



Beyond sharing experiences

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Project Management

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Norwegian University of
Science and Technology

Beyond sharing experiences

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Preface

This study is the result of our master thesis, carried out as part of the MSc - Project Management - program at the Norwegian University of Science and Technology (NTNU). The subject, TIØ4920, is concluding our master's degree at the Department of Industrial Economics and Technology Management.

The study is titled "Beyond sharing experiences" and comprises a thorough literature review and a case study investigation. We elaborate on our thoughts and findings from the Project Thesis, TIØ5230, and investigate the foothold of managerial implications from knowledge management literature in a knowledge intensive project-oriented real-life context.

The authors would like to thank our academic supervisor, Associate Professor Bjørn Otto Elvenes for his guidance and valuable insights during the work on this project thesis. Even though they shall remain anonymous, we would like to thank the interviewees and case company for their time, dedication and benevolence.

Trondheim, May 19, 2014

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Abstract

The purpose of knowledge management activities and practice is to enhance the ability to utilize the knowledge and experiences that exist embedded in the organization. Knowledge management is absolutely essential for the success of knowledge intensive project-oriented organizations like construction, and management should arguably put adequate resources in motion to facilitate and foster knowledge utilization on an organizational level. Even so, knowledge utilization has no real value to the organization unless project-participants, who are in need of useful knowledge receive it, accept it, utilize it and also re-apply it. We have investigated four separate subjects relating to these issues and found that all of them provide substantial possibilities for enhancing knowledge utilization in this knowledge intensive context. Leadership behavior, Mentorships, Portal solutions and virtual communication are addressed separately both theoretically and empirically. Measures and actions are presented as recommendations and cover a wide angel of approaches. The recommendation section is related to how a construction firm might improve knowledge- planning, development and sharing of knowledge. Some measures are easy, others could be more challenging to implement. Management is ultimately responsible for deciding upon which measures to take into account and how they should be both prioritized and customized to fit the organization under scrutiny.

Issues illuminated through literature do vary from real life experience, and even though most theoretical implications seem rooted in reality they do differentiate. In essence we narrow it down to whether or not knowledge management should be deliberately controlled by management or on the other hand more emergent and culturally handled.

By purposely placement of reflection questions throughout the study we try to spark the readers thought processing and reflection, in addition to visualize that there aren't many rights or wrongs when assessing knowledge management. As for the project thesis we do not want to signal that we propose direct answers to our research question. We discuss the subjects, raise awareness, illuminate knowledge management issues and provide the reader with alternatives and measures based on both literature- and empirical research.

Table of contents

1	Introduction	1
1.1	Research motivation and personal interest	1
1.2	Objective of the thesis	2
1.3	Research question	3
1.4	Scope of the thesis	7
1.5	Structure of the thesis	8
1.6	Theoretical foundation	8
1.6.1	Knowledge	9
1.6.2	Management	13
1.6.3	Knowledge management	14
1.6.4	Knowledge Intensive Project-Oriented Organizations (KIPOO)	17
1.6.5	Construction	18
2	Literature Review	20
2.1	Methodology	20
2.1.1	Choice of method	20
2.1.2	Search for literature	21
2.1.3	Review process	25
2.1.4	Critique, reliability and validity	26
2.2	Emergent- or Governance approach to knowledge management	27
2.2.1	Governance	28
2.2.2	Emergent	28
2.3	Socio-Behavioral issues related to Knowledge Management	29
2.3.1	Leadership behavior	30
2.3.2	The relationship between junior- and senior associates	44
2.3.3	The human aspect of portal solutions	59
2.3.4	Knowledge utilization in virtual settings	63
3	Empirical investigation	68
3.1	Methodology	68
3.1.1	Choice of method	68
3.1.2	Case study	69
3.1.3	Collection of data	70
3.1.4	Analysis and interpretation of data	71
3.1.5	Evaluation of the interview process	72
3.2	Results	73
3.2.1	Leadership behavior	73
3.2.2	The relationship between junior- and senior associates	79
3.2.3	The human aspect of portal solutions	84
3.2.4	Knowledge utilization in virtual settings	87
3.2.5	Governance vs. Emergent	89
4	Discussion	91
4.1	The four pillars	91
4.1.1	Leadership behavior	91
4.1.2	The relationship between junior- and senior associates	95
4.1.3	The human aspect of portal solutions	100
4.1.4	Knowledge utilization in virtual settings	101
4.2	Emergent vs. Governance	103
5	Recommendations	107
5.1	Leadership behavior	107
5.2	The relationship between junior- and senior associates	110
5.3	The human aspect of portal solutions	118
5.4	Knowledge utilization in virtual settings	119
6	Conclusion	120
6.1	Further research	121
7	References	123
	Appendix A: Interview Guide	130
	Appendix B: Reading template	147

