms interpersonal relationships and (d) manages the different aspects of communication.
5	Line managers, project managers, and team members are more motivated by challenging, applicable tasks than unchallenging ones.
6	A team member is rather selected on the basis of benevolence and integrity than on the ability to do the task.

2.2 Communication

Projects demand communication between the people involved in the project, and communication is therefore our other topic of our thesis. Pooley (2016) writes that communication have been divided into to two major topics from a sociological point of view, micro-level interactions (interpersonal) and macro-level interactions (mass/group). The psychological side of research on communication have been more supported because of the large interest in how communication influences the masses, especially in the post-WWII era of cold war and propaganda. Communication theory have seen a large number of directions since it started to institutionalize in the 30s, from topics like mass media influence to digitized humanity (Craig, 2016; Pooley, 2016). For our

thesis, a continuation into the area of sociopsychological understanding of communication have grown in popularity. Social psychology is a branch within psychology which covers the field of human interaction, how people affect, and are affected by others (Gergen, 1973; Krauss & Fussell, 1996). Krauss and Fussell (1996) writes that communication is one of the primary methods people have to affect each other, making the concept of communication relevant for our thesis. Before we explain and define communication, we must add that not all areas of research on communication are relevant to the research question. We will therefore limit our approach to interpersonal communication which includes face-to-face and small-group interaction. A clear definition and what falls in under the definition of communication is important to avoid ambiguity and subjective interpretations of communication. In order to provide this definition we must look closer at the basics of communication.

2.2.1 Basics of Communication

Henderson (2008) writes that communication can be divided into decoding and encoding of messages, or more easily denoted as receiving and sending of a message containing some kind of information. This can be seen as a functional perception of communication, and can be illustrated through metaphor for transporting messages along a railway track (Baym, 2016). The "railway"-model represents an objective perspective on a one way communication and is illustrated in Figure 1. This is probably also the easiest model for understanding the basics of communication as there is little complexity included. However, the simplicity of the model is also setting limits on how representative the model is, as "real world" communication is more complicated. We illustrate Henderson's aspect of encoding and decoding of messages through a revised "railway"-model of communication in Figure 2. This highlights Luhmann's requirement for communication: information must be uttered from a source and interpreted by a receiver (Luhmann, 1992). There is a large number of definitions and possible models of communication, this is not necessarily negative but can rather be used to explain different observations and perspectives on the topic (Craig, 2016). However, considering the simplicity of the "railway" communication model, a more constitutive model can be favorable. Craig (2016) writes that communication is a social process that produces shared meaning. Craig's definition brings us closer to interpersonal communication. Building on the argument above, communication can be viewed as a skill considering in its simplest form it is about transmission of messages, and in a more complicated form it is about creating shared meaning. Communication as a skill will then be dependent on the ability to understand and share information to achieve project objectives. To enhance understanding of the message going between people, and understand this shared meaning, emotional intelligence can help decode messages between sender and receiver (Salovey & Mayer, 1990).

We can summarize this to a general definition of communication. Given that communication takes up a large portion of the managers' time (Barret, 2006), we expect it impacts the time of project team members as well. Considering the different shapes and forms and models there are for communication, it can be stated that communication happens all the time, regardless of your role or position in the project team or organization. Even though some part of the communication is done unconsciously, Luhmann (1992) state that you require both a sender and a receiver, in addition to a message that is communicated between them, to have communication. The sender and receiver can be a single person or a group of people and the message can be shaped as oral, written, visual, or as a combination of these. Based on this, we can define communication as *sending and receiving of messages through different mediums to have a purpose or meaning*. Given the large number of varieties a message can be shaped into it takes time and effort to become better at handling this variety of possibilities. In addition, communication can

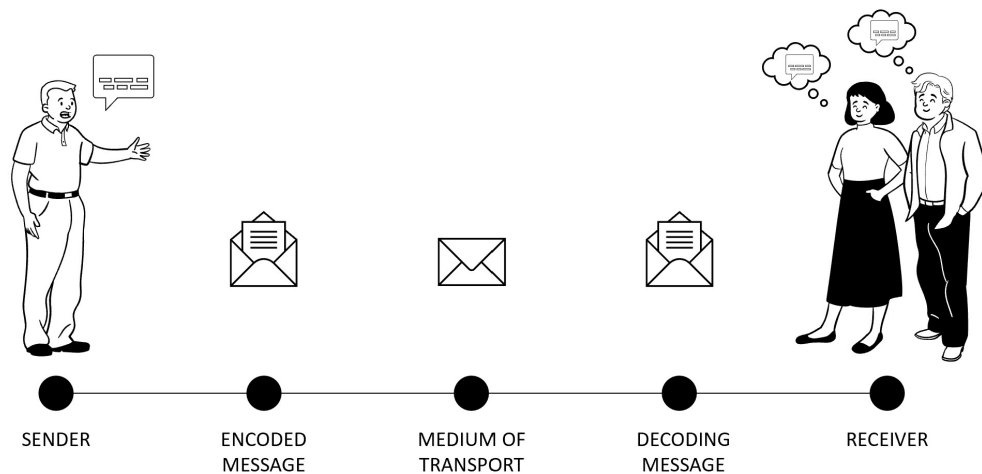


Figure 1: A visual representation of linear communication.

be expressed non-verbally which complicates the interpretation of communication further.

Proposition 7. Communication is about sharing information between people and groups.

2.2.2 Interpreting Communication

The ability to decode this information relies on several factors. Decoding a message can be said to understand or interpret the content of a message. Interpretation can be about ascription of meaning (Dresner, 2016), but is too wide of a definition to give anything purposeful. It is closely related to the transmission concept of communication where the receiver decodes a message (interprets meaning). Dresner (2016, p.7) explains it more carefully when she describes interpretation or decoding as "*uncovering the meaning that is already there, in the speaker's words (...)*". This coding and decoding (interpreting) messages is exemplified with in Figure 2 Encoding and decoding of messages.. This understanding of decoding messages in communication might be a little narrow, given that interaction would mean mutual influence between people, or communication where individuals use to convey meaning to each other (White, 2016). This implies that encoding and decoding of messages is not a linear process, but a continuous process, which makes Figure 3 Illustration of the transactional model (Foulger, 2004), more precise to describe our perspective on communication.

Another part of communication that needs attention is: nonverbal communication, or nonverbal cues (Hall & Knapp, 2013). Nonverbal cues include: body motion or kinesics [visible body movement], para language [stuttering, repetition, incompletions, and similar acoustic cues], proxemics [usage of space/room between people], gaze [eye movement and contact], and facial movement [facial expressions] (Hall & Knapp, 2013). The amount of nonverbal cues is very substantial and Hall and Knapp (2013) writes that it initially has been viewed as a more reliable source of information than verbal communication. We will define nonverbal communication as *visible cues that effects the interpretation of verbal communication*. Nonverbal communication characterized as acoustic features will not be assessed given their dynamic nature and their tight correlation to visible nonverbal cues.

Barnlund (2017) writes that communication and the view on communication have moved on from an elementary view and is now being more viewed in a systemic or holistic perspective, emphasising the importance of understanding not only the message transmitted, but also the context

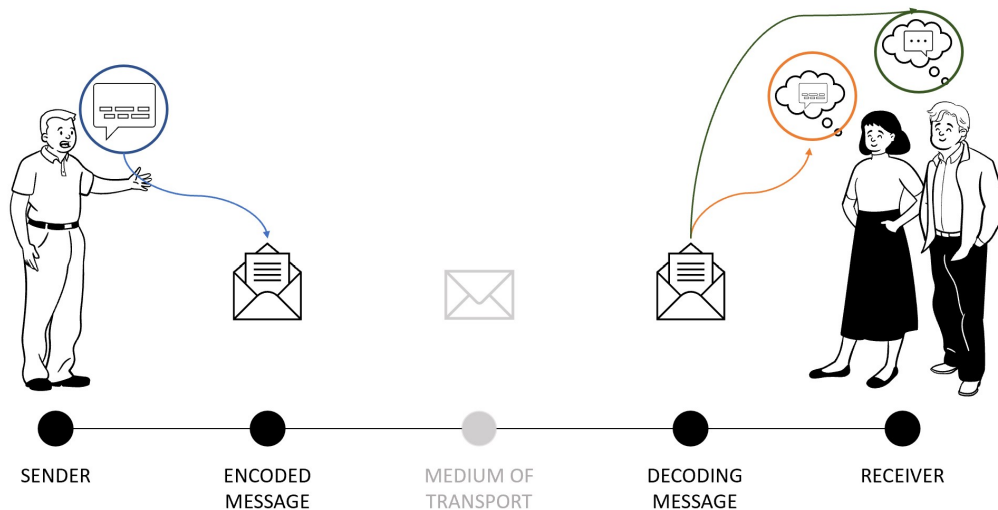


Figure 2: Encoding and decoding of messages.

and the behavior behind it. This gives rise for several interesting aspects that will be discussed further in the next sections and explains what we consider a part of the holistic perspective on communication.

Proposition 8. It is easier to interpret the message as intended when the communication contains visible nonverbal cues.

2.2.3 Interpersonal Communication

When we continue on the subject of communication, we see it necessary to explain the concept of interpersonal communication. In its simplest form, interpersonal communication can be explained as the exchange of information between two or more people (Gilkerson, 2016). More nuanced, interpersonal communication tries to explain how face-to-face and social interaction plays a role in social processes centered around the dynamic give-and-take aspect of social interaction (Berger, 2014). Historically, interpersonal communication was seen as a study in social influence of the masses, developing to authentic self representation, before it was viewed as a goal-directed and plan-guided process towards a goal. More recently it have been refined as an area of supportive communication, goal detection and planning, and skilled message production (Berger, 2014). Meaning that to some degree, it is concerned with how and what one communicate and tries to identify patterns in interpersonal communication. These directions or factors in interpersonal communication can contribute to a better understanding of communication patterns between the people in the organization we are researching.

Dragojevic and Giles (2014) writes that people's social identities can influence their social perception and behavior, even though social identities are a construct of our own making. This means that people who identifies differently in the organization will be influenced by their own and others social identity. Which in this case means that their interpersonal communication is influenced because of the social context of that moment. Goals is another factor influencing behavior and communication (Palomares, 2014). Personal goals describes the desired end state for a person and naturally comes with a plan, influencing the communication from that person. The word desire gives us a hint of a motivational factor, implicating that the action of communication itself is not a goal, but a way to achieve that goal (Palomares, 2014). The goal in itself

can be meaningless to co-workers or other persons, but generally explains why a person communicates what they are communicating. This naturally leads to what one seeks to accomplish with the interpersonal communication when it is not transfer of information, interpersonal influence. Individuals seek help from others and can provide help in return, and these gestures plant the seed of an enduring relationship (Dillard & Wilson, 2014). The messages communicated are designed to achieve the previously identified goal, and the message is a directed effort at influencing others (Dillard & Wilson, 2014). It is important to note that not all communicated messages is designed to influence others, at least not consciously, but these factors are aspects to keep in mind when assessing how people communicate. Henderson (2008) emphasizes the implicit impact of emotional intelligence in communication. *Emotional intelligence* is defined: *the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions* based on theory from Salovey and Mayer (1990). This points to the ability to decode messages, and could be a factor in interpersonal relations.

Proposition 9. Social relation is an important factor when choosing who we communicate with.

2.2.4 Informal and Formal Communication

Informal Communication

A factor influencing interpreting communication and interpersonal communication is the form of the communication. "Informal communication has been described as the social glue of the workplace" (Fay, 2011, p.212). This citation describes an interesting point regarding communication in organizations. Informal refers to communication that is simple and natural, without rules and restrictions. Often with an informal language, using more common terms than in meetings and other work contexts. This can also often be referred to as "dispenser talk", referring to the small talk happening by the water dispenser with your co-worker. Holmes and Marra (2004) refers to informal communication as one of the key methods to build relational practices, building teams. Because informal communication between co-workers creates good relationships, which in turn helps meet workplace objectives. Johnson, Donohue, Atkin and Johnson (1994) writes that informal communication normally do not follow the organizational chart and is more personal than formal communication. We will define informal communication as *communication where the message does not follow a formalized structure or pre-defined channel of transportation*.

An interesting view regarding informal communication is that it is proposed as one of the communication methods where common ground in the workplace is found (Fay, 2011). Implying that an informal context is valuable for improving formal understanding and agreement. Johnson et al. (1994)'s research also found that the informal communication channels was higher rated than the formal ones. This adds another level to informal communication, showing the potential for organizational gain in a context with another purpose.

Formal Communication

Formal communication is considered to be "official" in the organizational context, either oral or written, moving up or down the organizational chart (Johnson et al., 1994). This can be everything from emails to memorandums or directives in the company's laws. Formal communication is centered around work specific messages and because formal communication utilizes the

structure of the organizational chart it can be seen as official channels for information through the organization. This is also confirmed by Lunenburg (2010), which writes that organizational communication channels should flow freely both upwards and downwards in the organization, allowing good information flow. This gives us a definition of formal communication: *formal communication is official messages that uses pre-defined channels within the organization*. This would also mean that formal communication moves horizontally, between different departments, sections or between colleagues, related to work.

Formal communication is then placed in a more serious context as well. Considering the expectation of professionalism in the workplace, a formal message would leave little room for humour, jokes, or other means which would steal focus from the actual theme of the message. This also means that formal communication is directly centered around reaching organizational goals and objectives. If not it would be considered informal. However, the landscape of informal and formal messages can be somewhat ambiguous when one takes into consideration the possibility of formal and informal context. Given the sections above and their definition there is room for a more two-dimensional take on this concept. Considering that messages with informal content could move through formal channels and messages with formal content could move through informal channels. This challenges the conception of these communication forms, but based on own experiences it is natural to believe it is happening in organizations or at least in smaller groups within an organization. An example of this can be colleagues discussing a work-topic by the water dispenser in the hallway or talking about vacation plans during a meeting. So instead of presenting communication as either formal moving through formal channels and the opposite, we will use Table 4 to illustrate the different possibilities within formal and informal communication.

Table 4: Two-dimensional perspective regarding formal and informal communication.

		Channel	
		Formal	Informal
Content	Formal	Message	Message
	Informal	Message	Message

This leads to a proposition regarding informal and formal communication:

Proposition 10. Formal and informal communication is highly dependent on the context and situation.

2.2.5 Sharing Information

Given the definition visualized in Figure 1 and the perspective on communication possibilities in Table 4 it is clear that communication can be transmitted through different channels (formal/informal), in different format (written/oral/visual), and with different content of the messages (formal/informal). In addition, we can address the different models depiction of the communication process and how they share information. Foulger (2004) uses a similar model as the one visualized in Figure 1 to describe the process of communication, and writes that it can be developed into more detailed and precise models similar to what is practiced or experienced in real life. Foulger (2004) models are derived from a linear model of communication which is used by many researchers to describe or explain communication (Brent & Gigliotti, 2019). Brent and

Gigliotti (2019) writes that several known communication models, like Lasswell's model, Shannon's model, and Katz's model are linear models, depicting communication as a one-way street or a train track. They are closer to describing the flow of information from a source with a message through a medium to a receiver. It was first after Westley and MacLean Jr's transactional communication model was published, that communication models became more accurate for how humans actually communicate, with information going back and forth between each other (Brent & Gigliotti, 2019; Katz, 1955; Lasswell, 1948; Shannon, 1948; Westley & MacLean Jr, 1957). These models attempt to describe the relationship between the events or elements of communication (Barnlund, 2017), and is more recognizable as interaction between people.

The intermediary model (Foulger, 2004), is closely linked to mass communication, where intermediaries decides what information and how it is delivered to an audience. This can also be seen in the context of projects where the project manager receives information/messages from customers or leaders/sponsors and chooses what information to share with his project team members. This shows that in some situations, a high-level communication model might not be suited for the intentions of the message, or fits the audience it is supposed to reach. The transactional model is different in its function as well, being continuous, while the others model including the interaction model is linear. Linear models are by many viewed as inadequate to represent such a complex thing as communication (Brent & Gigliotti, 2019). Therefore, Westley and MacLean Jr's transactional model is better suited to describe communication between people and show the differences between the two communicators: that they don't necessarily encode, choose the best medium, or interpret messages similarly. Figure 3 is our illustration of Foulger (2004)'s description of the transactional model of communication.

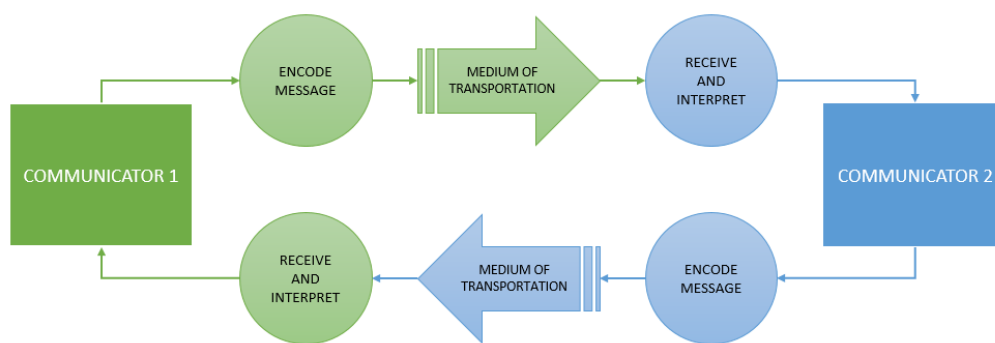


Figure 3: Illustration of the transactional model (Foulger, 2004)

As mentioned in Chapter 2.2 Communication, the function of communication is to send and receive messages, while Barnlund (2017) describes the meaning of communication to give meaning to the message within our own limitations deriving from previous experiences and current attitude. This means that communication is about sending and receiving messages that gives or creates meaning with the counterpart of the communication. This also means that in a project context, like explained in Chapter 2.2.8 Communication in a Project Context, communication is a mean to share information to meet a goal. Dawes (1996, p.379) writes that communication gives the organizational benefit of more comprehensive and accurate information sharing. Relating this to the transactional model of communication, we can see that the model illustrates the desired situation of sharing comprehensive and accurate information for problem solving in projects. In extension to this, it is possible to view the ability to utilize the transactional communication model as a skill level for communication, describing an increasing level of communication skills. Further implying that this model is more suited for different contexts and situations, given its ability to share information as a continuous process. Comparing Figure 1 and Figure 3, we can see similarities between how we define communication and how the transactional com-

munication models describe sharing of information, but they differ in the way that Figure 1 only represents a one way communication.

Proposition 11. The transactional communication model is superior to the linear communication model when used in a project context.

2.2.6 Media Richness Theory

Talking about communication and the transmission of messages through different mediums, regardless of the context, it is important to understand the different mediums ability to carry these messages. Daft and Lengel (1986) introduced what we call Media Richness Theory (MRT) in 1986, explaining and describing the difference between mediums, and ranking them accordingly with consideration to their suitability for complex tasks. Daft and Lengel (1986) ranked the mediums on the basis of their ability to provide immediate feedback in regards of low-complexity tasks like generating plans and ideas, and high-complexity tasks like negotiation in a conflict of interest.

Table 5: Rank of mediums by Daft and Lengel (1986)

1. Face-to-face
2. Telephone
3. Personal documents such as letters or memos
4. Impersonal written documents
5. Numeric documents

Face-to-face is ranked as number one because of its natural ability of immediate feedback. This means that the medium is capable to hold what Daft and Lengel (1986) calls information richness, which is information's ability to change understanding within a time interval. Face-to-face gives more cues than immediate feedback, like tone of voice, body language, and natural language. Daft and Lengel (1986) also mentions how these different mediums are suited for different tasks. While low-complexity tasks only require routine communication through a lean medium, high-complexity tasks like negotiating requires richer mediums because of the complexity of the content.

Daft and Lengel (1986)'s study was published in 1986, excluding modern society's possibilities such as digital communication. Ishii, Lyons and Carr (2019) explains how advanced technological development have enriched "leaner" mediums, such as voice chat, video chat, telephone, mail and text messages, making MRT more complex than initially in the 80's. This makes it important to take a look at digital mediums as well, especially because of the possible effect COVID-19 and working from home have on communication and information sharing in project teams. We assess digital communication mediums as the ones mentioned above: video chat, voice chat, email, and text messages. There is one aspect of MRT that falls short according to Kil (1999): MRT is faulted because it does not consider situational conditions that might influence social factors. Considering newer technology, one would assume that digital alternatives that are similar to face-to-face, like video chat or voice chat, would be close to the top of Table 5 Rank of mediums by Daft and Lengel (1986). Both Kahai and Cooper (2003) and Kil (1999) mentions that MRT is surprisingly well renowned taking into consideration its low degree of empirical evidence, but they justify the theory given the research to prove it have been focused around quality of decisions, and not choice of medium based on context and suitability to situation. They implicate that the reason for the theory to seem faulty and with little empirical evidence is because the research centers around choice of medium rather than how the medium is used. Most of the

research is also centered around assessment of performance in the different mediums, but performance is typically measured in terms of decisions and decisions efficiency (Kahai & Cooper, 2003). Interestingly, even though most of these researchers found MRT to be faulty or lacking, they do not seem to rule out the main point of the theory: *richer media is better suited when solving more complex tasks*. This makes it interesting to look further at the new technologies contribution to digital communication.

Proposition 12. Face-to-face communication is the most preferred communication medium because it is rich on information.

2.2.7 Digital Communication

Considering technological development and the introduction of new digital mediums, it is necessary to address the role digital mediums play in communication. Digital technologies have evolved over the last several decades to be key channels for interpersonal communication and interaction for things like sustaining relationships and exchanging emotional and material support (Nguyen, Hargittai & Marler, 2021). Oberländer and Bipp (2022) writes that the need to use digital communication platforms to accomplish work tasks have increased rapidly. Further, Oberländer and Bipp (2022) writes that competencies within digital communication and collaboration are essential assets to complete work efficiently. When it comes to digital communication and leading virtual teams, Hoegl and Muethel (2016) writes that a lot of project managers fail to lead efficiently and is having a hard time sharing responsibility. If a leader recognizes their team members willingness to take part in decision making and takes a more passive role, the team can establish shared leadership style which has reduced development time by 30% among other benefits (Hoegl & Muethel, 2016). Through digital communication the project manager's "felt presence" is reduced which may affect the influence the project manager has over the team members (Avolio & Kahai, 2003). Another factor which can affect influence negatively is other projects, tasks or interests a project member may have (Muethel & Hoegl, 2013). A study conducted by Oberländer and Bipp (2022) discovered limited positive effects of digital competencies to increase work engagement during the pandemic, meaning that strong personal competencies within digital communication methods does not necessarily increase your efforts working from home. Implicating that the combination of working in a functional matrix organization combined with having to use digital communication mediums can reduce the project managers overall influence over their team since digital technologies have a negative impact on work engagement.

Jarvenpaa and Leidner (1999) writes that there are upsides and downsides to virtual cooperation. Positive sides are: higher flexibility, more responsiveness, and lower-costs connected to re-allocation of resources in changing environments. While downsides are low individual commitment, role ambiguity, absenteeism, and social loafing to mention some. Upsides and downsides both seem to be connected to increased distance between the workplace and the employee, and the effect it has on expectations to and from the employee. Gilson, Maynard, Jones, Vartiainen and Hakonen (2015) writes that technology is meant to enhance collaboration and performance monitoring in teams, but at the same time it can pose challenges for the team such as lag in information sharing, increased misunderstandings, reduced attempts of gathering information and incoherent messages. Most of the research we found on digital communication in virtual teams are centered around working together in teams where the social connection is not established beforehand, which is not the case for the informants we are interviewing. This implies that for practical reasons, many of the downsides connected to digital communication mediums do not necessarily apply for our team, because they already have an established level of trust and have worked together for a long time in a traditional work environment before joining the digital team.

Researchers have also found that there is little correlation between decision quality and decision efficiency connected to the choice of medium (Kahai & Cooper, 2003; Kil, 1999). Sheer and Chen (2004) writes that MRT is lacking because it is unidimensional, not taking into account the fact that human communication is goal oriented, as mentioned in Chapter 2.2 Communication. They argue that choice of media should include instrumental, relational, and self-presentation goals for both parties to be more in line with concepts of interpersonal communication (Sheer & Chen, 2004). Their argument is to expand MRT to include multiple goals and account for a wider base of motivation and sensitivity regarding complexity and social implications. Meaning that when the social impact is believed to be higher, the complexity increases making the choice of medium more important. Because of technological alternatives being rich on information (e.g. video chat provides nonverbal cues), we believe that they will impact Daft and Lengel initial ranking.

A possible drawback of video chat and voice chat as a replacement for already existing mediums, is the effect computer-mediated communication can have on teams. Examining use of computer-mediated communication as a continuum, authors found that team members who used computer-mediated communication more often experienced lower levels of positive effect while working with their teams and had lower levels of affective commitment to their teams (Hoegl & Muethel, 2016). Positive affect mediated the relationship between use of computer-mediated communication and affective commitment. Moreover, the study identifies a tipping point (using computer-mediated communication more than 90% of the time) at which the use of computer-mediated communication was particularly detrimental to team outcomes (Hoegl & Muethel, 2016). This calls for another proposition regarding the effect computer-mediated communication has on teamwork and motivation.

Proposition 13. Teamwork in a computer-mediated environment is not considered teamwork by the individuals if most or all communication happen digitally.

2.2.8 Communication in a Project Context

After examining communication and project theory, we will specify the linkage between communication and projects. Ziek (2015) explains two senses of communication in the context of project managers and project teams, (1) firstly communication is viewed as a competency that project managers require to be effective, (2) secondly that communication is a factor for success, implicating that it is also the factor that leads to failure. Reimer (2007) adds that communication skills are considered to be a valuable career enhancer. Barret (2006) writes that senior executives in all industries and countries value communications skills as the most important skill a manager must possess. And that studies dating back to the 70s and 90s find that managers spend 70-90% of their time communicating. Giving us the understanding and pointing to the fact that communication skills is a basic need for managers to be considered effective at their job.

As a skill, project managers can use communication as a method to achieve the calculated and deliberate ends of a project (Ziek, 2015). Emphasizing that it is necessary to understand what elements communication skills include. Reimer (2007) writes that communication consist of several different elements such as oral, written, listening, visual, etc. It is also natural to take note of the context of a professional work environment, where interactions can be both formal and informal, which makes the attempt to define communication more complex. Adding to this possible complex skill, it is viewed as a prerequisite for managers to lead their subordinates in an effective way (Barret, 2006). Yang, Kuria and Gu (2020) add that through collaboration and sharing of information, project teams realize project objectives.

Proposition 14. Communication is a mean to achieve and realize project objectives for both managers and project team members.

2.2.9 Communication Summarized

In this chapter we explored communication as a concept and different factors to consider since communication is such a large spanning topic (Pooley, 2016). In its simplest form, communication is a function describing transportation, encoding and decoding of messages, but this does not cover all possible definitions of communication (Baym, 2016; Henderson, 2008). Seeing this in the context of interpersonal communication show that it is important to assess several aspects to avoid ambiguity and misunderstandings between people (Craig, 2016). To understand the communicated message, coding and decoding of messages is a central concept. Dresner (2016) defines coding and decoding as uncovering the meaning that is already expressed, and that factors influencing that interpretation is of importance. Hall and Knapp (2013) and White (2016) write that nonverbal cues is just as important as the message expressed, and that communication must be viewed in a more holistic manner to understand all of these factors. This can be visible cues and audible cues differentiated from the message, but Berger (2014) and Dragojevic and Giles (2014) also points to the dynamic nature of social interaction and the influence social relations have. Connecting social interaction to individual goals and objectives, and pointing out that even subconsciously, communication is used to influence others (Palomares, 2014). We also look into theory on how the form of communication is. Formal and informal communication is used interchangeably, sometimes mixing formal channels with informal messages and the other way around (Fay, 2011; Holmes & Marra, 2004; Johnson et al., 1994; Lunenburg, 2010). However, there is an emphasis on the importance of informal communication as an important social factor at the workplace by Fay (2011). Looking back at the basic function of communication, we find that Westley and MacLean Jr's transactional communication model, being more abstract and allowing for more complex interaction, is the most fitting for interaction in a project context. Representing a more precise representation of how humans actually communicate (Barnlund, 2017; Brent & Gigliotti, 2019; Foulger, 2004; Westley & MacLean Jr, 1957). To be able to interact on a complex level, theories show that one are dependent on a rich medium to share information between people. Based on Daft and Lengel's Media Richness Theory we have assessed different mediums of communication and seen both critique and support of the theory and its scope (Daft & Lengel, 1986). Though it is criticized for having a low amount of empirical evidence, studies are having difficulties proving it wrong, stating that a rich medium is best suited for complex information (Ishii et al., 2019; Kahai & Cooper, 2003; Kil, 1999). When we then look at the available mediums of today's technology, some digital mediums could replace older mediums on a higher rank than outdated mediums like memo's and letters. Theories on digital communication mediums show that project managers can struggle to create the same engagement and motivation as mentioned in Chapter 2.1.3 Project Team Success and Chapter 2.1.5 Motivation, in a digital environment (Avolio & Kahai, 2003; Hoegl & Muethel, 2016). Expanding MRT to include goals, social implications, and sensitivity to complexity is assessed as natural factors to include by Sheer and Chen (2004). When we then includes the different aspects of social interaction, the complexity of communication that is needed to work on projects, the different forms of formal and informal communication, and the importance of rich mediums to communicate without ambiguity, it is documented that a project manager must view communication as a competency to be effective (Ziek, 2015). Communication is therefore viewed as one of the most important skills because executives spend 70-90% of their time communicating (Barret, 2006; Reimer, 2007). This builds up to our second sub-research question to help understand how communication affects project team success.

How important is the communication medium for having effective communication?

Where effective communication is defined as *communication where the goal of the communication is accomplished and the message is understood as intended within a timely manner* based on Fielding (2006)'s barriers for effective communication and Klein (1996) among others' use of the "effective" term.

We ended up with eight propositions that are presented in Table 6 connected to the discussed theories. Proposition 7 covers the basic aspect of communication as explained as a function it is simplest form, sharing information. Proposition 8 is relating to the importance of decoding messages correctly and how central visible nonverbal cues can be in that process. Proposition 9 tries to highlight the importance of social relations in interpersonal communication and how people's behavior is influenced by these relations. Proposition 10 takes into consideration the complexity and norms of informal and formal communication, and how the usual conception does not necessarily cover the normal practices between people. Proposition 11 has a prerequisite that a project context often involves problem solving and discussions in which a communication model that revolves around having continuous or near continuous feedback is superior to a communication model that is based solely on one-directional information flow. Proposition 12 is reflecting the amount of information in different communication mediums, that communication gets better with more information, and that face-to-face communication would be the most preferred type of communication because it is the most information rich medium. The second to last proposition related to communication is proposition 13, which is about the consequences of digital communication as team members will no longer feel a part of the team if all or most communication is digital. Proposition 14 ties communication in projects to the achievement and realization of project objectives for all members of the project team. Through analyzing these propositions we will get an answer to our sub-research question and create a connection between our main research question and the propositions.

Table 6: Communication propositions

#	Proposition
7	Communication is about sharing information between people and groups.
8	It is easier to interpret the message as intended when the communication contains visible nonverbal cues.
9	Social relations is an important factor when choosing who we communicate with.
10	Formal and informal communication is highly dependent on the context and situation.
11	The transactional communication model is superior to the linear communication model when used in a project context.
12	Face-to-face communication is the most preferred communication medium because it is rich on information.
13	Teamwork in a computer-mediated environment is not considered teamwork by the individuals if most or all communication happen digitally.
14	Communication is a mean to achieve and realize project objectives for both managers and project team members
15	Mediums rich on information makes it easier to interpret communication and is therefore most preferred.

2.3 Summary of Theoretical Foundation

Through Chapter 2 Theoretical Foundation, we presented several key concepts to better understand what is already studied and the findings of previous research. The first overall concept, projects, showed us that projects and project team success is not just about delivery, but also the people working in the project team and the project manager. The second overall concept, communication, showed us that interaction and cooperation with other people is a complex and wide subject with many factors influencing how we communicate, and how effectively we communicate. While assessing previous research, we came up with our own propositions based on these. These propositions represent part of the theory that we believe are relevant for our case and will help answer the sub-research questions, which again will give an answer to the main research question. Through analyzing the propositions in Chapter 5 Analysis, and discussing implications in Chapter 6 Discussion, they will assist in answering the main research question.

Why does communication in a project team influence project team success in projects?

In total we have fourteen propositions based on communication and project theory that we will compare to empiric data to see if the propositions are anchored in reality or if they need to be reworked or removed.

When assessing the propositions in Chapter 2.1.7 Project Summary, we gain some clarity regarding similarities and the areas they cover. Proposition 2 can be covered through proposition 3 since team performance factors such as challenging and stimulating work environment can be reasoned to be covered through the aspects of project team success, such as processes, development, and satisfaction, we believe that proposition 2 is obsolete. When we assess the propositions in Chapter 2.2.9 Communication Summarized, we see that proposition 11 mentions two communication models, where both communication models cover the aspect of sharing information which is mentioned in proposition 7. Meaning that regardless if proposition 11 is supported or not, it confirms proposition 7, making proposition 7 obsolete. This also brings us back to proposition 8 which states that visible nonverbal cues makes interpreting communication easier. This could also be translated to communication is easier to interpret if it is rich on information, close to proposition 12. We can therefore strike proposition 8 and proposition 12 and create a new proposition based on the two:

Proposition 15. Mediums rich on information makes it easier to interpret communication and is therefore most preferred. Considering the reasoning in Chapter 2.2.9 Communication Summarized, we will exclude proposition 7 regarding the basics of communication, since it is already covered through 11. We can also see that proposition 6 and proposition 9 covers the same aspects, emphasizing how the social relation between people alters behavior and who we choose to communicate with on a project and how. This link between these propositions can be drawn and create a new proposition:

Proposition 16. Factors of social relation make grounds for choosing project team members and how to communicate with them. Reasoning in Chapter 2.2.9 Communication Summarized, also suggested leaving out proposition 8 since it is covered through proposition 12. These propositions, presented again in Table 7, are summarized by two sub-research questions. One for communication: *How important is the communication medium for having effective communication?*, and one for the project propositions: *How are the main project team performance factors affecting project team success?*. The propositions are used to go into details regarding the sub-research questions, to assess different aspects of these concepts, and be able to precisely answer them.

Table 7: Project and communication propositions

#	Proposition
1	The project team and the project manager are the two main contributors to project success.
2	Project team performance is closely related to challenging, stimulating work environments and getting recognition for the work done.
3	Project team success is relying more on processes, development, and satisfaction than the traditional cost, time, and scope.
4	A well-performing project manager is (a) sharing self-critiques, (b) establishing trust, (c) forms interpersonal relationships and (d) manages the different aspects of communication.
5	Line managers, project managers, and team members are more motivated by challenging, applicable tasks than unchallenging ones.
6	A team member is rather selected on the basis of benevolence and integrity than on the ability to do the task.
7	Communication is about sharing information between people and groups.
8	It is easier to interpret the message as intended when the communication contains visible nonverbal cues.
9	Social relations is an important factor when choosing who we communicate with.
10	Formal and informal communication is highly dependent on the context and situation.
11	The transactional communication model is superior to the linear communication model when used in a project context.
12	Face-to-face communication is the most preferred communication medium because it is rich on information.
13	Teamwork in a computer-mediated environment is not considered teamwork by the individuals if most or all communication happen digitally.
14	Communication is a mean to achieve and realize project objectives for both managers and project team members
15	Mediums rich on information makes it easier to interpret communication and is therefore most preferred.
16	Factors of social relation make grounds for choosing project team members and how to communicate with them.

3 Methodology

3.1 Research Strategy

For a thesis on the subject soft skills, or more accurately communication in a project as a factor for project team success and to see whether established theories on success in project management are applicable for success in the project team. We studied this through answering the research question:

How and why is project team success influenced by the communication in project teams doing deliverance projects?

For our research question, it is necessary with a detailed and intensive analysis of a single case. We are interested in the particular nature and complexity of the case and therefore a case study is the best fit for our study (Bryman, Clark, Foster & Sloan, 2021). Through a case study on an organization we could collect precise data. A clarification that is necessary to be done is why the method we use is qualitative, and not quantitative. Bryman et al. (2021) writes that case studies often are mixed-method research, covering both quantitative and qualitative data-collection. For our study, we have only gathered qualitative data. Even though our research have just focused on one organization, the unit of analysis is not the organization itself but the project team as an organization. As Bryman et al. writes, the sample we collect data from is the object of interest, and the location of the sample is less important. The requirements, advantages, and drawbacks regarding the design is discussed in Chapter 3.2 Research Design and Chapter 3.3 Research Method. While our sampling approach and data-collection methods is discussed in Chapter 3.4 Sampling Approach and Chapter 3.5 Data-Collection Method. Lastly, we describe the research process and provide reflections on the research method and process in Chapter 3.7 Evaluation of Research Method and Chapter 3.8 Reflections on Research Process.

To find the correct research method and guide our efforts we have used methodology practices presented by Bryman et al. (2021). In addition, we use articles regarding remote interviews and gathering of qualitative data with social distancing as a factor that affects our data. To assess the quality of our research we use Tracy's "Big-Tent" criteria.

3.2 Research Design

For choice of research design Bryman et al. writes that we have five options; experimental design, cross-sectional design, longitudinal design, comparative design, and case study design (Bryman et al., 2021). Experimental design would be unfitting to our study because it requires design and planning of a experiment to take place in real time, which would be both unpractical and unsuited for our research question. Experimental designs are not suitable since we seek to find factors in a project team in an established organization. Cross-sectional design is not right for our research question either. This design is a better option than experimental, but it is concerned with collecting data from a sample of cases in a single point of time, to make the data quantitative (Bryman et al., 2021). We are not looking for quantifiable data, but experiences on a specific case. This is troublesome taking into consideration that projects are temporary endeavours as mentioned in Chapter 2.1 Projects, and the fact that every project the organization have done will most likely be somewhat unique. Longitudinal design is an interesting form of research which collects data more than once, over a period of time. This could have been interesting, but is often an extension of a survey research or cross-sectional design and therefore not suited for a

master thesis spanning over 20 weeks of work (Bryman et al., 2021). Bryman et al. (2021) also writes that informants in this kind of research have a tendency to alter and adjust their response in follow-up data collection, hampering the quality of our research. Comparative design could have been a good design to use for our research question. To have the possibility to compare communication in projects at several contrasting cases or situations could create associations rather than findings, which could increase the internal validity (Bryman et al., 2021), but brings the same issues as with longitudinal, time and resources available for our study, and therefore not an option. This brings us to case study design.

3.2.1 Case Study Design and Unit of Analysis

Rowley (2002) writes that for a research questions that is answering a "why" or a "how", it is advantageous to use a case study to make grounds for new theory. The case includes two project teams with two project managers. In addition we wanted common colleges and the leader for the project managers, to get two other perspectives on the two project managers. This allows us to compare the two units we are studying, but with a holistic perspective since the two units are so closely interlinked. The main unit of these cases are the project managers, which the inquiry centers around, and it is not possible for us as researchers to manipulate the behaviour since it have already happened and the informants are sharing their contemporary observations. Case studies are often criticized because the number of units are few compared to surveys, but as a compensation, the level of detail is greater (Rowley, 2002). What makes this case special is that it does not focus on a special business area, but is focused on the phenomena of how and why communication influence project team success. Focusing on a phenomena inside a real life context, which makes it applicable to a wider field of study. Through this case study we seek to generate revised theory on project success and theoretical generalization. And that is also why a case study is most suited for our thesis, since we seek to explore a phenomena within projects which have not been thoroughly investigated before, as mentioned in Chapter 2 Theoretical Foundation. The case emerged as a result of theory stating that one of the most highly regarded skills among project managers was communication. This made it apparent that we have to understand why communication is of such importance to, and how it affects, project team success.

To answer how communication in a project team ties to project team success and find out why communication is important, we set out to examine two project teams from the same company. We planned to have two project teams with their respective project managers and a few team members, where one on each team had worked with the other project manager. Two colleagues and the project managers' common leader was also asked for, in addition to having two project managers with different communication skills. This was fulfilled, but after analysing the data we saw that a comparative study between the two teams was unfitting as the project managers were too similar.

The similarities of the project managers' communication was not the only similarity between them, as we initially only wanted the communication to be the differentiating factor between the project managers. The project managers are working in the same organization, have shared leaders, colleagues and team members, and are of approximately the same age and experience. Classifying this as multiple units would give us some replication, which could help validate our results. However, we believe the many similarities better fit a holistic view on the department and their projects and we will therefore analyse them as a single unit. Rowley (2002) writes that there is no simple answer to what is the best choice of research design, emphasizing that it always depends on the case and what one seek to accomplish.

3.3 Research Method

One important aspect of our study is that we seek to view the world of projects through the eyes of those actually executing the projects. Learning about their observations, their understanding of their everyday work and the situations they experience through their work. To gather data containing opinions, experiences, context, and have flexibility, qualitative interviewing is a suited method for collecting data according to Bryman et al. (2021). Some of the advantages to qualitative interviewing are the possibility of seeing through the eyes of the ones being studied, letting the ones being studied provide descriptions and emphasizing parts of the context they find important themselves. In addition, we found that qualitative interviewing gave us the flexibility we needed in our questioning and the possibility to interpret potential social processes in the sample of data (Bryman et al., 2021). This then circled back to theory we have already researched, and review of the research question. This is also where our method differs somewhat from general qualitative research, where the theory is grounded in the collected data (Bryman et al., 2021). Our method does not ignore the fact that the data gives ground for theory, but we started out with an understanding of theory before hand, and used that theory as the basis for questioning and further review of the theory. We believe that these reasons combined provided the best set-up for our research and gave us the possibility to explore and gain a more comprehensive understanding of the nuances from our informants.

3.4 Sampling Approach

There are often two levels of sampling in a qualitative research, one is the case or context, and the second one is the informants (Bryman et al., 2021). Because we were interested in a very specific group of people, we chose purposive sampling method and started early to talk to people that we expected to have interest in taking part of our case study. The process was starting as early as nine months before the writing began, as we had been informed that finding a case company could be a long process. We attended learning and development courses for project managers and asked a selection of people there if they allowed us to contact them regarding cooperation with them/their company on a case study regarding our project and/or master thesis. Three project managers from three companies were contacted this way. Two other companies were contacted via mail and a final one was contacted through social mingling after discussing our common interest in projects and communication. One of the companies contacted by email was quick to reject the request, but the other five would like to stay in the loop when we said that we would contact them again when we started on our master thesis, as the project thesis would be a theory study without any empirical data. At the time we were not sure which direction our thesis would go, but we were certain that it would be around project managers and their competence and/or interaction with others. Even so, to find that project managers out there found interest in what we were eager to study and wanted to cooperate with us gave us increased confidence towards finding answers to what we were curious about.

Possible case companies were identified by having projects as a part of their core business, their interest in project management and communication, and our personal interest in their company. After a short discussion of which of the three most interesting companies we wanted to work with, we sent an email to one of the project managers at the development course and one to the second company initially contacted by email. They will be named Company One and Company Two respectively. The project manager from Company One was still very positive and set out to discuss it with the respective coordinator/supervisor. Company Two was slower to respond and focused more on the challenges than on the possibilities and when they finally had a decision, we already had an agreement with Company One. The remaining three persons we had spoke to

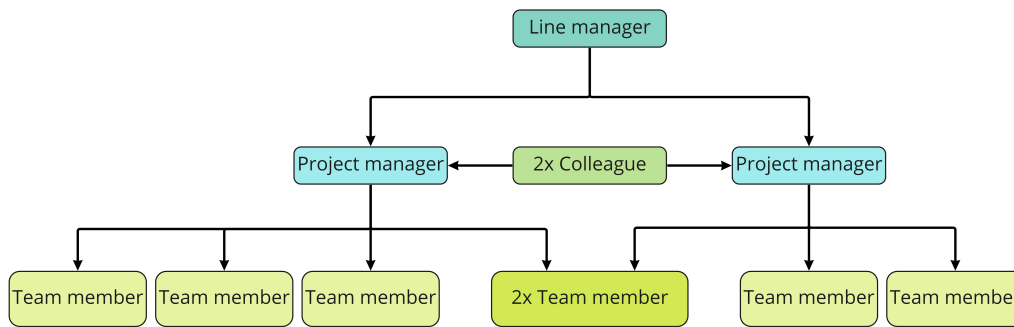


Figure 4: Final interview structure

got informed that we were moving forward with another company.

3.4.1 Sampling Process

After making a deal with the case company, we set out to find our informants. Except for the requirements related to informants' roles and relations, we had no specific requirements. We had a wish for two project managers with different communication skills, but it was not possible to accomplish. Our sampling process can be labeled as a combination of opportunity sampling and limited snowball sampling. Opportunity sampling was used when finding the case company as it was selected on the basis of how much information they could provide and how interesting it would be for us to cooperate with that company. When we agreed to cooperate with the case company, we used snowball sampling to reach out to the people we wanted to learn from. As we only had contact with the project manager but wanted to interview project team members, another project manager and their line manager, we relied on the first project manager to give us contact information of the other people, classified as snowball sampling (Bryman et al., 2021). This was easy and efficient for us, but might have decreased their trust in our independence, which is a process that could have been handled differently. At the same time, it is not certain that we would have gotten the same results if there had not been a point of contact whom the informants trusted to approach internal informants. Initially we had a set sample structure because we knew what we wanted and it would represent two project teams with correlating project managers and a common line manager to give us data diversity. However, after completing the interviews we made contact with our first informant, the project manager, again to discuss the possibility to interview a younger person, as it would be interesting to see if age possibly affected the answers. That was possible and we extended our sampling scope to match the two new informants and ended up with the structure visualized in Figure 4. The two new team members were not in a team member position any longer, but considering their previous involvement and that many of our other team members were working with other project managers now, we decided that it has little effect on our initial scope.