List of figures

Figure 1: Initial resource model.....	5
Figure 2: Resource model, step 2.....	6
Figure 3: Final research model.....	6
Figure 4: Data, information and Knowledge, inspired by (Infogineering).....	11
Figure 5: The Conduit Model of Knowledge Sharing (Hislop, 2013).....	12
Figure 6: Review process model.....	26
Figure 7: Deliberate and Emergent strategies, from Mintzberg and Waters (1985).....	28
Figure 8: From Junior to Senior within a KIPOO.....	46
Figure 9: Example of a Knowledge Portal.....	61
Figure 10: An illustrative example of virtual communication.....	64
Figure 11: Communication through smart phones and laptops.....	64
Figure 12: Final model.....	105
Figure 13: Illustrative example of the relations between manager, senior and junior.....	110

List of tables

Table 1: Different organizational theories, adapted from (Van de Kerckhove, 2011, Scott, 1978).....	14
Table 2: Knowledge Management definitions.....	15
Table 3: Final sample of articles through SCOPUS.....	22
Table 4: Literature included from Keyword-search.....	23
Table 5: Literature included obtained from reference list in other articles or books.....	24
Table 6: Literature included from other sources.....	25
Table 7: Leadership behavior recommendations.....	108
Table 8: Measures for senior employees as mentors.....	111
Table 9: Mentor characteristics.....	112
Table 10: Mentor role or functions.....	112
Table 11: Measures for Junior associates as a mentees.....	113
Table 12: Mentee characteristics.....	114
Table 13: Measures and approaches as a manager.....	116
Table 14: Portal recommendations.....	118
Table 15: Virtual recommendations.....	119

1 Introduction

Since the master thesis is a continuation of the project thesis, and the field of research still remains the same, the research- objective, questions, and scope is similar to preceding research and without too much alterations. Obviously we are not conducting the same research twice, hence the sub-research questions, research model and the structure/overarching framework of the thesis is entirely different. The research motivation and personal interest naturally hasn't changed much either, as we pretty much just extend the thoughts and curiosity of our project thesis.

“Project-based research gains substantial attention this days and increase in volume. Projects are unique one-time endeavors, temporary with a defined start and end, initiated to fulfill an objective or set of objectives. Projects as a form of conducting work has become popular in modern organizations which carry them out in order to achieve their own strategic and operational objectives (Pinto, 2012). Even so, a project-oriented organization is not shielded from shortcomings and weaknesses as there are several challenges and measures to improve project effectiveness. One of these measures to improve project execution is sharing and reusing existing knowledge embedded internally in the organization. Sharing and utilizing experiences internally should not be new to management in modern project-oriented organizations. The frustrating issue is how to make sure the knowledge residing in individuals is being utilized in the best possible manner.” (Faugstad and Melby, 2013)

This master thesis still addresses the issue of managing knowledge in a knowledge intensive project-oriented organization (KIPOO), but with focus on implications for management within technical consultancy in the construction industry. Here on out just referred to as “construction”. Knowledge management is arguably not exclusively an academic issue comprising a vast body of literature, it has become a widespread organizational practice (Easterby-Smith and Lyles, 2003, Spender, 2005). There seems to be an agreement that no single established business administrative field or social science perspective is likely to carry us all the way towards a comprehensive understanding of the management of knowledge (Foss, 2007). However, assessing both similar and opposing theories, compared with empirical investigation in the form of a case study could potentially lead to interesting insights regarding how to manage knowledge in construction organizations.