When it comes to our sample size we are barely within Baker and Edwards (2012)'s criteria, but far away from a satisfactory amount according to Gerson and Horowitz (2002). However, Bryman et al. (2021) emphasizes that there are large disagreements when it comes to what a satisfactory sample size is. Given the resources we had, the information we have gathered, and the recommendation we got from our supervisor, we are pleased with our final sample size.

3.5 Data-Collection Method

Most data was collected through semi-structured interviews through the digital platform *Microsoft Teams*, while a restricted document review of a published annual report was used to understand the case company's structure and business area. This document was representative, and can be classified as authentic, clear and comprehensible, but can be said to present a favorable picture of the organization. Even so, considering Bryman et al. (2021)'s criteria for the quality of documents, we would consider this document to be a sufficient element for our case.

Other data collection options could have been observation, which was something we initially wanted to do because it allows for more raw collection of data and would represent real world scenarios as it would be hard to alter their behaviour consistent thought the observation period. Experiment would also been a viable method as we could have controlled many of the parameters, observed and recorded a whole process, and alter or start a new experiment to examine new questions. The main reason for not choosing either of them is time limitation and social distancing. Observation or executing an experiment takes a lot of time and resources, which is not present in the relative short time period of a master thesis. In addition, social distancing was still intact when planning the research method and agreeing on the collection method with the case company. With these two limitations, digital interviews was the way to go, as they can be efficient in time and can be done remotely.

Digital interviews can be structured, semi-structured or non-structured, also called open interviews. We chose semi-structured interviews as we had a clear focus from the start on what we wanted to know more about, but still were open for unforeseen inputs. Having semi-structured interviews also allowed us to be more specific in our questions and change who asked the questions without to many implications (Bryman et al., 2021). However, we did not take advantage of the possibility to change interviewer as we did not find it necessary nor beneficial to do it. Semi-structured interviews are favorable because we it allows for more flexibility during interviews compared to structured interviews (Bryman et al., 2021). Informants are then allowed to talk relatively freely on the topic and provide details during their answers who might have been restricted if we had chosen a more detailed structure. Since we have a case encompassing a large area of projects and communication, semi-structured interviews allowed us to adapt to the informants as we interviewed them, while also using our interview guide as a path they should stay near. By doing this we gained much details from the informants on the things they considered important, which again is a part of the data in itself.

All interviewees were happy to contribute to our study and everyone agreed to have the interviews recorded. Our point of contact in the organization gave us information on available weeks for interviewing before we made our interviewing schedule. We then contacted each member independently for scheduling a suitable time slot. This allowed for good flexibility in interviews, detailed gathering of data, and created some distance between ourselves and the informants' leaders, responsible for selecting the respective informants. Bryman et al. (2021) writes that this approach allows the interviewees to shape the content and direction of the interview and takes greater interest in the interviewee's point of view. At the same time, it is not always beneficial for the study to let the interviewees fluctuate to much from the topic, making our interview guide important for these semi-structured interviews. The length of the interviews can be seen in Table 8, where almost half of the interviews are within 10% of the estimated time frame of 60 minutes, the shortest interview was 37 minutes and the longest was 68 minutes. This data could suggest that project managers are more interested in the topic of communication than the team members, but considering other team members and colleagues with project manager positions spent less time, we will not make that assumption.

Table 8: Length of interviews

Line manager	58min
Project manager 1	61min
Project manager 2	68min
Colleague 1	55min
Colleague 2	51min
Team member 1	45min
Team member 2	51min
Team member 3	53min
Team member 4	57min
Team member 5	46min
Team member 6	63min
Team member 7	37min

3.5.1 Theoretical Data

The theoretical data was mainly collected from articles found using Google Scholar, Oria [school digital library service], or being referenced in articles we read. The remaining articles was suggested by our supervisor or found in text books. We believe that our reference list contains relevant articles which presents previous research on the topic. The research previously conducted gave us a good understanding of the topic, and pointed to several interesting points. Reading established researchers reflections and assessment on the project and communication field of study highlighted important aspects to consider.

3.5.2 Interview Guide

Because we where doing semi-structured interviews it was important to have a guide for how to do the interviews (Bryman et al., 2021). We started the work on the interview guide by discussing what we wanted to ask the informants. After reviewing our theory and multiple brain storming sessions we had plenty of questions. The next step was to group the questions, have them in a logical order and make the total length suitable with our time estimate: 60 minutes. The main interviewer did our first pilot interview with his girlfriend, which was done in a hypothetical context and gave indications that we were on the right track. Just to be sure he also did a second pilot interview with a manager which had team leadership responsibility, but the organization was not project driven. Some additional follow-up questions where added before the first interview took place.

3.5.3 Doing the Interviews

All the interviews were done digitally, which almost was a prerequisite given social distancing, geographic distance, and the work situation of one of the interviewers. Bryman et al. (2021) mentions many drawbacks of digital interviews, but we experienced only a few. The main drawback we experienced was starting sentences at the same time due to connection issues, other then that we had exclusively positive experiences with digital interviews such as flexibility, no cost of travel and feasibility. Theoretically we could have done it face-to-face, but we believe that the challenges related to travel and the pandemic would have made the thesis unfeasible if we could not have it digitally.

Having the interviews digitally also made it possible for the both of us to attend interviews, even when being on vacation. Interviewing was fun, even though we where nervous at first. We

managed the semi-structured interviewing rather well, as most questions were asked the same way and order every time. There were some instances where we would ask a question where the interviewee already had touched upon the topic or felt like the question already had been answered, and a few instances where the question was unclear for various reasons.

One question was ill defined, as it used the phrase "physical communication" for body language, which was not obvious for our informants. This was changed after the first interview, as the informant reacted to what physical communication would mean. The phrase was mentioned one or two times after the change as well, as the interviewer would go off script and not read from the interview guide. If we were to do this again, we would prioritize to have a test interview with someone that is within or close to the research scope, as it would more likely serve as a better quality checker. However, we are satisfied with the interviewing process and do not believe that our minor deviations made any considerable impact on the data collected.

3.5.4 Transcription of Data

Since we conducted the interviews through the digital meeting function on the application Microsoft Teams, and all informants agreed to have the meeting recorded, most of our interviews were automatically transcribed with voice recognition software. This was extremely time saving, allowing for precise transcription of each interview, including paraphrases, pauses, and incomplete sentences, which makes the transcription work easier. We still had to manually edit each transcription for instances where the voice recognition failed, such as instances where the voice recognition software had misspelled words or missed parts of sentences. Even though this takes some time, it is not nearly as time consuming as Bryman et al. (2021) depicts with five to six times the length of our approximately hour long interviews. This meant that transcription of an hour long interview took approximately two hours. Because of some technical issues, we had to transcribe two of the interviews manually, which took considerably longer. This stands as a good example of how favorable voice recognition software have been for making interviews, researchers can assess the whole interview in writing seconds after the recording is done, saving time for other parts of the study.

Interviews were conducted in Norwegian, which made it easier to interpret potentially misspelled words, pauses, and paraphrases. This allowed for thorough examination of interviews for coding later, as is mentioned as an advantage of transcription by Bryman et al. (2021).

3.5.5 Coding of Data

Bryman et al. (2021) writes that to code qualitative data one should re-read the data and write memos from them. Since we already had written memos at the end of each interview to document our first thoughts, impressions, and understanding of interesting factors mentioned in each interview, we considered our proofreading of the transcripts a thorough enough re-read for being ready to code. Using the interview guide, the interview structure, and the memos written was the first step to categorize and gain an understanding of the content of our data. Linking the categories in the interview guide to what was actually said is seen as a drawback of using the interview guide for classifying the data, but since we were aware of this and used the interview structure and looked for answers for a question other places than where the question was asked, we believe we limit the drawback of using the interview guide as a support when coding the data. The themes from our interview guide were used to find the initial category for data as most data on a topic was collected from the same place in the interview guide. These categories were centered around our research question, and we arranged codes under their relevant category and created

new categories when a code did not fit into an existing category.

This is fairly close to what Bryman et al. (2021) presents as an deductive approach or thematic analysis. What differs in our approach is that we used pre-identified themes before starting our initial coding. This allowed for a more structured approach to our data, already having identified themes to look for in the data. This allowed us to move faster into more specific sections of codes, since the categories was guiding the content of the data. It also allowed us to see data that was centered around other topics and unrelated to our research question. Our initial themes was: project success, project phase, project manager, personal attributes, motivation, and communication. Within our approach we allowed adding of new categories if we found interesting data that did not fit into any existing code. This allowed the data to also form the categories, which is a trait of inductive approach. An example of a category that was added during coding of the data was the category "social commitment". After assessing the data we discovered that almost all informants mentioned or emphasized different aspects of social commitment, highlighting the importance of building social bonds as included in Chapter 4.2.2. This made it clear that it is necessary to create another category, and code data coherent with the new category as examples of that. This was an easy task to do in the program NVivo, which we used for all of our coding.

NVivo allows for easy categorizing and coding, as well as the possibility to find the quote in its original context, giving us easy access to find the meaning of the quote and gain an overview. NVivo also gave us a structured overview of our codes, what category a code belonged to, and if they were relevant for more than one category. This allowed us to see similarities and differences between informants' answers. An overview of the number of codes from each interview is also provided by NVivo. One of the general critiques of a coding approach to qualitative data is the potential loss of context regarding what is said (Bryman et al., 2021). This did not provide much trouble on our side because of the intuitive structure and functionality of NVivo. If we were uncertain of the meaning or wanted more information, it was just a click away. The codes gained from this process is used in Chapter 4 Empirical Findings, to show the results from our collected data.

To get the full value of our findings, it is important to understand how we approached the coding of data. To go from an overarching theme in the interview guide/transcriptions, down to a specific code inside a category in NVivo. As mentioned in Chapter 3.5.2 Interview Guide, the questions was grouped in a logical order and made it easier to find sections that could be grouped in one theme. Then, after grouping one section into a theme, we would assess that section to see what the informant actually was talking about. If there were information on other team members, it would go into the project team category. Then we would examine what the information was saying about the project team, e.g. is the informant talking about communication, goals, work habits, etc. Some of the codes was also sorted further based on how it addressed the information, e.g. was it drawbacks, positive aspects, or just descriptive information. To generalize the process we can describe the process of giving a quote a suiting code as a string like this where we identify: [Theme - Category - Topic - What - Why/How].

We will use a quote (4.4.1) from Chapter 4.4.1 Why is success challenging?, to give a specific example of our coding approach. First we found interest in the sentence and identified that the informant was talking about success, project success, and challenges to project success. The challenge of project success was resource allocation and leadership of the project manager. In addition to highlighting challenges to project success, the informant also talked about the project manager and wanted skills in the project manager. This gave us two strings of code: [Success - Project Success - Challenges to Success - Resource Allocation] and [Project Manager - Wanted Skills - Managing Project Team Members]. Another example of a code string we have is: [Project

- Communication - Preferred type - Oral - Rich on information]. This code contains a quote that is included in the empirical data and is the basis for the title of Chapter 4.3.4 What is the thing with oral communication?. Using code strings allowed us to maintain a degree of context of the quote while still fragmenting the data.

A loss of context is described as one of the main problems of coding data by Bryman et al. (2021). Comparing our approach to Bryman et al.'s description of the process, we have been moving backwards through the process. Starting from an overarching point of view and breaking it down into more details before fragmenting into smaller portions of data. This helped us maintain an overview of data, but also demanded frequent re-assessment of the data to see connections to other themes. Increased time consumption was then an acceptable consequence of maintaining an overview of the data, and allowed us to see the whole picture better, which is an advantage when we are assessing a wide topic. Maintaining an overview of the data was probably the key to our coding. When we conduct semi-structured interviews, informants are allowed to stray from the questions, making coding both more important but also harder, since a lot of the data do not directly answer our questions. Good coding ensured that information was collected and used in the proper places, looking for information in other places than we initially expected was also increasing the coding challenge but is important to ensure quality.

3.6 Ethical Considerations

In our study we have gained access to privacy data on informants which is the main ethical consideration to handle carefully, especially to protect the anonymity of our informants. We are using Tracy's tent criteria to assess the quality of our data in Chapter 3.7.1 "Big-Tent" Criteria, and will assess the ethical aspects of her criteria her and not in Chapter 3.7.1 Ethical. Tracy (2010) writes that ethical aspects to reflect on are procedural (do no harm, avoid deception, informed consent, privacy), situational (are our actions justified in this situation), relational (are we aware of our role and do we treat others with respect), and exiting (do we present our findings in a just way).

Procedural ethics are well thought through, and measures to ensure procedures are followed and done in an ethical way have been taken. On the aspect of situational ethics, this study do not challenge anything other than already established practices. No informants are compromised and we have been careful to consider whether specifics mentioned in interviews are "okay" to share in Chapter 4 Empirical Findings. During our interviews constant consideration was given to the possibility of affecting informants. We were careful not to impose personal beliefs or biases on our informants, allowing them to reflect without the answer being influenced from other factors than the question asked. We also allowed for informants to highlight what they thought was important for the research as described in Chapter 3.5.2 Interview Guide. Lastly, we have presented our research in a just way, taking into consideration possible interpretations of our results and describing our own intentions for this study to make sure that no results can be used to negatively portray any informants or the organization we have cooperated with. The study was conducted to discover possible theoretical implications in how the project organization experienced their own work, not to point to any misdoings in their practices.

Before beginning interviews and gathering data we investigated what measures was needed and how we were to store informant data. The general considerations to make regarding social research and privacy data is as follows (Bryman et al., 2021): whether there is harm to informants, whether there is lack of informed consent, whether there is invasion of privacy, and whether deception is involved.

Our data collection method does not include any physical experiments or acts which could expose informants to physical danger. On the notion of harm, exposure of statements or quotes could make informants feel harmed, and therefore we have taken careful consideration regarding anonymity of our informants to ensure confidentiality. We coded informants' names and stored recordings of interviews with coded names on institute servers to avoid "runaway"-data or identities. Before conducting interviews we sent out an informative letter explaining with the intentions for these research and how privacy data would be treated beforehand. This allowed informants to make an informed decision whether they wanted to participate in the study, as is described as good practice by Bryman et al. (2021). In addition, we provided each informant with a letter of consent they needed to sign before conducting the interview, giving us permission to treat privacy data. We had already gained permission from Norwegian Center for Research Data (NCRD) to conduct our study on the notion of how we would treat privacy data in accordance with General Data Protection Regulation (GDPR) and NTNU regulations. Through this thesis we also ensure that informants are referenced by role and gender neutral descriptions in order to not disclose anyone's identity. The last important aspect is deception. For collection of data and approach towards the organization we have studied, no deception methods have been used. Through our informative letter and the introduction to our interviews we have been forthright and explained the purpose of our research as well as explaining the purpose of our questioning. By doing this we ensure the informants know what their answers will be used for and what role they play in this context.

We feel that anonymity was of importance for this case since all informants have been working close together before and will most likely work closely together in the future. We have therefore chosen to not use any aliases, as a connection between quotes and/or to the time spent in interviews, can possibly be used to identify the informants. We still mention the role inside the company they have, as seen in Table 8, which is the most important and interesting. For those participating in the study, it could be possible to identify other informants based on the role, but it will be mostly speculation as most of the informants have multiple roles, and have at times been answering with consideration to another role than what they were interviewed as. Lastly, when the thesis is finished, all data will be deleted from servers.

3.7 Evaluation of Research Method

In Chapter 3.1 Research Strategy, we mentioned some considerations to keep in mind when choosing research strategy. Those considerations were connected to the choice of method and the quality of research. Quality of research is traditionally determined by the three criteria: reliability, replicability, and validity (Bryman et al., 2021). These criteria are often criticised because they are more commonly used to assess how measurable results are, which is not the focus of qualitative research. Bryman et al. (2021) writes that social research is struggling to meet these criteria, especially replicable. If we accept the three traditional criteria for success; reliability, replicability, and validity we take a position where we say that we can capture a recognized picture of social reality through our theories and concepts (Bryman et al., 2021). This would be somewhat pretentious. Instead we would like to adopt Tracy eight "*Big-Tent*" criteria, which gives a more nuanced picture of the quality of our research and apply these in Chapter 3.7.1 "*Big-Tent*" Criteria. We will discuss limitations for our thesis in Chapter 3.8 Reflections on Research Process.

3.7.1 "Big-Tent" Criteria

Tracy (2010) introduced her model of criteria in a pedagogical manner, with the goal of producing a best practice for qualitative research. Tracy also writes that qualitative research is less esteemed among governmental and funding agencies, and emphasizes that decision makers in these organizations are often unable to properly evaluate qualitative research (Tracy, 2010). Showing the importance of adjusting the criteria for qualitative research to be better suited for assessing it. Tracy's criteria for qualitative research is shown in Table 9.

Table 9: Criteria for assessing the quality of qualitative research by Tracy (2010).

Criteria	Various means, practices, and methods through which to achieve
1. Worthy topic	The topic of the research is: relevant, timely, significant, and interesting.
2. Rich rigor	The study uses sufficient, abundant, appropriate, and complex: theoretical constructs, data and time in the field, sample(s), context(s), and data collection and analysis processes.
3. Sincerity	The study is characterized by: self-reflexivity about subjective values, and inclinations of the researcher(s), and transparency about the methods and challenges.
4. Credibility	The research is marked by: Thick description, concrete detail, explication of tacit (non-textual) knowledge, and showing rather than telling, triangulation or crystallization, multivocality, and member reflections.
5. Resonance	The research influences, affects, or moves particular readers or a variety of audiences through: aesthetic, evocative, representation, naturalistic generalizations, and transferable findings.
6. Significant contribution	The research provides a significant contribution: conceptually/theoretically, practically, morally, methodologically, and/or heuristically.
7. Ethical	The research considers: procedural ethics (such as human subjects), situational and culturally specific ethics, relational ethics, and/or existing ethics.
8. Meaningful coherence	The study: achieves what it purports to be about, uses methods and procedures that fit the stated goals, and/or meaningfully interconnects literature, research questions/foci, findings, and interpretations with each other.

Worthy Topic

Tracy (2010) writes that good qualitative research is relevant, timely, significant, interesting or evocative. Continuing with emphasizing that good topics as easily emerges from timely societal or personal events could be better topics than educative topics who are more opportunistic or convenient without larger significance or personal meaning. Saying that research which challenges established ideas is often worthwhile in comparison (Tracy, 2010). Our research question seeks to explore other success criteria within project team success than the traditional *Iron Triangle*, fulfilling the first criteria for good qualitative research with a relevant and interesting topic of interest to both us and the subject literature. A study that challenges established literature within the project management field of study is of evocative nature, and could be of great significance to further research and practice within the field. Stating that this study directly challenges research from a field of study which have been researched since the 50s might be a little bold, but progress within the field have also been minor, which can point to a timely need for changes. Considering this we can conclude that the topic of our study is worthy.

Rich Rigor

High-quality in qualitative research is recognized through rich complexity, in contrast to quantitative which is appreciated for its precision (Tracy, 2010). Emphasizing that with a large number of theories and a lot of data, the researchers are able to find nuances and embrace the complexity of the topic. Rigor also points to data-collection, procedures, and analysis. Through research on the topic communication in connection with project success we have included an abundance of complexity, considering the countless possibilities of communication and how it may be interpreted. We gathered data from 12 informants to include as many perspectives as possible on the research question, giving us a variety of perspectives and possible realities from each of the informants. This have provided a large amount of data which is possible to use for generalize findings. Considering context of our study, a project organization can be claimed to be appropriate to research concepts within projects, making the context of our study right for the research question at hand. The use of semi-structured interviews also allows informants to reflect and choose what they deem important themselves, making the data just as complex as the field of study. It can be questioned if one round of semi-structured interviews are sufficient time spent collecting data, but at the same time, interviews with all informants lasted approximately one hour and transcriptions was detailed down to every para sound made. Considering these arguments we can conclude that our study meets the necessary rigor.

Sincerity

Self-reflexivity and transparency are ways to reach the end goal of sincerity and give a notion of genuineness and authenticity in the research (Tracy, 2010). To give this notion, we as researchers have to be honest about our point of view, our shortcomings, and our strengths. Through Chapter 3.8 Reflections on Research Process, we reflect on our own research, how the process have moved forward and our shortcomings to provide transparency in this research. Our point of view and motivation for doing this study have also been mentioned several times and been reflected on to give the readers an understanding of where we are going and where we are coming from. Our informants have also provided us with personal reflections and views on the topic of our study and what they find interesting. It is not a secret that we both find the "soft" or "human" side of project management to be exciting, and that we was motivated to do this study because of our views on project management. This has given us a possibility to view collected data from another perspective than what traditional project management theories would suggest important. We have also noted through our interviews that informants have started reflecting on aspects of their everyday work life from another point of view than they have been used to. Our perspective on project management could be a drawback when assessing our data, with the possibility of looking for results that are not there. At the same time, every aspect of this research is documented and explained in detail in our methodology. We have also taken several step backs to consider what our findings actually means in a bigger picture and presented data which disproves propositions or perspective. Showing that our research and intentions for this study is sincere.

Credibility

Credibility is a term used for describing the findings of data in qualitative research, and refers to trustworthiness and plausibility of the findings (Tracy, 2010). To make sure our findings are trustworthy there is a need to describe the context and situations of our findings abundantly. Through a thick description of our findings in the interviews, Tracy (2010) writes that the reader

is able to make up their own minds and make their own decisions in line with findings. To be able to understand the cultural language in the project teams we would have to have spent time in the field for a longer period of time, to actually understand what the cultural values are. Our study was conducted through digital semi-structured interviews, which moves us further away from tacit knowledge, but we have provided clear descriptions and tried to interpret our informants through their expression of nonverbal cues to the best of our understanding. This will at least provide some understanding to cultural values. In addition, the line of questioning did not encompass technical aspects of projects in the organization, making tacit knowledge less important when analyzing data. In Chapter 4 Empirical Findings, we provided detailed description of our findings and what was said during the interviews, not emphasizing empirical findings in direction of our research questions. The sample from the project organization included several parts of the project team, from managers, team members, colleagues, and line managers (only personnel responsibility), which gave us multiple varied perspectives on the topic and from their different point of views, enhancing the credibility of our study to a satisfactory level.

Resonance

Resonance is used to describe the research's ability to meaningfully reverberate and affect an audience (Tracy, 2010). This means that the research should be of meaning to someone who do not know anything about the field of study beforehand, referring to the aesthetic and transferability of the research (Tracy, 2010). Through our own engagement in the topic we have given our readers a personalized perspective on the study, while maintaining an objectiveness in presenting findings and presenting results, which further affects our own view of the topic. When conducting a case study, as we have done, it can be difficult to show transferability considering the unique nature of the case. At the same time, we have shown that the topic can be applicable to many contexts because of the "human" factors. We can argue that these factors are applicable to several business areas because projects are so extensively used and because you will people in all businesses who have to work together in teams. This natural generalization does not come from our desire to change practices, but how the study shows *why communication in a project team influence project team success in projects*.

Significant Contribution

When assessing the significance of our study's contribution it is important to gauge the current situation of knowledge, practices (Tracy, 2010). This includes reviewing whether the research holds any implications for existing theory, or if that theory is applicable in a certain case or different context (Tracy, 2010). The theoretical significance can be difficult to judge, given the uniqueness of the case study, and whether findings in this study is transferable. On the other hand, as explained previously, our research covers a more "human" aspect than what traditional project management have done. Making our findings relevant for established theories on project management. Even though the extent of our research might be too narrow for large theoretical significance, it can be viewed as heuristic significant, because the "human" aspect of it. As an extension of our research it is possible to dig deeper into these alternative sides of project management, showing how this study is of significance to an old and established field of study.

Ethical

Ethical aspects have already been discussed in Chapter 3.6 Ethical Considerations and we believe that our thesis considers ethical considerations thoroughly and fulfils demands of anonymity for

informants.

Meaningful Coherence

A study with meaningful coherence contains literature that situates findings and the findings attend the research question, and the study uses a method suited for answering the research question (Tracy, 2010). Meaning that there is a logical connection between the different parts of the thesis. Our study uses a case study method to research project teams in an organization that uses projects and investigate why communication is such an influence on project team success. Literature presented in our theoretical foundation provides an understanding of the research question as well as provides valuable placement of findings in relation to the literature. Further, a case study have shown to be the best suited method for this study. This has contributed to establishing a red line through our thesis which connects the different parts together and a plausible end to our study.

3.8 Reflections on Research Process

In this chapter we will describe our reflection the research process, reflect on it, and provide individual personal reflection of the group work and work process. This will give an insight to how we approached the task, see if there is anything we think could have been done differently, and what we personally think of the process.

Our supervisor have assisted us throughout the process with his guiding in regular meetings and the occasional email. He has also been flexible by having a combination of physical and digital meetings, which has been key for our success as Magnus was not located in Trondheim at any point during the thesis. This had some implications such as our dependence of digital solutions to work and cooperate. We combated a lack of team feeling and commitment by setting daily and weekly goals, working together in an online writing program, and video chatting whenever possible. This will be discussed more in Chapter 3.8.1 Personal Reflections.

3.8.1 Personal Reflections

As mentioned in Chapter 3.8 Reflections on Research Process, Magnus was not present in Trondheim as he has a full time job and lives in Oslo. Erik Olav lives in Trondheim and was therefore able to meet with the supervisor at the university almost every week. Hybrid meetings was fruitful when conducted, and it is definitely an advantage to wrap more heads around feedback on our thesis. Throughout the thesis we believe our methods have been giving us a good ground for assessing whether our research is substantial and provides new findings to research further within the project field of study. When we have been able to cooperate through digital meetings on a day-to-day basis we have experienced an extreme increase in work rate and efficiency when working together. Assessing this in a retrospect shows that it could have been beneficial to adopt this work style earlier, but circumstances demanded adaption.

Magnus

This chapter will elaborate on Magnus' point of view, with his feelings on the process of the master thesis. Firstly the areas with room for improvement will be presented, next the positive aspects, before a summary of the overall thoughts and a final impression.

As one part of a two-man-team on the master thesis, I knew there was going to be a lot of work. My situation as working full time as an officer on a Navy frigate automatically brings tense shoulders. Even though my schedule is known to me, I am not allowed to share operational plans and chain of events with Erik Olav, which makes it somewhat unpredictable for him. This is a burden to bear for both, and provides me with bad conscience when the progress is not at the intended pace. From my side, I feel the need to compensate for this by being as adaptable as possible and putting in the extra hours to increase progress. Working full time and studying full time is a deliberate choice from my side, and I have therefore tried to take most of the burden myself. Even though we are equal partners in this thesis, I feel much responsibility to show my dedication. Even though I am perfectly comfortable working disconnected, working together on a daily basis when possible have shown me more and more how important close contact and relation is to teamwork. Funny enough, this is in line with our findings. The part of this period of time and thesis that have have proven to be difficult is to manage the time available and use this to engage in teamwork to ensure progress.

This focus have also provided the results it was intended to bring. Using the available time to connect through video chat and communicate as closely as possible, to make it comparable to being situated in an office. Through this close collaboration we have been extremely progressive, experiencing the effect of good teamwork, discussing possibilities, implications, and how we can move forward. This experience have provided me with a positive feeling. Showing that we work well together as a team, coming from different perspectives, having different styles, but still putting together good work together. An important aspect of building this sense of team feeling was the social part of our "digital office". Talking and discussing everyday subjects contributed to building a social bond which strengthen the commitment to the task at hand. Even though we are aware of the effect of social bonds in the military, and how it enhances cooperation, it is valuable to see it work in everyday situations without the stress of a warfare scenario pushing limits.

Overall I am pleased with the process we have been through. With my own working situation and the physical distance between us we have managed to write a good thesis and work through periods of low progress and low motivation. As well as experiencing the highs of the high progress, high motivation periods where the keyboards where experiencing high temperatures. We have suppressed the bad effects of a slow start and worked well as a team to exploit the good periods towards the end. Making me pleased with the results of this thesis.

Erik Olav

This chapter will give an insight to Erik Olav's point of view, and his feelings around how the process has been. First the negative critique and points of improvement will be presented, next will be the positive feedback, before ending it by summarizing the overall thoughts and final impression.

Working on the master thesis was approximately what I expected after completing the project thesis. I knew it would be challenging, but I was mentally ready and I was certain we would be able to perform as long as we worked together. I knew from the project thesis that I worked better when working alongside Magnus, the only problem was that he would be sailing for the first 6-7 weeks. This resulted in mediocre performance from my side, but I focused on doing one task at a time and have some progress every day. This period has also been affected by the uncertainty around the war in Ukraine, and whether Magnus suddenly had to sail away and set the master on hold. This taught was most prominent when the news media had an update every hour, but have since faded away.

The team feeling was another thing I feel we managed well. We would update each other about our weekend, tell jokes and show our general mood before starting to work. This has mostly been during video call work, but we also tried to include it in times where we only sent messages. When Magnus has been at home, we have spent whole days video calling while working. I think that has been key to our success, as it has provided a stronger team feeling, increased our commitment, and lowered the threshold for asking questions and interacting. These factors can relate to motivation, which we found in our data to be important for team performance.

Other data suggests that a physical belonging is important, which we also can relate to. However, I think we reduced the negative effects of not having a physical belonging by being present with video calls. The way we worked could simulate an office environment, as we would sit face to face without talking, just doing our own tasks, but if there was anything we had instant two way communication.

Overall, I feel like me and Magnus has performed well. We have adapted to the environment and made the best out of the options we had available. There was room for improvement in the start phase when we worked unconnected, but I knew it would improve once we got to video chat so I was not too worried about the lack of communication. When all is considered, I would say that I am satisfied with the process and the result.

4 Empirical Findings

4.1 Case Description

To provide some context and understanding of the situation we will describe the case before providing our empirical findings. To explore other factors with a potential to influence project team success we have interviewed project teams from an organization. All information used in this case description comes from interviews with informants and the organizations annual report of 2021. The organization is a Norwegian owned company that specializes in security classification, efficiency, and sustainability. They employ more than 10,000 people in fifteen countries, where most of employees holds a higher degree. The organization is grouped into six business areas; maritime, energy systems, digital solutions, business assurance, supply chain and product assurance, and the accelerator. Half of the workforce is located within maritime and energy systems. Last years annual report showed a annual revenue of more than 15,000 (*millionNOK*) and approximately 100,000 customers. The organization uses an organizational structure in all business areas and utilizes technical as independents experts to advice customers on safety and risk management. The structure is maintained to focus on customers and serve the market in a cost-effective way and maintain a corporate identity and unity. Despite this, the organization utilizes projects to solve customer orders. The project teams we have interviewed were organized within their own business areas and with specific areas of expertise but were selected to work on projects based on several factors.

Figure 4 shows the structure of our informants and their role the organization in the context of this interview. Many of the informants has been or still has other roles in the organization, such as project manager and line manager. In situations where they have reflected and spoke from another role, we have incorporated it into the respective role because we found it valuable and gave us more coverage. We do not provide any information regarding what business area they are located in in the organizational structure. All of our informants are experts within a technical area of expertise and the least experienced person have 15 years of experience within the organization. Each of the project members have some experience managing projects of different size, and 11/12 have an degree in engineering. Team members are resources within technical expertise for projects, project managers are resources for projects and utilizes team members expertise, while line managers do not work on projects but hold personnel responsibility for their divisions/departments/units within their respective business areas. This also means that project managers are responsible for requesting and allocating the right resources for projects while line managers "own" the resources. Subsequently, this means that people often have an established social and professional relation with each other before meeting in the first project team meeting. All of the informants have worked in the company for more than fifteen years and most of the informants have more than 30 years of experience. Since project success criteria is mostly the same across business sectors, we believe that findings in this project team within this business sector can be applicable to other business sectors as well. Even though the interview structure seems to represent to individual project teams, it became very clear that all informants had some experience as project managers at different sized projects. In addition, the differences between the two teams and the projects they worked on where minimal, making it more suitable to assess this as one department of project managers, talking about their experiences with communication in their project teams. Our findings on this is presented in this chapter.

4.2 What do we value in the workplace?

4.2.1 Experience is More Important Than Education and Personal Attributes

According to many of our informants, education is something that enabled them to get the position they have today, but is not the most important asset to their work profile. One informant is describing it as "something to check off." This opinion is not relating to the position they have, but on personal experience and values. In opposition to feeling that the education is a check off, some are meaning that the education is very important. Some say it is important because they do a lot of technical work related to their education, while the others are agreeing and add that it is important in the context of the project manager to also have the education within project leadership, and that it is continuing to be very relevant even after one gains experience. While a final category says that it is valuable in the beginning of their career, but eventually experience takes over. The following sentiment is shared by those who think education is important:

"Education is helping project managers and supervisors to understand the people they are managing and supervising" - Line manager

Experience is unsurprisingly highly valued by all informants. However, it varies how important they think it is. Some are saying that their experience is clearly what delivers most value. One informant says that education can only get you so far, to exceed and get a deeper understanding you must have experience. Others are saying that experience is helping them to understand the project manager's communication and is helping them do their work more efficient. It is also a factor for team members who recognize that they must keep their communication on a similar level to the project managers education and experience levels. The same goes for project managers when they are communicating, for example with customers. The first sentiment is explained by the following statement:

"Education is like the foundation of the house, maybe the roof and walls. It is the experience that gives the house everything else like interior, facilities and soul, and making it so you want to live there." - Project manager

When it comes to personal attributes, most of the informants are saying that their personal attributes are an important factor for their value at work. Some are explaining it by describing how they interact with customers and other team members regularly, and that their attributes are enabling them to communicate and interact more efficiently. Attributes as patience, understanding, clarity, structured and listening are some of the ones that is mentioned. Others are more careful and say that the personal attributes are not that important, and it is first and foremost the technical competence that [delivers success] and is the reason for being included in a project. However, they acknowledge the effect of personal attributes, and one say that personal attributes might be more relevant for the project manager as he or she has to adapt to the people and project goals. Some describes it as a package, you have some positives and negatives, but you have to deal with both sides. We summarize the opinions with the following statement as we believe it covers both sides:

"Personal attributes are something you have and is a part of you are, weather you like it or not." - Team member

4.2.2 Social bond, a factor and a goal

Social bond is according to many of the informants an important part of communication, not just an effect of frequent communication but also one of the purposes of communication. Many of the descriptions gives the impression of a reciprocal relationship between the social bond between people and how they communicate. Some informants also mention that their social bond affects their method they use for communication. Face-to-face, video chat, telephone, chat messages or e-mails seems to be some of the choices that will be affected by the social bond.

"(...) because we understand each other in a different way. That is how it is with human relations." - Team member

Some informants mentions urgency and social bond as a factor for communication, explaining that if you are short on time, it is easier to communicate efficiently with a person you already know, rather than another person reacting badly to the message. In addition, there are some informants who mentions that they interpret communication differently depending on the social bond with that person. Making an example that they can say the exact same thing, but understand it differently. These examples show that even though they aware of the effect social bond have on communication, they can find it difficult to interpret the communication because the conditions of the social bond between them. It is mentioned by some of the informants that personal attributes affect the social bond between them, that these personal attributes determines how they listen, understand, generally how they communicate. Some of them also mentions that it is time consuming to build this social bond between them. This makes it interesting that when informants talk about social bonds, they often references trust as a wanted result or a goal for their communication.

"(...) it is very much about creating trust between the people you are communicating with." - Team member

Job satisfaction is definitely dependent on our social bond, how we communicate, and subsequently, affects the output of their work. Combining this social bond with their personal attributes, determines how the group harmonizes, enabling or disabling communication between them. Informants talk about how they feel that a social bond is required to work effectively with each other, how it enables them to reflect together over their work and come up with better solution. It is also mentioned that a good social bond makes it easier to get the best out of people if you have a good social bond. Some informants mentions that it is by their own free will that they are where they are, making a point out of the fact that if they did not want to work there, they could go anywhere else. This last sentiment underlines the importance of job satisfaction being influenced by social bond, and is exemplified by this quote:

"Most of the people here would not have trouble finding work anywhere else, even with better wages, so a good social environment is very, very important." - Line manager

This gives us an understanding of the importance of the social bond. Communication and social bond seems to be reciprocal important. Communication is a mean to build a social bond, but social bond does also affect the communication, at every level of social bond between people.

4.2.3 Are the project managers perfect?

When suggesting improvements for the project managers, all informants are having a hard time. Many informants feel like the project managers are about as flawless as a human can be, as the project managers are highly competent with many years of experience. Some informants are comparing their own preference in communication to be quite similar to the perceived communication of the project manager, which can contribute to the opinion of perfectness. Another factor is the amount of trust and respect the project managers have. As stated earlier, most of the informants have worked in the company for a long time, and over this period of time they gain positive and negative experiences which influences how they perceive the project managers. After working with a person with ten bad traits, it is easier to negotiate the one negative trait of another person.

"In my lifetime I have met a lot of weird stuff, really, not much weird that would be mean, but most of, at least in the project teams here including the project managers, are competent." -Team member

Comparing own preferences to the perceived reality of the communication was helping some informants reflect and come with feedback on what they would prefer if a change was happening. A few informants are feeling that the project manager can be a bit too detail oriented compared to their own liking and what they find necessary. Continuing on this they explain it may be because of the experience the project manager has and the way she feels in control. Others are saying that these "controlling" features is the reason or part of the reason for why they like the same project manager very much and is considered one of the best in the company.

"I think that for, from my point of view if I should compare with how she works, then I feel like she embraces everything and likely takes small formalities with regards to reporting ect. (...) Maybe some of those small details are insignificant some times." -Team member

"She is very good at involving and give responsibility. I feel she gives a lot of responsibility and still to manage and follow up in a nice way." -Team member

The other project manager is also considered one of the very best project managers in the company by most informants, if not the best by some informants. However, also this project manager has some room for improvement. Some informants feel like interactions may take longer than they want or expect them to take. They highlight that it is not a directly bad thing, but in a hectic work day where time is limited an extended explanation or discussion is something they would like to avoid. Some say it is a result of over engagement and loss of track of time. Others explain it by saying that a simple question that may have taken two minutes to answer, she would discuss, explain and/or reason for the answer and end up using ten minutes. However, they acknowledge this also as a positive trait which is perfect for getting a deeper understanding and learning something new.

"She gets really exited and can. It can take take one small thing can kind of take half an hour because she gets so exited in a way. And if one then has a lot to do, then it can be a bit frustrating, but it is just that it is good to be enthusiastic, but yes like that." -Team member

4.3 What is the point of communication and why should you care?

4.3.1 Communication is about understanding

Communication as a tool for distributing information between other project members, project managers, or customers is a mindset many of our informants are using. Even though one portion of the informants concludes that communication is important while others seem to be more careless on the importance of communication, it always seems to be used for sharing of information. Communication can be said to be the key element of information sharing in the project, and is important for cooperation and interaction between the members of the project team. This sentiment could be drawn from both project managers and project members, and they further explained the importance of adjusting to the one you're talking to when information is given. They are also mentioning technical background and trust as a part of the assessment of the receiver. The following quote shows how several members of the project team are conscious about who they are talking to and the importance of being understood to pass on information:

"I have to adapt to the one I'm talking to, so they understand me." - Project manager and team member

"If I communicate by means of letter or e-mail, it must be solid, it cannot be ambiguous in retrospect." "I prefer oral communication face-to face, it is more nuanced and is faster." - Team members.

Even though most informants preferred oral communication they also saw the value of written communication. Most informants made the point that oral communication has more nuances and is more efficient. The quote above also shows how the different conceptions of communication methods are. Written communication is perceived as more demanding in regards of liability by a lot of project team members, being more formal and centered around official documentation. While many suggest that through face-to-face oral communication the project team can efficiently interact and discuss with a level of detail that would have been time consuming if it was to be written down, others prefer the written communication as it can be shorter, right to the point and has less social interaction. The advantage of face-to-face communication is exemplified in the following quote:

"With face-to-face [communication] you can see if the person understands what you are talking about, and adjust accordingly" - Team member

Considering some of the similarities, and the sentiment given above regarding communication as a mean of sharing information. Some other points that seem to go hand-in-hand with choice of communication method is focused on relations, emotions, being honest, expressing trust, and adjusting to the receiver, rather than the actual mean of transferring information when they communicate. This is emphasized by the following quote:

"It is important to be attentive, actually listen to the receivers point of view and understand where they are coming from." - Team member.

This sentence exemplifies more sides of communication. Understanding recipients does not necessarily only focus on emotional and relational factors, it also included technical background

and expected technical competence. But interviews showed opposite polarities among the informants, some of the project members was more focused on their perception of the counterparts technical competence exemplifying the difference between technical understanding and emotional awareness. Even though the project teams perspective are nuanced, the main thing to draw from their different perceptions of communication is this:

"Finding common ground between the communicating parties is important. How we communicate with each other is depending on the situation we are in, and we need to adapt to each other to understand each other. Independently of technical competencies or emotional perspectives." - Team member.

4.3.2 "I focus on clarity when I communicate"

Being precise, unambiguous, more nuanced are just some of the points mentioned when interviewees considered important aspects of communication, and especially when they described advantages with oral communication, compared to written. One project member said: "You get a whole other connection to the one your talking to, it is easier to communicate when I can assess their body language as well." One other project team member is telling that her positive attitude and clarity is making the communication good. Looking at the empirical data, we can see that most informants prefer oral communication, based on some of the points above. One of the informants managed to catch the main sentiment for how most of the project team members prefer to communicate:

"I prefer face-to-face communication when I need to discuss or clarify things, secondly group meetings discussing the information and our next steps for moving forward." - Team member

One point of interest regarding how most members and managers prefer oral communication over written is that they still assess that most of the communication is actually written. This is credited to the need for documentation and project development to be traceable, but still goes on accord with what is preferred among most of the people working on the project. One of the project members had a solid point to describe this situation, discarding the team members preferences as a factor and rather establishing that what and how we communicate is only dependent on the current situation and what that situation demands from yourself.

"What kind of communication I prefer is irrelevant, it is solemnly dependent on what is needed in that situation." - Team member.

This point does not necessarily stand uncontested. Most of the informants preferred oral communication and found more advantages to oral communication than with written. Some of the informants did admit that oral communication could be time consuming and inefficient if the topic or the message could be passed on in written format. Emphasizing that meetings and other face-to-face settings could be diverted into social conversation, thus, leading off topic of the meeting. This coincides with the point made by the project member above, establishing that some situations could actually have benefited from another form of communication than oral. Besides the general opinion on written vs. oral communication, most of the informants have accepted or points to documentation and written reports as a natural part of their job. Explaining how it is a natural part of projects and the deliverable to a customer, with thorough documentation, certificates, and written reports following the company's procedures on project documentation.

This understanding or expectations connected to scope and demand of projects seems to be implemented as a basic thought, a bone marrow reflex, because this is how the company can show for results and is considered a formal part of the project. Some of the informants did also mention the importance of precision in written communication, especially since it is traceable. One of the informants described written communication like this:

"The things I write has to be correct, on the topic, and must be able to withstand anything [like a lighthouse in a storm], if not I should not have written it down." - Project member

4.3.3 There is 50/50 chance you use written or oral communication the most

Even though they all work in the same team, or have contributed to the same project, they do not seem to agree on the most commonly used communication form in the project. Some informants are saying that they mostly use oral communication, discussing problems and topics of relevance in groups. Further emphasizing that this is how they drive projects forward, through discussion in groups. Another also say that when they are working on results related to a project, they have to meet up to discuss it, either through video chat or in a meeting room at the office. This suggests that the project team members are dependent on some form of face-to-face communication to feel progress in the project, and that discussion in groups or meetings are needed to assure team members that what they are doing is correct. The following quote exemplifies the points above:

"It is the day-to-day discussion, the daily chat where we discuss things that drives the project forward." - Team member

Others are saying that most of the communication goes through e-mail, confirming that written communication is the most used communication form. One mentions that oral communication has to be backed up by written communication, either a report, memo or e-mail afterwards, to have traceability on the work done. Another one says that, because they might not be situated at the same place at all times, they have to use written communication. While another makes a point that peoples memory just does not hold enough short-time memory to span further back than a couple of weeks. Most of these examples center around one interesting thing, and that is the point that you cannot reach all members in the project through oral communication, especially if there are a lot of resources working on the project, situated at different locations, you are dependent on written communication to get the information out. As shown in through this quote:

"(...) if the communication is supposed to reach several people, it is most often written. But when it is supposed to address one person, it is more usual with oral communication forms." - Team member

Others are more convinced that there is a more evenly distributed difference between the two kinds of communication, depending on situation and purpose. One informant says that tasks, contracts, and similar things needs to be written down, while other things like result require some discussion before moving forward. Also mentioning some of the different aspects above where information that was necessary to spread to the whole team was written down and distributed, while information or discussion that was not relevant to everyone is better to take face-to-face or on video chat. Both points being that the most used form of communication is more situational dependent than predefined. But another informant had an interesting view on the topic, and made a point out of a blurry line between what is written and oral communication.

"What is written and what is oral? (...) sometimes it is difficult to separate the two, because of how the messages are (...), take teams messages as an example [chat messages]." - Team member

This stands as an example of how oral and written communication forms also can be affected by the context of the message and how it is transferred. The team member made a clear point that even if the message is written down, it can be viewed as oral communication, because it is not formal. Showing how it is more difficult for project members to separate between written and oral communication based on the formality of the message.

4.3.4 What is the thing with oral communication?

With some exceptions, most informants preferred oral communication. The interesting thing to take from the interviews is what the purpose and advantages with oral communication are. The informants are mostly agreeing on the purpose, stating that it is to transfer messages, or share information, without losing time and have less misunderstandings. These factors seem to be most important for most of them. They also emphasize the fact that it is an easy form of communication. It is not difficult, nor time consuming, so it is a quick way to relay messages between members of the project. From the informants perspective it is mostly centered around the point that it is easier to give information and avoid being misunderstood in the process, a medium rich on information, as shown by the following quote:

"You get a better opportunity to explain, and can pass on much more information, like tone of voice, body language. (...) when you write a mail, so much can be misunderstood." - Team member

One of the informants mentions listening as the most important aspect of oral communication, showing the other side of the point of the other team members. If oral communication is about understanding, quick relay of messages, avoiding misunderstandings, listening is the key to receiving information. The same team member also mentions honesty in the same context, pointing out that oral communication is dependent on honesty. This relates to the quote above regarding the richness of information in the oral communication form. Adding that through listening to someone in oral communication, you get direct feedback on what you are saying, either through discussion or through body language. This can show as an example of the fact that listening is not only done with your ears. One informant added that it is also possible to catch things that was not said, confirming the point of body language and the importance of eyes to interpret communication, even if it was expressed orally, as the quote below shows:

"One advantage is that you can catch things that... well, was not said." - Team member

Some of the informants is more focused on aspects that connects to the things that are not said in plain text, and that is the effect oral communication has on the people in the project, the social relations. One informant said that oral communication is about achieving common understanding, trust, and maintain a healthy sociopsychological work environment. While another mentioned that it is about creating team cohesion. This shows another side to oral communication than what the other informants mentions. The informants does not necessarily only see communication as a way of transferring information between them, they also see it as a way to create a social bond, to create trust, especially with oral communication. These aspects comes from line manager and project managers. They seem more focused around this than the other

project members. Yet, a team member mentioned that it is not possible to create a social bond over telephone, or through written communication. This shows as an example of how face-to-face communication is seen as the best way to relay information, as well as creating a social bond from both team members and members of project leadership.

"(...) and there is to get to know fellow human beings. You cannot do that over the phone, maybe you can do it through video chat, but it is not as easy [as face-to-face]."

- Team member

4.3.5 Everyone thinks the communication is good, but is it perfect?

An interesting observation is that everyone is saying that their own, their project manager's, line manager's and the project team's communication is good. However, a few did mention that it may have been situations earlier but they had been solved and was no longer relevant. This explains why everyone is happy with the communication, because if someone had a problem they would share it and the team would find a conclusion. This sentiment is represented by the following quote:

"Wants to be open for [other approaches]. There is many ways to Rome, many ways to do things. But of course, if there is something I think could have been done differently, I would rather propose it and so discuss it [than to make it a problem]." - Team member

When it comes to improving the communication, some are saying that there is nothing to improve. They think communication is perfect or good enough as long as the project delivers without any bigger implications caused by communication errors. Others are saying more structure in their written communication would be something to improve as it would be easier to find the documentation. To talk more in meetings and use oral communication oftener is something a few are seeing as a point to improve, as they are more comfortable with the opposite but sees the value of using oral communication and being more active in meetings. One informant is talking about how his communication is very direct and transparent and how that can be, to some people, difficult to handle. While one informant feels that it is dependent on how much time they have available. Coherent with another informant who is saying that the communication quality is dependent on the situation and project, which is explained in this quote:

"If you have more time, you have more time to communicate, you get time to it. If you are running out of time you barely have any time for communication, you just have to stress through [the work]." - Team member

To tell the reason why the communication works, despite most of the informants having multiple reasons and possible things that can hamper communication in projects, is somewhat difficult. One team member makes an example of how leadership communicates to the project team, making a point out of the fact that if there is any issues, they communicate quick and without delay, both orally and through e-mail to ensure everybody is up to date. The team member also tells that they have good routines and procedures for communication when problems arise. This is also confirmed by another informant, who says that they always address things right away. Another team member highlights that they almost always know what the expectations to them are, having little room for ambiguity or uncertainty in responsibility. Another way they ensure good communication in the team is through weekly reports from project managers, informing of project status. All of the above reasons can point to one specific thing that a few informants do not mention directly, but shines through in one of the informants quote:

"We communicate well together, because we know each other." - Team member

This does not necessarily connect directly to a strong social bond between colleagues, it can also point to a level of trust between team members and leaders. Knowing each others role and place in the organization, and being comfortable with that situation.

4.3.6 Everybody is unconsciously conscious about body language

When asked about body language, most informants needs a little time to reflect. Some does have a clear opinion beforehand and is pretty clear that they are unconscious about body language, especially their own. Body language is movement, expressions, gestures, and similar things that we do with our body, and can give others an impression of thoughts and emotions when they talk. Those informants who needed time to reflect admitted to mostly being unconscious, but could notice if somethings were odd about other's body language. Most informants were conscious about only parts of their body language, making eye contact with the one your talking to.

"Both yes and no. I am conscious about eye contact, to show that you are following the conversation." - Team member

This quote is similar to what many of the informants say, showing that they are to some degree conscious about their body language, but not necessarily aware of all aspects of it. The fact that they seem to only notice when something is misplaced can mean that their level of consciousness is connected to their sense of trust to the other members of the team or the group as a whole. One informant says that:

"If you are safe [comfortable] with the group, you are less aware of your own body language." - Project manager

When it comes to sensitive topics, especially regarding personal behaviour, everybody seems to be aware of their body language. Many of the informants mentions person sensitive topics to be important situations to be careful about your body language. They do not necessarily say what kind of message you are to express with your body, but that it is important to be clear. This can to some degree connect to a feeling of trust. If what you are about to say possibly could jeopardize that status quo that exist in the team, you might feel uncomfortable and therefore become more conscious about your body language. At the same time, some informants mentions that in sensitive settings, body language is important to underline the point of sensitivity or seriousness. One of the team members gave an example to a situation involving body language:

"If you in some situation do not feel 100% comfortable with what you are to say, you might start sweating and be in a state of unease, (...) making it more clear that you are uncomfortable." - Team member

One of the informants points to situational awareness and role flexibility when considering body language. It is a point that a large part of our body language is unconscious to us, even though you notice it in some situations. The informant stated that it is natural to have change your body language depending on the situation and role we are in. If a person is standing in front of a crowd and speaking publicly they would have a different body language than if they were speaking face-to-face with a person. This builds on the previous examples regarding comfort, trust, and social

bond between people and adds situations and roles to the mix, making communication with body language harder to interpret. This also makes it clear to see that even though most informants believed they were unconscious about their own and other's body language, they were to some degree actually very conscious about it as well, like this informant:

"To some degree, clearly some of it is unconscious. (...) but you would have different body languages depending on the different roles you step into." - Team member

4.4 How is success and motivation tied to communication?

4.4.1 Why is success challenging?

In the start of projects, there are some specific focus areas that is deemed important to have a good start to a project. Many of the informants say that there is a strong focus on getting everybody up to date, emphasizing that it is not just about knowing what they specifically are supposed to do, but also understanding what the project is about. Some of the informants say that much of the communication in the early stages are group meetings and written communication. One of the informants say that this is to have the possibility to have nuanced information about the project, and then traceability to be able to remember what was said. One informant mentions that the critical parts of the start-phase is to understand your task and the requirements of the project. Another one summarizes the start-phase with what the projects requires from the organization and if they are able to carry out the project or not.

"Who is available? What capabilities do we have? What is the time available? This is the background for a detailed work-program that everybody has to understand and follow." - Line manager

The communication in the start-phase is centered around the question at hand: can we complete this project? Meetings and documents are used to enhance everybody's understanding, but the main goal as it is depicted by the informants is to know if the organization has the resources and time to follow through on the project. Some informants also say that the start-phase of the project is used to get to know the other members of the team if they do not already know them, giving us an indication that they require a certain social bond to cooperate. Another informant mentions bad social chemistry as a potential threat to project success as well. But with a early focus on how to prioritize resources and accomplish good communication within the team, it also seems to be the same topics that are challenging to accomplishment of the project anyways. Time, allocation of resources, and to many tasks at the same time [prioritization] is some of the factors which are mentioned as the main challenges from the informants. Keeping everyone up to date during the whole project span is also mentioned as a challenge, indicating that communication with everyone involved is more difficult or down-prioritized as the project develops. One of the informants gives a nuanced picture of several challenges to success:

"The problem is resources, because there is to much happening at the same time.(...) and if the project manager cannot make everybody pull in the same direction, you got a problem." - Team member

The quote above puts a lot of responsibility on the project manager. Others are even clearer about the challenges to success and the responsibility on the project manager. Some are saying that the project manager is the one setting the framework, while others are emphasizing that the

project manager need to clearly communicate what is important when resources and time gets scarcer, both from the customer and further with the project team. From the informants points of view, challenges to project success mainly comes from how the communication develops through the project, and if the project manager is aware of this development. A quote from one of the informants summarizes what the bottom line challenge is:

"The challenge to project success is clear communication." - Team member

4.4.2 Success is about happy customers, learning new things and deliver to the requirements

What is the essence of success? If you ask members of this team they are mostly in agreement on what is required to call a project successful. From line leadership down to team members we can see that there are subjects that repeats themselves in every level. Almost all of the informants mentions happy customer as a criteria for project success. Stating that a happy customer means income, which in turn means more customers, which in turn means that they can continue working on and with the things they like. Knowing that your work is valued and meets the customer requirements is valued among most of the informants. As illustrated with the following quote:

"I believe that success is when we feel like we have delivered something that holds meaning for the customer." - Team member

When it comes to learning and social environment, many of the informants mentioned this as factor for success. For some of the informants they see learning as a factor for having fun, resulting in better social environment and motivation for further work on projects. Some of the informants mentions good social environment to be inspiring while others confirm the fact that if the project resulted in new knowledge, they would feel that the project would be somewhat successful even if the organization did not end up having profit from the project. As exemplified with this quote:

"(...) we can have a successful project without making money, but then you have to have learned something." - Project manager

This might just stand as an exemption to the other usual requirements for project success. Just as traditional project management literature states, as mentioned in Chapter 2.1.1 Project Success, delivery on planned scope and requirements is important for success. This requirement does also seem to be a universal belief, from line managers down to team members. Some say it is part of making the customer happy and delivering value to the customer, while some say it is overarching. Stating that the project cannot have been a success if you do not meet the requirements. One informant emphasized a point that might fall in under the category of requirements, and as a part of that is one of the most important.

"It does not matter if you did an excellent job, everything correct, and discovered something that is great for the customer, if it is delivered two months late." - Team member

This stands as point of perspective for every criteria of success above. Almost all of the informants mentions time as a factor, often as a part of requirements for project success, or as a part

of meeting customer requirements. An interesting observation is that you do not necessarily end up with a happy customer, even if you have met all the requirements. Some of the informants mention that in some cases, customers ask for what they want and not what they need. Because of this we summarize the informants' view on success that if a project results in a happy customer, monetary profit, learning, or have met the requirements, there is some degree of success in the project.

4.4.3 "You are barely motivated by written communication"

The quote in the heading rate oral communication as being the most motivating. This is backed by many others, because they find it personal and contains more information such as body language and richer context. One is saying that the oral communication does not need to have any different message than the written one, but with oral communication you have a direct connection with the person you are communicating with.

"You are generally more motivated by a speech, than to read that same speech" -Team member

Others are feeling like a written statement or well articulated mail is more motivating, as someone has taken the time to formulate the text and an oral feedback often is spontaneous and deteriorates faster in comparison. Some say that if you get a written feedback it is more valuable as you will have it documented and it can later work in your favor, either it is for being selected for a special project in the future or getting a larger bonus at the end of the year. One informant is also saying that a written feedback is often sent to more than the team or person that did the job and is about visibility in the organization and can not be compared to oral feedback.

"[Written] feedback is not something you do on a normal project where you are done and delivered on time and everything was always fine. It is something that happens when something was extraordinary." -Team member

Some are saying it is easier to understand the intention of the communication if it is oral compared to written as more information can be shared. Oral communication can also be better for the sender, as it is formed while you are speaking and takes the response from the receiver into consideration, while written communication can be read and interpreted in many different ways without the sender being able to explain or correct any wrong interpretation right away.

"When you read something you can read it with different eyes. So if you are negative, have had a bad day, then you will focus on the negative in that text" -Line manager

Many informants are also saying that the oral alternative to a work task are more motivating than the written counterpart. Some mention problem solving as a task that is more motivating orally. The reason for this is that it requires discussions, which if done via e-mail would be inefficient as it would take much more time to communicate. Another task that some informants are mentioning are instructions for doing a task or task delegation. This is because when given an instruction or delegation orally, you can ask questions and it becomes more like a conversation where you can agree or understand the instruction or task.

"[With oral communication you get] direct answers, and you can ask. It becomes more of like a two-way communication instead of you receiving it in an e-mail: do this, do that. (...) You get a low degree of ownership [and motivation] in a way" -Team member

4.4.4 The biggest motivator is challenging tasks

Near all of the informants say that challenging tasks are the most motivating. The reasoning behind differs from wanting to expand and apply their knowledge to cross-competence cooperation and being demanding. A logical but still interesting finding is that line managers are less motivated by learning and growing their field of knowledge, but more by having project managers and team members that are happy, well performing and laying the base for future organizational growth.

"I think it is so good if people in my department have projects they enjoy, having tasks they can grow on, and see that it delivers value to the customer. That motivates" - Line manager

To see others do a good job is not only motivating for the line managers to see, but also project managers and some team members say that it is motivating to see coworkers do a good job. A trusting relationship between team members are also mentioned by some informants related to the "team member" and "project manager" group, but is not mentioned by any line manager. Continuing on things not mentioned by the line managers are the motivation from being in a group. Many informants say that it is motivating to have a good tone, getting to know the people behind the knowledge and being a part of the daily processes.

"I think it is extra important to have humor in these [stressful and hectic] projects. So when we are working, to have some twinkle in the eye. That is important." - Team member

If challenging tasks are the number one motivator, the second biggest would be relating to the customer. Most of the informants is in one way or another connecting their motivation up to the customer. Some say it is customer satisfaction, while others say that customer satisfaction is irrelevant if they are not bringing any value to the customer.

"So that the customer really isn't interested and only wants to tick the box. So it is very important that if I deliver now that the customer actually appreciates it. That is very important." - Team member

A few informants touch upon the difference of being in a project from start to finish compared to being included for only a part of a project. The opinions are vast different, where one side is feeling special and extra valuable for being included and considered an expert in the field, the other side is feeling that they are not valued as a human being because they are just used as a resource to do a task before getting removed from the project when the task is completed. One informant say this often removes the social part as there is one job that must be done and most if not all focus is on that one task, while if you are in a project from start to finish there is focus on other aspects such as the process and you develop a social bond to the other members.

"When you enter a project as a resource you feel like you are more valuable in a way. You are summoned to have a speciality on a team." - Team member

"To be motivated is maybe harder when you only have a small, very specific task. And of course then I think it is pretty hard to feel motivated because you feel like you can't. It's just in to do a little thing before its out again" - Team member

4.5 Can we go digital?

Pandemic and social distancing have shown that the society is vulnerable because of our lack of resistance to diseases, but it also showed that the professional work environment had to adapt to these new standards of social distancing. People were forced to work from home on their computers and even though digital collaboration tools have come along way since the computer first launched, not all informants find today's digital tools sufficient for the home office.

4.5.1 How is the home office different?

Informants say that they value building social bonds with people at the office. When you are face-to-face with another person you ask them questions non-related to work, it can be in many different settings, both over the desk or by the water dispenser. Some of the informants say that it is not necessarily consciously directed at getting to know each other, but it is more how they are used to behaving and what they are expecting, to show some degree of care about each other. One informant mentions that the social events, like a beer after-hours, or just the friendly chat with someone is valuable part of the office-life. One informant mentioned that there are two goals when he or she is working:

"One goal is the job I have to do, the other is to get to know people besides work. And we cannot get to know each other through telephone, we can to some degree over internet [video chat, chat messages], but it is much easier to accomplish face-to-face." - Team member

These informants mentioned how their social connection with co-workers have changed since they was forced to work more from home. Some informants also mentions that work habits have changed since they were forced to be more at home, having digital meetings. One informant says how digital meetings differed form physical ones. In a physical room you might see them coming through the hallway or seen them earlier that day and know that they will come, but digitally that information may be non-existent. Some are saying that it is easier to have the casual talk before and after a physical meeting because you are leaving and entering, going for coffee and having eventual breaks together. In a digital environment these actions are instant or done alone.

"Now you are late if you join [digital meeting] 15 seconds over [scheduled] time, then people start to question where you are." - Team member

This change in daily routines are welcome by some, and disliked by others. Many of the informants who are positive say that they now have a more calm work space, without "chit chat" from colleagues or people dropping by their desk. They generally express that it is easier to concentrate from the home office. Some are positive to the new form of meetings, where there is less time wasted on social "chit chat", getting quicker to the point. Some of the negative examples made are focused around other team members availability, feeling that the threshold to contact others is higher. As well as discussions regarding work results on projects are done more seldom. One informant say that technical discussions are more difficult, and you often have to exchange opinions via e-mail beforehand to be able to be able to engage in valuable discussions. Even though most informants see more positives to working at the office rather than the home office, they do find positive sides to the home office and how it influences co-workers to change their practices regarding digital contact. As exemplified with this quote:

"(...) people are different regarding picking up their phone. I believe that has changed these last two years, with teams it have become easier to just call each other." - Colleague of project manager

4.5.2 Digital tools are not sufficient for brainstorming and discussions

Face-to-face communication have been mentioned as the ideal form of communication by most of the informants. When they assess digital means of communication it does not seem like there is an equal option in the digital tools available to them. Video chat, chat messages, telephone, and text messages are mentioned several times as the most frequently used mediums at the home office, but it seems like it is not sufficient to enable good communication over time. Many informants seem to have different habits when working from home on the computer, in replacement of being at the office. Where you earlier went over to a colleague to mention something, and you could end up in an engaging discussion about the topic, whereas now you refrain from doing this because of your physical separation. Even though everyone is available at the other end of your keyboard or screen. Many informants say that they use the digital tools available to contact each other sometimes, but the content and duration of the communication is mostly kept short and to a minimum. Some also mention that it is difficult to reach other members of the project team.

"At the office you could just stop by people, pop your head in their cubicle. (...) during Covid it has not been easy to reach people." - Project manager

The richness of communication is brought up as a subject by several informants, reflecting around the amount of information they get from the digital mediums of communication. It is mentioned among the informants that much of the digital communication mediums are similar to face-to-face communication, or the content of the messages are similar to the content when you communicate face-to-face, but that it is difficult to catch all aspects of what is being said. One informant explained it like this:

"(...) the best thing is to talk face-to-face (...), video is great, but it does not really catch everything, like body language and other things we experience when we are in the same room." - Team member

When trying to discuss things in the home office, through digital communication, it seems like the threshold for engaging in video chat is higher than engaging in discussion face-to-face at the office. Some informants say that they would typically share results via e-mail or chat messages, and the discussion would go back and forth sometimes before they eventually would call each other to discuss further. This is in many ways comparable to the discussions and settings they could experience at the office but seems to use more time to reach the same stage. Some informants are having a completely opposite chain of thought, finding digital meetings much more efficient and time preserving than regular meetings. Even though one informant say that they are not equally sufficient, there are positives and negatives to both. As this quote shows:

"It is much easier to have meetings on teams [video chat]. (...) video meetings is a better way of communicating than e-mail or something written, (...) but then again, compared to physical meetings, well yes..." - Team member

To summarize the informants impression of digital mediums of communication, we can say that most think that it is not sufficient for good discussions or brainstorming sessions. Informants

also say that you lose valuable information by not being able to see other peoples body language, but it seems that when you look past some of it's drawbacks, it is an efficient way of communicating information that do not require discussing.

4.5.3 It is easier to be unavailable and get things done

In a general team you have a composition of different disciplines of knowledge and personalities. Some may thrive in an open office solution while others are suffering from constantly being interrupted by external factors. This is true for our case company as well, as some informants say that it have been a delight to be able to "shut down" and focus solely on executing calculations or other individual tasks. One informant elaborates on the daily struggle of answer versus not to answer, as one would be interrupted from the work flow and would use time to get back into the right mindset.

"Then it is kinda hard to really know whether to decide when you should jump out [from the work flow] and then really lose the next two hours because you are out of it, or in what degree you just say 'no, I am deeply invested in this' [and continue to work]" - Team member

Informants are sharing different experiences and effects the remote work is having for them. Some informants highlight that it is easier to meet with the customer or resource personnel outside of the company, as a digital meeting requires less effort to plan and execute than to meet in person. This has lead to less time spent on traveling which is appreciated by some informants. Others are experiencing that even if every team member or colleague was only a text, team message or call away from them, the felt distance was much larger as when you sat in your home you where alone.

What I see now is, especially with costumers, is that it is way easier to have meetings like this. Meetings on Teams. And I think it is much more positive compared to earlier" - Team member

Many informants are also sharing how important it is to adjust the communication to the receiver, and how this is becoming an increasing challenge with digital communication. The informant, in the role of the sender, cannot as easy pick up on leads that tell what the receiver really thinks of the communicated message. One informant is explaining it by saying that if she is talking with another person that is on the same technical level as her, she would discuss what equation she has used in that instance. If she was to talk with someone that was missing the technical level of insight, she would tell them that a choice where made that results in 5% faster recovery times compared to last time they spoke.

"You have to adjust all the time to who the receiver is. That goes for both internal and external [communication]" - Team member

A lack of physical belonging is something a few informants have raised concern about. They can feel that a digital work day is okay now and then and sees the benefits of having remote work as an option, but when it is transferred to being a full-time solution it becomes problematic as this quote highlights:

"I think there is an underwhelming amount of focus on physical affiliation. (...) You wonder where people are and where decisions are made and stuff like that." - Team member

5 Analysis

We started this thesis with one main research question:

How and why is project team success influenced by the communication in project teams doing deliverance projects?

Through assessment of theories and literature regarding different aspects of projects and communication, this research question was broken down to two sub-research questions, which are connected to the propositions made throughout Chapter 2. The sub-research questions was:

Projects: How are the main project team performance factors affecting project team success?

Communication: How important is the communication medium for having effective communication?

These questions can be answered through analysis of the propositions connected to each question. In Chapter 2.3 Summary of Theoretical Foundation we revised our propositions after careful consideration of their scope and if they were already being covered by other propositions. This resulted in a revised table of propositions. In this section we will analyze the propositions made in Chapter 2 Theoretical Foundation, by assessing whether the empirical data supports our propositions. Through this analysis we can further understand how theory connects with actual findings and whether the relevant theory actually is representative for our case. Discussing the theoretical implications from this analysis will provide a foundation for answering our sub-research questions in Chapter 6.

Note that references to the results will only have the chapter number and not the whole name of the chapter, as the titles under empirical findings are too long to be referenced efficiently.

5.1 Project Success

Proposition 1. The project team and the project manager are the two main contributors to project success.

In Chapter 2.1.1 Project Success, we write about how project success is a matter of perspective and agreement, rather than universal criteria (Pinto & Mantel, 1990; Wateridge, 1995). We also write that the main contributors for reaching success are the project manager and the project team (Imam & Zaheer, 2021; Müller & Turner, 2007).

Our findings in Chapter 4.4.1 and Chapter 4.4.2, supports this proposition. However, data from Chapter 4.4.1, suggest that the success scope is mainly set by the project manager, implying that the project team is excused for bringing a failure if the success criteria were unreasonable. Data that supports this proposition will be provided in the following paragraphs.

In Chapter 4.4.1, challenges to success is the focus. The first challenge mentioned is to not only understand the tasks and requirements for the project, but also to understand the reason for this project's existence. Understanding the purpose for a project can make it easier to do the best adjustment of a specific task. This will most likely increase the chance of project success, and is in the hands of the project manager and project team members.

Another challenge mentioned in Chapter 4.4.1, is communication. There are multiple challenges connected to communication, the first being information sharing. To get the understanding mentioned in the previous paragraph, communication is needed. If the communication is lacking so is the understanding. Data suggest that the responsibility of the communication is mainly on the project manager, especially when communicating important messages with the customer and the project team when time and resources are under pressure. In addition, the project manager is responsible for adjusting the scope of the project and therefore also setting the criteria for success, making the role even more important for accomplishing success. The data from Chapter 4.4.2, suggest happy customer, learning, earning money and meeting requirements as important success criteria, all of which the project manager influences, which further supports the proposition.

Summarized we see that proposition 1 is supported, and we will see which implications this brings to the relevant theory presented in Chapter 2.1.1 Project Success.

5.2 Project Team Success

Proposition 3. Project team success is relying more on processes, development and satisfaction than the traditional cost, time and scope.

As discussed in Chapter 2.1.3 Project Team Success, there can be multiple factors deeming project team success, but there have been a change towards increased focus on project team, project manager and bringing value. Bringing value is not limited to making money or having a product, but can include other factors such as personal, team and organizational development, process execution, handling challenges etc. We state in our proposition that this change of focus has come to a point where project team success is more dependent on the processes within a project, the development of the team and the satisfaction of the team members, than whether the team managed to complete the project on time, within budget and to expectations of the project owner.

Our findings in Chapter 4.4.2 partly supports this proposition. There are evidence that supports the proposition, but there are also evidence that contradicts the proposition. We will provide the different arguments for and against the proposition at hand, before we come with a conclusion. All data is from Chapter 4.4.2, unless other is specified.

In this paragraph the arguments that clearly supports this proposition is presented. The first one being that we found that a project can be a success, even without making any money, supporting that cost can be less relevant. This comes with a caveat, that the organisation should at least learned something new. Another one is seeing learning as fun and increasing motivation and social environment, which would support the importance of process, development and satisfaction among the project team.

There are also some contradicting evidence, or evidence that is up for debate. The main finding that is hard to determine is the fact that the project team highly values the opinion of the customer, and if the customer is dissatisfied, they would be as well. This can support our proposition by saying that the process with and satisfaction of the customer is more important than meeting the "iron triangle". On the other side, a lot of times the costumers' satisfaction, and thus project team's satisfaction, is dependent on delivering on time, to agreed cost and to the specifications or expectations which would say our proposition is wrong.

Finally, there are evidence that the iron triangle still is the most important. Data indicates no matter what the project team delivers to the customer in the end, if they did it under budget or if

they had a great time during the project, it did not matter if one critical success factor failed to be completed. Often are time and scope one of these critical success factors, which goes against our proposition. Other data show that clear goals or scope is important for success, which also indicates that The Iron Triangle still is relevant.

Based on this analysis we say proposition 3 is not supported due to the uncertainty of saying one factor is more important than another. We would instead make two new propositions we found support for:

Proposition 3a. Customer satisfaction, team satisfaction and individual development and learning are important factors for project team success.

Proposition 3b. The Iron Triangle is still important factors for customer satisfaction and therefore also for project team success.

5.3 Project Manager

Proposition 4. A well performing project manager is (a) sharing self critique, (b) establishing trust, (c) forming interpersonal relationships and (d) managing the different aspects of communication.

Proposition 4 is stating that a project manager that is high performing is a good communicator (Anantatmula, 2010; Gillard & Johansen, 2004; Tannenbaum et al., 1998; Thamhain, 2004b), shares self-critique (Tannenbaum et al., 1998), establishes trust with team members and within the team (Anantatmula, 2010; Bond-Barnard et al., 2018; Fedor et al., 2003), and forms interpersonal relationships with team members (Gillard & Johansen, 2004).

This proposition is divided into four sub-propositions, where each will be examined individually. We find support in the data for proposition 4b, 4c, and 4d. For proposition 4a however, there are no relevant data which will imply that it is not important and therefore unsupported. Arguments that support proposition 4b, 4c, and 4d are provided in the following paragraphs.

Data in Chapter 4.2.1, support the importance of communicating and forming of interpersonal relationships, as the project manager has to adapt the communication depending on who the receiver is, and that understanding and adaptability is important to form relationship with team members. The importance of trust is highlighted in Chapter 4.2.2, where data states that trust is often a result or goal of communication, which affects the social bond which again has an effect on how one communicate to another. Data from Chapter 4.2.2, also support the the importance of forming interpersonal relationships, as social bonds will keep team members committed even if they are given attractive job offers from other companies.

In data from Chapter 4.2.3, the importance of adapting the communication is mentioned, and data from Chapter 4.3.1, 4.3.2, 4.3.4, 4.3.5, 4.4.1, 4.4.3, 4.5.2 and 4.5.3, are all mentioning communication and the importance of it, further supporting proposition 4d. The amount of data supporting the importance of communication, both in general and in a project manager context, are signs of how important it is for a project manager to handle the different aspects of communication. The different aspects we suggest are the most important, based on the data referenced above, are listening and communicating clearly which both should assist to get a common understanding of the message and information. The social environment is also documented to have importance in data from Chapter 4.5.2, further supporting proposition 4c and the importance of the project manager's ability to form interpersonal relationships.

5.4 Motivation

Proposition 5. Line managers, project managers, and team members are more motivated by challenging, applicable tasks than unchallenging ones.

This proposition states that no matter the organisational level, one get motivated by challenging tasks as long as they are possible to complete or well formulated (Earley, Connolly & Ekegren, 1989; Earley, Connolly & Lee, 1989; Locke & Latham, 2002; Lunenburg, 2011), as mentioned in Chapter 2.1.5 Motivation.

Data from Chapter 4.4.4 mostly support this proposition, but also data from Chapter 4.4.3, will be used in the theoretical implications as it relates to the presented theory in Chapter 2.1.5 Motivation.

There are many arguments from Chapter 4.4.4, that support the proposition as most data point to challenging tasks being the biggest motivator. This is exemplified through the data that suggest one wants to extend and apply knowledge to solve a problem, use cross-competence cooperation as it often requires new perspective and increased coordination, and being in a demanding environment as there is always something requiring one's attention. What this data has in common, is that they all are challenging tasks which in turn gives higher satisfaction when completed.

The data presented in the previous paragraph is mainly supporting the proposition regarding motivating project team members and project managers as they are the ones solving the theoretical and practical problems, orchestrating cross-competence cooperation and performs in this demanding environment. However, a line manager also operates in a demanding environment, it is just challenging in other aspects. Data form Chapter 4.4.4, proves that a line manager is also motivated by challenging tasks, as we argue that it is a great feat to make sure that the people the line manager manages, has projects they like, can develop through, and that they deliver value to the customer.

Data from Chapter 4.4.4, further supports the proposition as it indicates that routine work or work done just to "tic the box", are less motivating as it offer little challenge and/or creation of value.

Interestingly, not everyone is motivated "blindly" by having challenging tasks as some data from Chapter 4.4.4, indicates that other factors like social belonging and being included are prerequisite for being motivated by a task. However, since social belonging and inclusion is not mentioned in the proposition, and data supports that challenging tasks are more motivating than easy tasks, we deem this proposition as supported. The theoretical implications will be discussed in Chapter 6.1.4 Motivation.

5.5 Informal and Formal Communication

Proposition 10. Formal and informal communication is highly dependent on the context and situation.

In Chapter 2.2.4 we write about informal and formal communication and how they are part of the workplace, in both informal and formal contexts, as well as the differences in formulation of messages (Fay, 2011; Johnson et al., 1994; Lunenburg, 2010). Theories suggest that informal communication in an informal context is considered a social tool at the workplace, while formal communication is more institutionalized following official channels and being shaped in a pre-

defined format. However, theories also state that informal communication happens more often and is apparently more used to find common ground in the workplace, making the intended use of each of these communication forms somewhat contradictory.

Findings in Chapter 4.3 point to some ambiguity regarding the use of informal and formal communication. Findings in Chapter 4.3.3 point to informal communication forms being most frequently used, and that informants need informal communication methods in situations where they want to make progress in the project. While others state that formal communication forms and channels are necessary to include everyone and to be able to document project progress. This supports our proposition, pointing to situational dependency more than preferences.

In Chapter 4.3.2 findings indicate that people prefer informal communication forms and contexts to better understand and share opinions. They also see more advantages with informal communication methods and channels, being more precise in its expression. At the same time, our findings point to the notion of time consumption by formal communication methods. Informants emphasized that formal communication method were necessary in many contexts, but needed careful consideration since these messages was more traceable. This also emphasizes communication form being dependent on context and what is needed in that particular situation. Findings also supports this, where informants say that personal preferences got no room in the choice of communication form, it is what the situation demands from you that is guiding for choice of communication form.

Our findings in Chapter 4.3.3 point to another interesting aspect of informal and formal communication. Some informants pointed clearly to the fact that what communication form is best suited is situational dependent, but it was also pointed out that the differences between informal and formal communication could sometimes be very unclear. Because of how the message was shaped, but also because of the channels it moved through. This evidence supports our proposition.

Evidence found in Chapter 4.3 show that informants are not thoroughly conscious about the use of informal and formal communication, and indicate that there is a somewhat unclear distinction the two. This gives us ground to say that **proposition 10** is supported by the data available, and that context and situation are deciding factors for the use of informal and formal communication.

5.6 Sharing Information

Proposition 11 The transactional communication model is superior to the linear communication model when used in a project context.

Theory in Chapter 2.2.1 and Chapter 2.2.5 covers the basic function of communication, sharing information and two different models of communication. The linear communication model show communication as a general way of encoding a message with information, and sending that message to a receiver which has to decode the information, without feedback or adaption communication of any kind (Baym, 2016; Craig, 2016; Henderson, 2008; Luhmann, 1992). The transactional communication model is more abstract, including the concept of feedback for each message and viewing communication as a continuous process where senders and receivers adapt to each other through continuous communication (Brent & Gigliotti, 2019; Foulger, 2004; Westley & MacLean Jr, 1957).

Findings in Chapter 4.3.1 gives arguments supporting our proposition. Informants explain that communication is a tool for sharing information in the project between all parts of the project organization. Arguments also state that the ability to adjust your communication to the recipient

is of importance, showing that feedback while you communicate is important to be able to adjust. This includes nonverbal cues as well, some informants argued that with face-to-face communication, you are able to assess whether the person you are talking to actually understand without responding verbally. This argument shows how the transactional communication model allows for continuous sharing of information and adaptation.

Evidence in Chapter 4.3.2 points to the importance of being understood when you communicate. This supports our proposition as well, showing the advantages of transactional communication. Allowing for more nuanced information sharing and adaptation based on these nuances. Some findings indicate that much of the communication is done with a linear communication model, because it is demanded in some situations and context. Arguments regarding the use of linear communication models also suggest that when they feel they are not being understood, they communicate in a more transactional way to clarify misunderstandings.

Chapter 4.3.4 also gives arguments supporting our proposition. Informants write that communication forms which allows for transactional model is easier to use and is quicker, allowing them to be more efficient, and avoid misunderstandings.

These arguments show that **proposition 11** is supported in our data. The transactional communication model is superior to the linear communication model when it comes to sharing information in a project context. Evidence show that informants definitely view this model as advantageous and prefers to use communication methods like face-to-face communication, which allows transactional interaction. However, there where also evidence that show that in some situations, a linear communication model would be sufficient, because the complexity of the information was low or the receiver's location, availability and/or quantity made the transactional model less efficient.

5.7 Digital Communication

Proposition 13 Teamwork in a computer mediated environment is not considered teamwork by the individuals if most or all communication happen digitally.

In Chapter 2.2.7 Digital Communication we presented theory connected to studies on the effect of digital communication, the recently increase in use and the different effects it has on people and how they collaborate through digital mediums. Theories state that the rapid development of technologies along with the increasing need to accomplish work tasks have made competency within digital mediums equally important to effectively solve your tasks. Technological development have also made human resources more flexible, more responsive, and reduced costs, but on the other hand has reduced have reduced team members sense of belonging to the organization and team. Researchers have also discovered that decision quality is less affected by choice of communication medium that initially suggested. Theory suggest that these factors negatively impact teams who mostly collaborate through digital mediums (Hoegl & Muethel, 2016; Nguyen et al., 2021; Oberländer & Bipp, 2022; Sheer & Chen, 2004). In our proposition we state that these factors influence how project team members view their work done through digital communication mediums in a negative way, reducing the sense of team feeling and less commitment to teamwork.

Our findings in Chapter 4.5 Can we go digital? mostly supports this proposition. There are some arguments against teamwork through digital mediums, and some arguments for. We will present the arguments before jumping to a conclusion regarding the proposition. All data is from Chapter 4.5.

In Chapter 4.5.1 arguments are supportive to our proposition. One argument suggests the social relation between co-workers is influenced by the increased distance, even though digital communication increases responsiveness and availability, informants argue that they feel an increased threshold to contact team members to engage in what would be considered routine team activity, e.g. discussion of findings and results. Another argument also centers around the social bond that is built at the office, and its absence in the home-office. Reducing common understanding and goal setting within the team. These evidence suggest that some of the fundamental parts of teamwork are less or almost complete absent when you have to work solemnly with digital communication. Some of the informants do find this increased distance between themselves and co-workers to be relieving, but that is more an example of preferred work habits rather than the effect of digital communication on teamwork.

Another argument supporting our proposition presents itself in Chapter 4.5.2. Even though it is highlighted through this section that digital mediums are similar or close to face-to-face communication, digital communication mediums are influenced by factors as increased threshold for initiating in conversation and lack of nonverbal cues. Most of the informants state that they experience difficulties to engage in one of the most essential parts of teamwork, discussion. This strongly suggests that digital communication, however close to face-to-face communication, is not good enough for basic teamwork activities such as discussing.

The final argument present in Chapter 4.5.3 is confirming some of the points made in the previous arguments. Digital mediums or a digital mediated environment allows for more distance between co-workers and weaker nonverbal cues. Allowing team members to distance themselves from the project team, and as a consequence have a harder time building social bonds because of fewer cues to pick up on. Some informants do say that they have experienced an easier approach to customers and resources outside of the company, and if the team is set-up with a lot of external resources, digital means of communication could be enhancing to teamwork. Even so, most arguments points toward weakened experience of teamwork and possibilities within the team.

Based on the analysis above, we can say that **proposition 13** is supported by evidence pointing to affiliation in the group is reduced because basic teamwork functions can not be utilized optimally in a digital mediated environment.

5.8 Communication in a Project Context

Proposition 14 Communication is a mean to achieve and realize project objectives for both managers and project team members.

In connection between projects and communication we presented relevant theories in Chapter 2.2.8 Project Manager, which state that communication is viewed as a competency and a factor for success (Ziek, 2015). It is also viewed as one of the activities that project managers have to spend most of their time doing, and is seen as a pre-requisite for leading a project team efficiently in reaching project objectives (Barret, 2006; Reimer, 2007; Yang et al., 2020). In addition one important point was made in Chapter 2.1.4 Project Manager, regarding communication and human related problems are some of the most challenging parts of projects (Thamhain, 2004a).

The arguments in our findings are divided in two main points that support this proposition. As a project objectives must be understood in order to be achievable and realized, evidence in Chapter 4.3.1 and Chapter 4.3.2, shows that communication is used to gain a common understanding, efficiently share information, and is viewed as a key element for cooperation within the project. They also state that communication is used in two ways to drive the projects forward, discussions are used to understand and discuss results, while e-mails and documents are used

to document results and prepare the deliverable outcome of the project.

The other main point from our findings comes from Chapter 4.4.1. Communication is not only a tool to understand project objectives, it is also a way of learning about challenges to these objectives. Evidence show that communication around the start-phase of a project is used to understand what the project requires of resources to be completed satisfactory. There is mentioned several challenges to success: time, resources, and number of tasks, which all have to be communicated clearly to be managed properly. These findings do mostly point to the project manager as the responsible party for using communication to achieve and realize these objectives, but they also suggest that project team members are equally responsible for communicating their own challenges. In addition, communication is evidently the only way to be able to make sure that everyone is up to date on the project and a mean to share adjustments with members of the project.

The arguments show that **proposition 14** is supported in two ways. On one hand, communication is a mean to share information regarding what the project objectives are, and how they are realized. On the other hand it is a mean to understand the challenges to these objectives.

5.9 Information Rich Mediums

Proposition 15 Mediums rich on information makes it easier to interpret communication and is therefore preferred.

In Chapter 2.2.6, we explored theories regarding the information richness in different mediums and how they are ranked and why. Daft and Lengel (1986) ranked communication mediums like face-to-face communication highly because of the amount of cues available in the organization, while Ishii et al. (2019) write that "leaner" mediums have gained richness because of technological development. Research on information richness in mediums have been criticized for not including social factors and how the mediums are used (Kahai & Cooper, 2003; Kil, 1999). In Chapter 2.2.2, we added on theories regarding interpreting communication and the fact that decoding of communication is about uncovering the meaning as intended from the sender (Dresner, 2016). We also included theory regarding nonverbal cues and their contribution to decoding messages (Hall & Knapp, 2013).

Chapter 4.3.1 presents some arguments in support of our propositions. Informants highlights that with face-to-face communication it is possible to assess nonverbal cues to know if the recipient actually understand what is being expressed. Another argument also highlights the importance of social factors to understand each other, to actually understand the perspectives of both sender and receiver, which is easier in a medium rich on information. While in Chapter 4.3.4 and Chapter 4.3.6, nonverbal cues are mentioned as medium enhancer, including more information to understand the message and the intentions behind the message more clearly. One argument highlighting another aspect is the fact that information rich mediums are sometimes unnecessary when the information that is being shared is low-complexity.

Arguments in Chapter 4.3.2, show that informants finds precision, unambiguous, and more nuances as important factors in communication and choice of medium. These factors are mentioned as advantages when comparing face-to-face communication with written communication. Another argument in the same chapter mentions how face-to-face communication is preferred when clarification on a topic is needed, strengthening the support for our proposition.

An argument in Chapter 4.5.2, exemplifies the nuances regarding alternative mediums to face-to-face communication and what might be considered reliable replacement. It is clear that face-

to-face is the ideal choice, but video chat, chat messages, telephone, and text messages are also mentioned as frequently used alternatives. These mediums are in many situations seen as sufficient or close to equal to face-to-face communication, but also assessed to be missing valuable information in nonverbal cues being less prominent in these mediums.

Considering the arguments above, we can say that **proposition 15** is supported in the empirical data, with a general conception that the richest mediums are easier to interpret and is also therefore preferred.

5.10 Factors of Social Relations

Proposition 16. Factors of social relation make grounds for (a) choosing project team members and (b) how to communicate with them.

Proposition 16 is based on theory from Chapter 2.1.6 Trust and Chapter 2.2.3 Interpersonal Communication, which states that social relations are (a) affecting the selection of project team members (Salovey & Mayer, 1990; Shazi et al., 2015), and (b) affecting how one communicates with another (Bond-Barnard et al., 2018; Dragojevic & Giles, 2014; Salovey & Mayer, 1990).

Both proposition 16a and 16b are supported by data presented in Chapter 4.5.1, 4.3.6, 4.3.5, 4.2.2 and 4.2.1. Arguments will come in the following paragraphs.

Data from Chapter 4.5.1, partially support proposition 16b, as it states that one can choose the type of communication depending on what future social relation one wants with the person, but it does not state the current relation nor how that effects the choice of medium. Chapter 4.3.6, provides information on how body language is dependent on the situation and the social relation one has to the person or group he or she is communicating with, further supporting proposition 16b.

In Chapter 4.3.5, data indicates that the communication is good because of the established social relations, while data from Chapter 4.3.1, indicates that the communication method is selected, not only with transferring information in mind, but also what type of relation, emotions and feedback one wants from the communication, both supporting proposition 16b.

Chapter 4.2.2, which revolves around social bonds, support proposition 16b at many instances. Data state that communication becomes more efficient as the receiver knows the sender, because a message can be short without the receiver misinterpreting it. This means that the sender can choose to send a short email to a person that he or she has a good social relation to, while a phone call might be the chosen communication with another person with lower social relation.

Proposition 16a finds support in Chapter 4.2.1, where data suggest that personal attributes or social relations affect the selection of project members, but it is not the main contributor for selection as the technical competence has to be in place first.

Then to summarize, we find limited support in our data for proposition 16a, while we find strong support for proposition 16b. We will not say proposition 16a is false, as there are evidence for social relations having an effect on who is included in a team. However, this effect seems to be minor and just present if there are multiple people with the same competency. Implications following these findings will be discussed in Chapter 6.2.6 Factors of Social Relations.

5.11 Summary of Analysis

A summary of our propositions can be found in Table 10, where the ones that are supported are green, the partial supported are orange, and the unsupported are red. This analysis will help us answer our sub-research questions, which in turn will make way for answering our main research question. The theoretical implications of this analysis will be discussed in Chapter 6 Discussion.

Table 10: Proposition's level of support.

#	Proposition
1	The project team and the project manager are the two main contributors to project success.
3	Project team success is relying more on processes, development, and satisfaction than the traditional cost, time, and scope.
4	A well-performing project manager is (a) sharing self-critiques, (b) establishing trust, (c) forms interpersonal relationships and (d) manages the different aspects of communication.
5	Line managers, project managers, and team members are more motivated by challenging, applicable tasks than unchallenging ones.
10	Formal and informal communication is highly dependent on the context and situation.
11	The transactional communication model is superior to the linear communication model when used in a project context.
13	Teamwork in a computer-mediated environment is not considered teamwork by the individuals if most or all communication happen digitally.
14	Communication is a mean to achieve and realize project objectives for both managers and project team members
15	Mediums rich on information makes it easier to interpret communication and is therefore most preferred.
16	Factors of social relation make grounds for choosing project team members and how to communicate with them.

6 Discussion

Through this chapter we seek to reflect on what our findings mean to our main research question and the potential theoretical implications this brings for our research area. We used two sub-research questions to support our main research question:

How and why is project team success influenced by the communication in project teams doing deliverance projects?

Our sub-research questions were divided into a project theme and a communication theme. In Chapter 5 Analysis, we analyse the propositions in relation to our propositions made in Chapter 2 Theoretical Foundation, and we will now look at the theoretical implications of the analysis.

6.1 Sub-Research Question, Projects

Our sub-research question on the theme projects was:

How are the main project team performance factors affecting project team success?

After discussing theoretical implications from each of the propositions, we will conclude this research question in Chapter 6.1.5 Conclusion of Sub-Research Question, Projects.

6.1.1 Project Success

Our analysis in Chapter 5.1 Project Success, states that **Proposition 1** *The project team and the project manager are the two main contributors to project success*, is supported.

The data presented in Chapter 4.4.2, support Pinto and Mantel's theory of success being a matter of perspective and not a fixed set of requirements (Pinto & Mantel, 1990). Atkinson's model of bringing in other aspects to deem a project a success or failure is also supported through the many success criteria mentioned in the data presented in Chapter 4.4.2 (Atkinson, 1999). The importance of having a clear understanding of the project and project goals are supporting Wateridge, and the responsibility the project manager has, according to Chapter 4.4.1, support Imam and Zaheer's theory (Imam & Zaheer, 2021; Wateridge, 1995). Even though some data from Chapter 4.4.2, highlights individual and team satisfaction as important success factors, which supports Müller and Turner. We found no data that can support nor conflict whether an more experienced project manager has more emphasis on team satisfaction than younger project managers due to the similarity of age among the project managers.

Initially we read about Morris and Hough's success criteria because of how "absurd" we thought it was (Morris & Hough, 1987). After discussing and reflecting around the statement, we understood the purpose and could see where they were coming from, they meant that if the project was complex with a chance of being cancelled because of the increase in uncertainty and risk (Thamhain, 2013; Williams, 2017), one should make sure that the project could close down in an effective way. To our surprise, this criteria of closing down a project in an orderly manner was relevant, as one informant shared an experience where a complex project suddenly had to shut down, but still became a success because they managed to see the end goal, the path to get there, and the needed resources. This overview resulted in the optimal way to close down the project, which resulted in a success. This supports the importance of being able to successfully

terminate a project (Morris & Hough, 1987), as well as supporting theories by Thamhain (2013) and Williams (2017) since it highlighted the risk and uncertainty related to complex projects.

6.1.2 Project Team Success

The analysis in Chapter 5.2 Project Team Success, states that **Proposition 3** *Project team success is relying more on processes, development and satisfaction than the traditional cost, time, and scope*, is not supported. This made us propose two new propositions which is supported in the empirical data and we will discuss their theoretical implications.

Proposition 3a. Customer satisfaction, team satisfaction and individual development and learning are important factors for project team success.

Proposition 3b. The Iron Triangle is still important factors for customer satisfaction and therefore also for project team success.

By changing the propositions, we have to see what implications this has for the theory. Our data from Chapter 4.4.2, support Pinto and Slevin's and Munns and Bjeirmi's theory on project mission and completion of projects as important factors for project team success (Munns & Bjeirmi, 1996; Pinto & Slevin, 1988). If we say the level of cooperation is connected to the social environment which is connected to project team success, it would indicate that cooperation is more important than suggested. However, if we separate social environment and cooperation because one does not directly reflect the other, we can see that Barclay and Osei-Bryson's and Cooke-Davies's theory is supported through our data from Chapter 4.4.4, which indicates that the project team members are more motivated in a cooperative environment and therefore implying higher chance of project team success (Barclay & Osei-Bryson, 2010; Cooke-Davies, 2002; Peterson, 2007).

Atkinson (1999)'s criteria of organizational learning and personal development is also supported in our data from Chapter 4.4.2. Whether Burke et al.'s statement of how dependent project team success is on the project manager is not clear from our data, as some say it is completely up to the team members, other say it is the project manager and line manager/organization, and some data say it is the project manager who influences project team success the most (Burke et al., 2006). This is also the case for the theory from Fedor et al. (2003) if we look strictly at Chapter 4.4.2, but if we include the data from Chapter 4.4.4, the project manager and organization are the ones delegating tasks and therefore important actors for giving team members challenging and rewarding tasks which influences project team success (Peterson, 2007). Fedor et al.'s theory of the importance of generating knowledge is highly supported in Chapter 4.4.2, where data directly states that learning can be an important factor for success in a project (Fedor et al., 2003).

6.1.3 Project Manager

Chapter 5.3 Project Manager, analysed **Proposition 4** *A well performing project managers is (a) sharing self critique, (b) establishing trust, (c) forming interpersonal relationships, and (d) managing the different aspects of communication*. The analysis showed that only parts of the proposition was supported in our empirical findings, which means that there are some theoretical implications connected to our findings.

The first part of proposition 4, proposition 4a which is stating that a good project manager is sharing self-critique, is not supported in any of our data. This implies that the importance of sharing self-critique, as Tannenbaum et al. suggests, may not be important for deliverance pro-

jects, or for project teams where prior ties are already established (Tannenbaum et al., 1998). Other aspects of Tannenbaum et al.'s theory around critique is also lacking support, such as critique of tasks and not people, team evaluation, specific critique, and discussion around team work and processes. If this is because of the absence of issues in the collected data or if Tannenbaum et al.'s theory is not applicable in our case is debatable, but we believe that the importance of their theory is reduced. As a small comeback for Tannenbaum et al., data from Chapter 4.3.1, proves the value of listening as a part of communication skills.

Anantamula, Fedor et al., Gillard and Johansen, Peterson, and Thamhain's theories on communication and the importance of communication in a project manager is strongly supported by our data as it is mentioned in most of our data collection chapters as seen in the analysis (Anantamula, 2010; Fedor et al., 2003; Gillard & Johansen, 2004; Peterson, 2007; Thamhain, 2004b). Trust, as mentioned by Anantamula (2010), is proven to be of value by data from Chapter 4.3.1 and 4.2.2, which supports Anantamula's theory on the importance of trust.

6.1.4 Motivation

In Chapter 5.4 Motivation, we analyze the performance factor "motivation" through **Proposition 5** *Line managers, project managers, and team members are more motivated by challenging, applicable tasks than unchallenging ones.* The empirical data supports this proposition, which subsequently means that there are some theoretical implications to consider.

Sekhar et al.'s literature of motivation as a way of increasing engagement and performance is supported by data from Chapter 4.4.4, which indicates that motivation ties to performance (Sekhar et al., 2013). Achievement, accomplishment and the need for adaptation of the task at hand as Fisher, Lewis et al., Locke and Latham, and Lunenburg writes, are also supported by the data in Chapter 4.4.4 (Fisher, 2009; Lewis et al., 2011; Locke & Latham, 2002; Lunenburg, 2011). The importance of concrete goals to increase performance as Lunenburg writes, is also supported by data in Chapter 4.4.1, which highlights the importance of understanding the goal, and we argue that a concrete goal is also an understandable goal.

However, data from Chapter 4.4.4, indicates that a specific task can offer little motivation, which would imply that Lunenburg is wrong if performance and motivation share a linear relationship. Another implication before we state if Lunenburg is wrong, is to ask whether the motivation of that individual would have been even lower if the task given were abstract or with a vaguely defined goal. Without the possibility to answer to these two implications, we are not able to draw any further conclusions regarding the credibility of Lunenburg's study. The theory of Earley, Connolly and Ekegren, Earley, Connolly and Lee, and Locke and Latham is also indecisive based on the available data we have.

We think that project managers should increase the focus on individuals and map out who prefers to be a special resource, and who excel in a start-to-finish environment. Based on our data in Chapter 4.4.4, it will boost motivation which in turn will increase project team performance and likelihood of project team success.

6.1.5 Conclusion of Sub-Research Question, Projects

Our first sub research question was *How are the main project team performance factors affecting project team success?* On the basis of our data, we see that the main project team performance factors are a competent project manager with good communication skills, a project team that is engaged and motivated, and that the tasks should be adapted to the team members ability to

complete the task. The way each of these performance factors affect the project team success are interdependently: Having one of these factors at exceptional performance will not "guarantee" a success, at the same time, having one of these factors at zero performance does not "guarantee" a failure. These factors are coherent and has to be seen holistically. The project manager's communication skill will increase trust development, forming of interpersonal relationships, agreement when forming goals, and engagement and motivation among team members, which will increase the chance of project team success. Having a good project manager with good communication skills does not automatically motivate and increase engagement in the team, it is therefore important that the team members also have an internal drive for wanting to perform. This drive and eagerness to perform can be assisted and enhanced again by the tasks and goals the team member is set to do. A team with these three factors will have a higher chance at project team success and project success.

6.2 Sub-Research Question, Communication

Our sub-research question on the theme communication was:

How important is the communication medium for having effective communication?

After discussing theoretical implications from each of the propositions we will conclude this sub-research question in Chapter 6.2.7 Conclusion of Sub-Research Question, Communication.

6.2.1 Informal and Formal Communication

Chapter 5.5 Informal and Formal Communication, analyzes **Proposition 10** *Formal and informal communication is highly dependent on the context and situation*. This proposition considered how these communication forms are used in the workplace, considering the possible combinations of settings and context they apply to. We find evidence supporting the proposition, because data shows that informants are struggling to distinct between the use of them, making it obvious that context and situation are a large factor.

The analysis presented in Chapter 5.5 Informal and Formal Communication, leads to some theoretical implications. The proposition analyzed was supported, which means that theories regarding informal and formal communication have been confirmed to some degree. Theories presented regarding the importance of informal communication to build social relations, improve teamwork, and therefore also meet workplace objectives are supported (Fay, 2011; Holmes & Marra, 2004; Johnson et al., 1994). The arguments found also showed that informants preferred informal communication to drive projects forward.

Taking into consideration theories of formal communication as well, there were evidence supporting these theories. The support of the proposition does also mean that some situation demands formal communication, meaning that this communication form is needed to meet situational demands. Or said in other words, in some situations and contexts, official channels is a necessity to be able to deliver in projects, because the information discussed informally needs to be formalized to be applicable in delivery of results. This confirms theories regarding the need for formal communication to secure information flow in the organization (Johnson et al., 1994; Lunenburg, 2010).

6.2.2 Sharing Information

The analysis of **Proposition 11** *The transactional communication model is superior to the linear communication model when used in a project context*, in Chapter 5.6 Sharing Information, data confirms our proposition regarding the transactional communication model, but also provides some nuances regarding the use of both the transactional and linear communication model.

This does not necessarily have large implications for the theory, but some minor ones. Theories regarding communication as a linear model is not wrong in its perception of communication, but can be more precise when describing low-complexity communication, where the need for information is lower and where it is not necessary with direct feedback. At the same time, the linear model can not be said to create shared meaning as Craig emphasize as the process of communication (Craig, 2016). This also means that as a social process, the linear model of communication as Baym, Henderson, and Luhmann describes it is not applicable to the social process (Baym, 2016; Henderson, 2008; Luhmann, 1992).

Continuing on the note of Craig's explanation of creating shared meaning, our findings show that the transactional communication model is better suited for this in projects. Since it better describes the interaction between people when they communicate on projects. It is also important to remember that the transactional communication model is not suitable for interaction with larger groups, where the process of direct feedback is more difficult to handle for both the sender and receiver.

6.2.3 Digital Communication

Our analysis in Chapter 5.7 Digital Communication, took on **Proposition 13** *Teamwork in a computer mediated environment is not considered teamwork by the individuals if most or all communication happen digitally*. The analysis shows that the proposition is supported by the empirical data.

By confirming this proposition in Chapter 5.7 Digital Communication, we further have to look at the theoretical implications of this evidence. Theories presented by Jarvenpaa and Leidner, suggests that teams should experience higher flexibility, increased responsiveness, and reduced costs (Jarvenpaa & Leidner, 1999). Gilson et al. also suggest that project teams working in a virtual environment should experience enhanced collaboration and performance monitoring (Gilson et al., 2015). Our findings in Chapter 4.5, suggests that these theories carry less upsides compared to downsides. Project team members experienced increased threshold to collaborate and lower responsiveness, even though they were available through digital communication mediums. This increased distance or "felt presence" confirms Avolio and Kahai's claim that influence between project manager and project team is reduced (Avolio & Kahai, 2003). Another implication that appears is that theories regarding the negative sides of digital communication connected to teams working in a digital mediated environment is centered around teams with little to no social relation before engaging in teamwork (Avolio & Kahai, 2003; Gilson et al., 2015; Hoegl & Muethel, 2016; Jarvenpaa & Leidner, 1999). Our findings suggest that these downsides are applicable to teams with already established social bonds as well.

Our findings also support theories suggesting that the ideal choice of medium should incorporate human factors, meaning that relational and self-presentation goals should be included when choosing medium (Sheer & Chen, 2004). Sheer and Chen's theory regarding medium richness argues that social implication should be accounted for when choosing medium of communication, which is supported by our findings, indicating that building of social relations are hampered

through digital mediums, which subsequently hampers teamwork.

6.2.4 Communication in a Project Context

Our analysis in Chapter 5.8 Communication in a Project Context, seeks to understand more of communication in a project context by analyzing **Proposition 14** *Communication is a mean to achieve and realize project objectives for both managers and project team members*. The empirical data gives support to our proposition.

Following our analysis in Chapter 5.8 Communication in a Project Context, there are some theoretical implications to be discussed. Our findings support the point made about the amount of communication needed in projects, even though we do not have quantifiable data. Findings were centered around communication and the large portion of communication done to understand project objectives, individual tasks, and share information between members of the project team. This supports the theory presented by Barret (2006), Reimer (2007) and Ziek (2015).

Another point made is the importance of communication to understand challenges. Thamhain (2004a) writes that the most demanding projects often have human related challenges connected to communication, which is confirmed by our findings. This stands in contrast to traditional theories regarding managing the Iron Triangle (cost, time, and quality) as the main challenge. The support our findings give to the proposition suggest that the Iron Triangle can be viewed as an achievement and realization of objectives, and that communication is a mean to accomplish that.

6.2.5 Information Rich Mediums

Another analysis that gives support to our proposition is done in Chapter 5.9 Information Rich Mediums. Here we found support in the empirical data for **Proposition 15** *Mediums rich on information makes it easier to interpret communication and is therefore preferred*. Evidence supporting proposition 15 in Chapter 5.9 Information Rich Mediums, provide some theoretical implications.

Daft and Lengel's theory regarding choice of medium and their suitability is partly supported. It is though not a substantial amount of data supporting preferences regarding complexity of tasks and choice of medium (Daft & Lengel, 1986). Data rather point to the fact that information rich mediums are almost always preferred. Ishii et al. (2019) emphasis on digital mediums is supported, where video chat, voice chat, chat messages, telephone, and text messages are viewed as good alternatives to face-to-face communication.

Data also supports the importance of nonverbal cues as mentioned by Hall and Knapp (2013). It is not clear whether it is the most important source of information, as Hall and Knapp mentions, but that the choice of medium is heavily affected by the prospect of the additional information it provides to understand the message, is clear. This also implies that a more holistic view on communication is closer to reality, rather than a elementary view as Barnlund (2017) writes, meaning that Barnlund's theory is weakened.

6.2.6 Factors of Social Relations

In Chapter 5.10 Factors of Social Relations, we analyzed **Proposition 16** *Factors of social relation make grounds for (a) choosing project team members and (b) how to communicate with them*.

We did find support for parts of the proposition in our empirical data.

As we mention in Chapter 5.10 Factors of Social Relations, there are some theoretical implications following our empirical findings. Data from Chapter 4.2.2 and 4.3.5, support Bond-Barnard et al.'s theory of trust having an impact on cooperation, as data show that the communication becomes better with an established social relation (Bond-Barnard et al., 2018). Dragojevic and Giles's theory of how social identities can influence one's social perception, is supported in our data from Chapter 4.5.1, 4.3.5, 4.3.6 and 4.2.2, as it show how different contexts or social relations affects communication, which is a central part of the social perception (Dragojevic & Giles, 2014). Also data from Chapter 4.2.3, support Dragojevic and Giles's theory, as data gives insight to how the project team members perceive the project manager's communication as perfect, and that it might be because of similarity in their social identity.

Data from Chapter 4.3.1, which states that communication is selected with an intended goal in mind, is supporting theories from Dillard and Wilson and Palomares as they write that communication is a way of achieving goals (Dillard & Wilson, 2014; Palomares, 2014). The relevance of emotional intelligence, as described by Henderson and Salovey and Mayer, is also present in our data (Henderson, 2008; Salovey & Mayer, 1990). Chapter 4.3.1 and 4.3.4, mentions how the sender uses available information to adjust the communication, implying that the person uses emotional intelligence to guide its thinking and action, supporting Dillard and Wilson, and Palomares.

Finally, Shazi et al.'s theory of the importance of integrity and benevolence compared to one's ability to do the task, finds no support in our data (Shazi et al., 2015). Chapter 4.2.1, provides data that the most important factor for being selected for a team, is the person's ability to do the task and not any personal attributes or social relations. This is contradicting to what Shazi et al. suggests, implying that their theory may not be true in a delivery project context. An argument for the latter is that the goals set for the project team, especially in our case study, is highly demanding and specific within different fields of knowledge. This makes it highly unlikely that a person without the ability to complete the task, is able to do the task. Even if that competent person is selfish and lacks integrity, he or she has a better chance of completing the task than someone who is likable and has integrity, but have low competence.

6.2.7 Conclusion of Sub-Research Question, Communication

Our second sub research question was *How important is the communication medium for having effective communication?* If we again look at our data and supported propositions, we can see that the chosen medium has a significant effect on the effectiveness of the communication. If one has to communicate the same message to a too large group or want to inform about something without getting any direct response, written communication would be preferred as it can be seen as one way communication and can be transferred to many people with text message or email. If feedback or discussion is needed, the transactional communication model is preferred as it provides continues sharing of information between the sender and receiver. The best alternatives within the transactional communication model are face-to-face communication and video call, as they are the communication mediums which provides the most information. Communication medium should also be chosen on basis of the social relation, both present and wanted future state, as the social relation will affect how the information is received, and the communication medium affects the social relation. This shows that the communication medium is important for having effective communication, but is dependent on situational factors as well.

7 Conclusion

Our main research question was *How and why is project team success influenced by the communication in project teams doing deliverance projects?*

Project team success was found to be measurable through the project team performance factors; competent project manager with good communication skills, engaged and motivated project team members, and adaption of tasks to project team members. These factors must be seen holistically to increase chances of success, and are therefore co-dependant. To answer how these are influenced by communication, we take a look at the effect of communication on the team. Findings show that the project team is dependant on good communication to formulate goals, engage in meaningful teamwork, and adjust tasks to the project team members. Communication also affects engagement and motivation because of the impact it has on social relations within the team. Findings indicated that the project team felt that building of social bonds increased the feeling of teamwork and therefore also increased engagement. These bonds led to mutual understanding in the project team and between project team members and the project manager, allowing for adaption of tasks. This shows how communication is a cornerstone for project team performance and therefore also project team success. Then, why is communication a cornerstone in these project team performance factors?

From the project side we have the project manager's communication, motivated team members, and adjusting goals that affect project team success. On the communication side we learned that different type of communication are effective in different situations, depending on context and goal. Communication is important for building trust, forming interpersonal relationships, formulating goals and motivating team members. This is because communication is used to continuously share information, both work-related and personal, and is therefore important for building social bonds and work together in a team. If we look at these answers together, communication in a project team influences project team success because the performance factors of the team is relying on communication, and the effectiveness of the different communication mediums are influencing ambiguity in goal-setting and task formulation. What this means for the field of study and the practices will be discussed next.

7.1 Practical Implications

The practical implications of our findings will be presented in this chapter. We will present the implications in different categories, sorted by themes and who they apply to.

Project Success in Organizations

Firstly, organizations, line managers and project managers should view project team performance factors separate from project performance factors. The Iron Triangle is a valuable measure for projects in relation to the happiness of customers, as time, cost, and scope seem to be important for customer satisfaction in delivery projects.

Secondly, our findings show that project team success can be better measured with human factors such as having engaging and motivating tasks, a good project manager, a feel of team spirit and bringing value to the customer. These distinctions mean that organizations, line managers, project managers or other people deeming success, should differentiate between project success and project team success and use different measures between them when forming an evaluation of success. This can in turn lead to more engaged and motivated team members,

which can increase the likelihood of success in the project.

Recruiting

The experience and technical skills have been mentioned frequently as a pre-requisite to be effective as a project manager, and is closely linked to the ability to motivate and create engagement. Line managers or people directing project managers should select a project manager that has some technical competence, but should be aware that one can partly counterbalance lacking technical knowledge with good communication skills. This does not mean that technical strong project managers can ignore the importance of communication, as they should be good communicators as well. Because the aforementioned performance factors are not achievable without communication skills, it cannot be ignored.

Technical skills and communication must be seen from a holistic perspective, findings indicated that if a project manager do not have the technical knowledge needed to understand and form goals in cooperation with the project team members, he or she is most likely not fit to lead the project either. This means that project managers either need to have the technical knowledge needed beforehand, or be able to acquire it before they engage in the project work, in addition to being able to communicate well.

Project Managers

To dedicate time to improving communication skills is important for all project managers, old as new. For new project managers, seeking technical knowledge within your required field is just as important. The technical knowledge is important to understand the tasks, while the communication skill is used for motivating and creating engagement among team members. Communication skills are also closely related to the adaption of tasks to project team members.

For anyone wanting to improve their communication skills, they should balance listening and expressing, and focus on understanding. Communication is a wide subject, and acquiring these skills demand close attention to be developed over time. Findings suggest that communication is just as much about listening and understanding as being able to express yourself. This will imply that anyone that is interested in improving their communication skills should balance listening and expressing, and focus on understanding. "Do I understand?", "Do I express my understanding?" and "Does the receiver understand my expression?", are quotes a person that is improving their communication should be asking themselves. Looking at the transactional communication model, listening and understanding can be seen as a prerequisite to be able to express oneself.

Project Team

Findings suggests that effort should be directed at creating social bonds within the project team. Technical background was mentioned as a deciding factor for choosing project team members, but other factors influencing the project team and their cooperation was social relations, communication medium, and motivating tasks.

Another important aspect to consider when working in a team is the difficulties connected to managing these factors when working in a digital environment. Findings suggested that the social factor was absent in a digital environment and that tasks was less motivating when not discussed properly with other team members. Digital mediums was apparently seen as close to face-to-face interaction, but still had major flaws connected to the richness of information,

decreasing the feeling of teamwork when discussing work-specific tasks. This means that to ensure an effective project team and be able to increase performance, one should emphasize that social bonds are important to build in a project team, especially when the team work in a digital environment.

7.2 Further Research

Our practical implications do also mean that there are some areas that could be researched further to confirm or rule out causalities. Research regarding project team performance factors would be an interesting addition to the field of study, with further investigation into how these factors connect with the traditional project success as Atkinson (1999) suggest can be separated into an organizational and stakeholder view. Adaption of tasks to team members is found to be a performance factor for the project team. Building on this, it can be valuable to investigate how this performance factor is influenced by the other performance factors we found. For example one could investigate the effect of good communication skills in the project manager when delegating tasks, and conclude the importance of good communication in that context. This would also extend on the theory by Gillard and Johansen (2004), stating that a successful project managers have devoted a lot of time to develop their communication skills.

Another aspect that would be interesting to know more about is building on the theory presented in Chapter 2.1.2 Project Team and Chapter 2.1.5 Motivation, which states that team members get motivated by challenging, doable tasks. However, based on Chapter 5.4 Motivation, we would like to see a comparative study of increased motivation between suited tasks and social environment, to get an understanding of how they motivate and see further implications. This would put theories on improvement of project team performance through team and social processes, as suggested by Pollack and Matous (2019), to the test.

We have highlighted the need to separate between project success and project team success. Project success have been thoroughly researched before and several theories have merged such as the Iron Triangle and the Square Root Model (Atkinson, 1999; Kerzner, 2015). While theories on project team success have been closely linked to project success, but is shifted more towards cooperation as Davis (2014) writes. The analysis and discussions in Chapter 5.2 Project Team Success and Chapter 6.1.2 Project Team Success, show that learning, motivation, and social environment is factors influencing the feeling of success in the project team. Further research into factors of project team success would be valuable, especially to see the correlation between project team success and project success.

There would be beneficial with quantifiable results regarding communication skills among project managers and the effect of these, so that a wider generalization can be made. Chapter 2.1.4 Project Manager, states this importance of communication skills in a project manager, but the effect of communication skills of project team members would also be an interesting topic as Chapter 5.8 Communication in a Project Context and Chapter 5.6 Sharing Information, highlights the importance of two way communication and the team's involvement in that communication. Studies show that communication is a wanted skill in project managers (Barret, 2006; Luhmann, 1992; Reimer, 2007), our own study show that it is an important skill for project managers and team members to facilitate for project team success. The causality between communication skills and project team performance factors is therefore a recommended subject for further studies.

The communication skills of the project manager is also ground for another possible study, which builds on the practical implications discussed in Chapter 7.1 Recruiting. We would like to see if there is possible to test a project manager for his or hers communication skills. If this testing

is possible, can companies use that test to predict performance of a project manager given approximate parameters such as project type, team composition, and success criteria, to mention a few. If testing of project managers is a success, one could also look into testing project team members, as one could possibly combine individuals that would more likely form interpersonal relations and therefore increase motivation as found in Chapter 5.4 Motivation.

Further, based on our findings and the limitations connected to them, we would suggest further research within age and experience, and how these influence communication. This will be a valuable guide for whether our results can be applicable for all ages and experience levels, or if there are differences associated with age and experience. Findings presented in Chapter 4.2.1 indicated that experience is important, making it interesting to look closer at younger professional. Another aspect a new study could examine is the effect of prior connection between project team members and project leaders in delivery project, and see if a team without prior connections would give different results. Findings in Chapter 4.2.2 pointed to the importance of social bonds, indicating that further research could examine the connection between social bonds and project team success.

7.3 Concluding Remarks

Project team success is related to the project manager, the project team members, and the tasks the team is set to complete. Communication skills are needed by the project manager to communicate with the team to set common goals, dedicate tasks and motivate team members. Communication skills are also needed by the project team members to form social relations, and communication with the customer and the project manager, which has an impact on project team success. People wanting to improve their communication skills should balance listening and expressing, and focus on understanding. Professionals evaluating or setting project team success criteria should differentiate project success and project team success, as data show that they can be two different things. Finally, future research should look to generalise our findings and see if they are applicable for a wider sample.

Bibliography

- Aga, A. D., Noorderhaven, N. & Vallejo, B. (2016). Transformational leadership and project success: The mediating role of team-building. *International Journal of Project Management*, 34(5), 806–818.
- Anantamula, V. S. (2010). Project manager leadership role in improving project performance. *Engineering management journal*, 22(1), 13–22.
- Andersen, E. S., Grude, K. V. & Haug, T. (2009). *Goal directed project management: Effective techniques and strategies*. Kogan Page Publishers.
- Atkinson, R. (1999). Project management: Cost, time and quality, two best guesses and a phenomenon, its time to accept other success criteria. *International journal of project management*, 17(6), 337–342.
- Avolio, B. J. & Kahai, S. S. (2003). Adding the “e” to e-leadership: How it may impact your leadership. *Organizational Dynamics*, 31(4), 325–338. E-Leadership.
- Baker, S. E. & Edwards, R. (2012). How many qualitative interviews is enough.
- Barclay, C. & Osei-Bryson, K.-M. (2010). Project performance development framework: An approach for developing performance criteria & measures for information systems (is) projects. *International Journal of Production Economics*, 124(1), 272–292.
- Barnard, C. I. (1968). *The functions of the executive*. Harvard university press.
- Barnlund, D. C. (2017). A transactional model of communication. In *Communication theory* (pp. 47–57). Routledge.
- Barret, D. J. (2006). Strong communication skills a must for today’s leaders. (pp. 385–390). Emerald Group Publishing Ltd.
- Bavelas, J. B., Black, A., Chovil, N. & Mullett, J. (1990). *Equivocal communication*. Sage Newbury Park, CA.
- Baym, G. (2016). Communication theory. In *The international encyclopedia of political communication* (pp. 1–11). John Wiley & Sons, Ltd.
- Berger, C. R. (2014). *Interpersonal communication*. Berlin: De Gruyter Mouton.
- Bond-Barnard, T. J., Fletcher, L. & Steyn, H. (2018). Linking trust and collaboration in project teams to project management success. *International Journal of Managing Projects in Business*.
- Brent, R. D. & Gigliotti, R. A. (2019). *Leadership, communication, and social influence : A theory of resonance, activation, and cultivation*. Emerald Publishing Limited.
- Bryman, A., Clark, T., Foster, L. & Sloan, L. (2021). *Bryman’s social research methods*. Oxford: Oxford University Press.
- Burke, S. C., Stagl, K. C., Klein, C., Goodwin, G. F., Salas, E. & Halpin, S. M. (2006). What type of leadership behaviors are functional in teams? a meta-analysis. *The Leadership Quarterly*, 17(3), 288–307. Leadership in Team-Based Organizations.
- Calamel, L., Defélix, C., Picq, T. & Retour, D. (2012). Inter-organisational projects in french innovation clusters: The construction of collaboration. *International Journal of Project Management*, 30(1), 48–59.
- Cicmil, S., Williams, T., Thomas, J. & Hodgson, D. (2006). Rethinking project management: Researching the actuality of projects. *International Journal of Project Management*, 24(8), 675–686. Rethinking Project Management.
- Cimatti, B. (2016). Definition, development, assessment of soft skills and their role for the quality of organizations and enterprises. *International Journal for quality research*, 10(1).
- Cleland, D. I. et al. (1998). *Field guide to project management*. Van Nostrand Reinhold New York.
- Cleland, D. I. & Kerzner, H. (1985). *A project management dictionary of terms*. Van Nostrand Reinhold.

-
- Cooke-Davies, T. (2002). The 'real' success factors on projects. *International Journal of Project Management*, 20, 185–190.
- Craig, R. T. (2016). Traditions of communication theory. In *The international encyclopedia of communication theory and philosophy* (pp. 1–10). John Wiley & Sons, Ltd.
- Daft, R. L. & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management science*, 32(5), 554–571.
- Davidson, F. J. (2003). *Structuring project teams and building cohesiveness*. John Wiley & Sons.
- Davis, K. (2014). Different stakeholder groups and their perceptions of project success. *International journal of project management*, 32(2), 189–201.
- Dawes, S. S. (1996). Interagency information sharing: Expected benefits, manageable risks. *Journal of policy analysis and management*, 15(3), 377–394.
- Dillard, J. P. & Wilson, S. R. (2014). Functions of interpersonal communication. In *Interpersonal communication* (Vol. volume 6, pp. 155–176). Berlin: De Gruyter Mouton.
- Dragojevic, M. & Giles, H. (2014). Fundamental processes. In *Interpersonal communication* (Vol. volume 6, pp. 29–52). Berlin: De Gruyter Mouton.
- Dresner, E. (2016). Interpretation. In *The international encyclopedia of communication theory and philosophy* (pp. 1–7). John Wiley & Sons, Ltd.
- Earley, C. P., Connolly, T. & Ekegren, G. (1989). Goals, strategy development, and task performance: Some limits on the efficacy of goal setting. *Journal of applied psychology*, 74(1), 24.
- Earley, C. P., Connolly, T. & Lee, C. (1989). Task strategy interventions in goal setting: The importance of search in strategy development. *Journal of Management*, 15(4), 589–602.
- Fay, M. J. (2011). Informal communication of co-workers: A thematic analysis of messages. *Qualitative Research in Organizations and Management: An International Journal*, 212–229.
- Fedor, D. B., Ghosh, S., Caldwell, S. D., Maurer, T. J. & Singhal, V. R. (2003). The effects of knowledge management on team members' ratings of project success and impact. *Decision Sciences*, 34(3), 513–539.
- Fielding, M. (2006). *Effective communication in organisations*. Juta and Company Ltd.
- Fisher, E. A. (2009). Motivation and leadership in social work management: A review of theories and related studies. *Administration in social work*, 33(4), 347–367.
- Foulger, D. (2004). Models of the communication process. *Brooklyn, New Jersey*, 1–13.
- Gällstedt, M. (2003). Working conditions in projects: Perceptions of stress and motivation among project team members and project managers. *International journal of project management*, 21(6), 449–455.
- Gambetta, D. et al. (2000). Can we trust trust. *Trust: Making and breaking cooperative relations*, 13, 213–237.
- Gergen, K. J. (1973). Social psychology as history. *Journal of personality and social psychology*, 26(2), 309.
- Gerson, K. & Horowitz, R. (2002). Observation and interviewing: Options and choices in qualitative research. In *Qualitative research in action* (Vol. 6, pp. 200–224).
- Gilkerson, N. D. (2016). Interpersonal communication. In *The international encyclopedia of political communication* (pp. 1–6). John Wiley & Sons, Ltd.
- Gillard, S. & Johansen, J. (2004). Project management communication: A systems approach. *Journal of Information Science*, 30(1), 23–29.
- Gilson, L. L., Maynard, T. M., Jones, N. Y. C., Vartiainen, M. & Hakonen, M. (2015). Virtual teams research: 10 years, 10 themes, and 10 opportunities. *Journal of management*, 41(5), 1313–1337.
- Hall, J. A. & Knapp, M. L. (2013). *Nonverbal communication*. De Gruyter Mouton.
- Hargie, O. (2016). The importance of communication for organisational effectiveness. *Psicologia do Trabalho e das Organizações*, 15–32.
-

-
- Heckman, J. J. & Kautz, T. (2012). Hard evidence on soft skills. *Labour economics*, 19(4), 451–464.
- Henderson, L. S. (2004). Encoding and decoding communication competencies in project management – an exploratory study. *International Journal of Project Management*, 22(6), 469–476.
- Henderson, L. S. (2008). The Impact of Project Managers' Communication Competencies: Validation and Extension of a Research Model for Virtuality, Satisfaction, and Productivity on Project Teams. *Project Management Journal*, 39(2), 48–59.
- Hoegl, M. & Muethel, M. (2016). Enabling shared leadership in virtual project teams: A practitioners' guide. *Project Management Journal*, 47(1), 7–12.
- Holmes, J. & Marra, M. (2004). Relational practice in the workplace: Women's talk or gendered discourse? *Language in society*, 33(3), 377–398.
- Imam, H. & Zaheer, M. K. (2021). Shared leadership and project success: The roles of knowledge sharing, cohesion and trust in the team. *International Journal of Project Management*, 39(5), 463–473. doi:<https://doi.org/10.1016/j.ijproman.2021.02.006>
- Ishii, K., Lyons, M. M. & Carr, S. A. (2019). Revisiting media richness theory for today and future. *Human Behavior and Emerging Technologies*, 1(2), 124–131.
- Jarvenpaa, S. L. & Leidner, D. E. (1999). Communication and trust in global virtual teams. *Organization science*, 10(6), 791–815.
- Johnson, D. J., Donohue, W. A., Atkin, C. K. & Johnson, S. (1994). Differences between formal and informal communication channels. *The Journal of Business Communication* (1973), 31(2), 111–122.
- Kahai, S. S. & Cooper, R. B. (2003). Exploring the core concepts of media richness theory: The impact of cue multiplicity and feedback immediacy on decision quality. *Journal of management information systems*, 20(1), 263–299.
- Katz, E. (1955). *Personal influence: The part played by people in the flow of mass communications*. Glencoe, Ill: Free Press.
- Kerzner, H. (2015). *Project management 2.0: Leveraging tools, distributed collaboration, and metrics for project success*. Hoboken, New Jersey: John Wiley & Sons Inc.
- Kil, S. S. (1999). Impact of communication medium on task performance and satisfaction: An examination of media-richness theory. *Information & Management*, 35(5), 295–312.
- Klein, S. M. (1996). A management communication strategy for change. *Journal of organizational change management*.
- Krauss, R. M. & Fussell, S. R. (1996). Social psychological models of interpersonal communication. *Social psychology: Handbook of basic principles*, 655–701.
- Kuster, J., Huber, E., Lippmann, R., Schmid, A., Schneider, E., Witschi, U. & Wüst, R. (2015). What is a project? In *Project management handbook* (pp. 5–8). Springer.
- Lasswell, H. D. (1948). The structure and function of communication in society. *The communication of ideas*, 37(1), 136–139.
- Lewis, J. A., Packard, T. R. & Lewis, M. D. (2011). *Management of human service programs*. Cengage Learning.
- Lloyd-Walker, B. & Walker, D. (2011). Authentic leadership for 21st century project delivery. *International Journal of Project Management*, 29, 383–395.
- Locke, E. A. & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American psychologist*, 57(9), 705.
- Luhmann, N. (1992). What is communication? *Communication theory*, 2(3), 251–259.
- Lundin, R. A. & Söderholm, A. (1995). A theory of the temporary organization. *Scandinavian Journal of Management*, 11(4), 437–455. Project Management and Temporary Organizations.
-

-
- Lunenburg, F. C. (2010). Formal communication channels: Upward, downward, horizontal, and external. *Focus on Colleges, Universities, and Schools*, 4(1), 1–7.
- Lunenburg, F. C. (2011). Goal-setting theory of motivation. *International journal of management, business, and administration*, 15(1), 1–6.
- Manata, B., Garcia, A. J., Mollaoglu, S. & Miller, V. D. (2021). The effect of commitment differentiation on integrated project delivery team dynamics: The critical roles of goal alignment, communication behaviors, and decision quality. *International Journal of Project Management*, 39(3), 259–269.
- Mayer, R. C., Davis, J. H. & Schoorman, D. F. (1995). An integrative model of organizational trust. *Academy of management review*, 20(3), 709–734.
- Morris, P. W. & Hough, G. H. (1987). The anatomy of major projects: A study of the reality of project management.
- Muethel, M. & Hoegl, M. (2013). Shared leadership effectiveness in independent professional teams. *European Management Journal*, 31(4), 423–432.
- Müller, R. & Turner, R. J. (2007). The influence of project managers on project success criteria and project success by type of project. *European management journal*, 25(4), 298–309.
- Müller, R. & Turner, R. J. (2010). Leadership competency profiles of successful project managers. *International Journal of Project Management*, 28(5), 437–448.
- Munns, A. K. & Bjeirmi, B. F. (1996). The role of project management in achieving project success. *International journal of project management*, 14(2), 81–87.
- Mutka, S. & Aaltonen, P. (2013). The impact of a delivery project's business model in a project-based firm. *International Journal of Project Management*, 31(2), 166–176.
- Nguyen, M. H., Hargittai, E. & Marler, W. (2021). Digital inequality in communication during a time of physical distancing: The case of covid-19. *Computers in Human Behavior*, 120, 106717.
- Oberländer, M. & Bipp, T. (2022). Do digital competencies and social support boost work engagement during the covid-19 pandemic? *Computers in Human Behavior*, 130, 107172.
- Palomares, N. A. (2014). Fundamental processes. In *Interpersonal communication* (Vol. volume 6, pp. 77–99). Berlin: De Gruyter Mouton.
- Payne, J. H. & Turner, J. R. (1999). Company-wide project management: The planning and control of programmes of projects of different type. *International journal of project management*, 17(1), 55–59.
- Peterson, T. M. (2007). Motivation: How to increase project team performance. *Project management journal*, 38(4), 60–69.
- Pinto, J. & Mantel, S. J. (1990). The causes of project failure. *IEEE transactions on engineering management*, 37(4), 269–276.
- Pinto, J. & Slevin, D. (1988). Project success: Definitions and measurement techniques. *Project Management Journal*, 2, 67–72.
- Pollack, J. & Matous, P. (2019). Testing the impact of targeted team building on project team communication using social network analysis. *International Journal of Project Management*, 37(3), 473–484.
- Pooley, J. D. (2016). Communication theory and the disciplines. In *The international encyclopedia of communication theory and philosophy* (pp. 1–16). John Wiley & Sons, Ltd.
- Reimer, M. J. (2007). Communication Skills for the 21st Century Engineer. *Global Journal of Engineering Education*, 11(1).
- Robles, M. M. (2012). Executive perceptions of the top 10 soft skills needed in today's workplace. *Business communication quarterly*, 75(4), 453–465.
- Rowley, J. (2002). Using case studies in research. *Management research news*.
- Salovey, P. & Mayer, J. D. (1990). Emotional intelligence. *Imagination, cognition and personality*, 9(3), 185–211.

-
- Sauser, B. J., Reilly, R. R. & Shenhar, A. J. (2009). Why projects fail? how contingency theory can provide new insights – a comparative analysis of nasa’s mars climate orbiter loss. *International Journal of Project Management*, 27(7), 665–679.
- Schooper, Y.-G., Wald, A., Ingason, H. T. & Fridgeirsson, T. V. (2018). Projectification in western economies: A comparative study of germany, norway and iceland. *International Journal of Project Management*, 36(1), 71–82. Festschrift for Professor J. Rodney Turner.
- Schulz, B. (2008). The importance of soft skills: Education beyond academic knowledge.
- Sekhar, C., Patwardhan, M. & Singh, R. K. (2013). A literature review on motivation. *Global business perspectives*, 1(4), 471–487.
- Shannon, C. E. (1948). A mathematical theory of communication. *The Bell system technical journal*, 27(3), 379–423.
- Shazi, R., Gillespie, N. & Steen, J. (2015). Trust as a predictor of innovation network ties in project teams. *International Journal of Project Management*, 33(1), 81–91.
- Sheer, V. C. & Chen, L. (2004). Improving media richness theory: A study of interaction goals, message valence, and task complexity in manager-subordinate communication. *Management Communication Quarterly*, 18(1), 76–93.
- Sithambaram, J., Bin Md Nasir, M. H. N. & Ahmad, R. (2021). Issues and challenges impacting the successful management of agile-hybrid projects: A grounded theory approach. *International Journal of Project Management*, 39(5), 474–495.
- Tannenbaum, S. I., Smith-Jentsch, K. A. & Behson, S. J. (1998). Training team leaders to facilitate team learning and performance., 247–270.
- Thamhain, H. J. (2004a). Leading technology-based project teams. *Engineering Management Journal*, 16(2), 35–43.
- Thamhain, H. J. (2004b). Linkages of project environment to performance: Lessons for team leadership. *International Journal of project management*, 22(7), 533–544.
- Thamhain, H. J. (2013). Managing risks in complex projects. *Project management journal*, 44(2), 20–35.
- Thamhain, H. J. & Wilemon, D. L. (1987). Building high performing engineering project teams. *IEEE transactions on engineering management*, (3), 130–137.
- Thomas, M., Jacques, P. H., Adams, J. R. & Kihneman-Wooten, J. (2008). Developing an effective project: Planning and team building combined. *Project Management Journal*, 39(4), 105–113.
- Tracy, S. J. (2010). Qualitative quality: Eight “big-tent” criteria for excellent qualitative research. *Qualitative inquiry*, 16(10), 837–851.
- Turner, R. J. (2009). *The handbook of project-based management: Leading strategic change in organizations*. New York: The McGraw-Hill Companies.
- Turner, R. J. & Müller, R. (2003). On the nature of the project as a temporary organization. *International journal of project management*, 21(1), 1–8.
- Tyssen, A. K., Wald, A. & Spieth, P. (2013). Leadership in temporary organizations: A review of leadership theories and a research agenda. *Project Management Journal*, 44, 52–67.
- von Danwitz, S. (2018). Managing inter-firm projects: A systematic review and directions for future research. *International Journal of Project Management*, 36(3), 525–541.
- Wateridge, J. (1995). It projects: A basis for success. *International journal of project management*, 13(3), 169–172.
- Westley, B. H. & MacLean Jr, M. S. (1957). A conceptual model for communications research. *Journalism Quarterly*, 34(1), 31–38.
- White, C. H. (2016). Interpersonal interaction. In *The international encyclopedia of communication theory and philosophy* (pp. 1–11). John Wiley & Sons, Ltd.
- Williams, T. (2017). The nature of risk in complex projects. *Project management journal*, 48(4), 55–66.

-
- Yang, Y., Kuria, G. N. & Gu, D.-X. (2020). Mediating role of trust between leader communication style and subordinate's work outcomes in project teams. *Engineering Management Journal*, 32(3), 152–165.
- Yukl, G. & Gardner, W. L. (2020). *Leadership in organizations* (9th edition, Global edition). United Kingdom: Pearson Education Limited.
- Zaccaro, S. J., Rittman, A. L. & Marks, M. A. (2001). Team leadership. *The leadership quarterly*, 12(4), 451–483.
- Ziek, P. (2015). Communication, dialogue and project management. *International Journal of Managing Projects in Business*, 8(4).
- Zulch, B. (2014). Leadership communication in project management. *Procedia-Social and Behavioral Sciences*, 119, 172–181.
- Zuo, J., Zhao, X., Nguyen, Q. B. M., Ma, T. & Gao, S. (2018). Soft skills of construction project management professionals and project success factors: A structural equation model. *Engineering, Construction and Architectural Management*.