In the following section we present the motivation and personal research interest. We continue with the objective-, research questions and scope of the thesis. Concluding this chapter we present the overall structure of the master assignment.

1.1 Research motivation and personal interest

As MSc - Project Management students and part time associates in an interdisciplinary technical consultancy firm, project-oriented organizations felt like a natural point of departure in our project thesis autumn 2013. The project thesis basically raised more questions than answer. So, during this master thesis we wanted to elaborate further and gain some tangible measures for management to pursue (Faugstad and Melby, 2013). The all-encompassing and conceptual focus of the project thesis are broken down into a smaller and more tangible form, motivating us to provide the reader and ourselves with some concrete insights, measures or actions to pursue. Issues related to project based work are something we as PROMAN-students encounter on a daily basis, and naturally interests us greatly. In addition, the

recognition of project management as a “profession” and wide acknowledged in both literature and practice, fuels additional motivation.

During our academic journey we have developed major interest in managerial issues comprising organizational improvement, development and effectiveness. We have both witnessed the great potential knowledge sharing and utilization can have on organizational effectiveness, triggering our interest to research how knowledge utilization could be facilitated optimally. Looking back before our project thesis, our focus and interest evolved around effectively transferring knowledge and experiences internally in an organization, thus comprising between- junior and senior, projects, through portals, functions and even regional departments. These are subjects which we had less focus on the project thesis are researched further in the master thesis. Our personal motivation and interest was to go “beyond knowledge sharing”, moving towards how to assure benefits from the knowledge that resides in each and every employee. We wanted to go further, not taking the sharing and reuse of experience for granted. We still want to know if individuals participate in knowledge activities “just because”, as a culturally and emergent process only, or if the process of utilizing knowledge is something deliberate that employees are aware of practicing and want steered from management. We found the potential effect knowledge management could have on project-oriented organizations like construction fascinating, inspiring us to conduct the project thesis and now a more comprehensive research through the master assignment. As a result of these initial thoughts, a more comprehensive literature review were conducted, of which (in addition to the project thesis) provided us with a foundation where we could gain insight from practice through empirical investigation. We wanted the master thesis to consist of both theory and empirical evidence, to find out if knowledge management initiatives from literature have roots in real life knowledge intensive contexts. This excites us greatly, and besides just testing the validity of theory in practice we wanted to approach the empirical part more explorative, looking for insights to supplement the enormous bulk of knowledge management research. The literature review and rationale for choice of method is described in detail in section 2.1. The empirical foundations and the choice of this method are described in detail in section 3.1.

1.2 Objective of the thesis

The objective for the master thesis evolved, as you probably get from reading our motivation section, from the findings of the project thesis. As for the project thesis there were a range of potential and interesting topics we could pursue. However, we for once wanted to investigate and provide something a little more “action based” and tangible, something that could gain momentum and make sense to readers who operate under these conditions in their everyday work-life. We still wanted to study knowledge management as this was interesting to both ourselves and the potential case company at that point. But, we wanted to elaborate on subjects more closely related to a knowledge intensive context like construction. The most appealing subject to both us and the industry we are analyzing where to which extent knowledge utilization should be something entirely organic and emergent, or something deliberate that should be steered and influenced more through governance. This will be substantiated in the succeeding sections. Hence, the objective of the thesis is basically to provide the reader with insights, issues, theory as well as practice comprising the broad and ever so confusing topic of knowledge management, construction in particular. We hope to raise awareness of issues, pitfalls and barriers on one side, while providing alternatives of action on the other. Alternatives to pursue for a manager struggling to get a grip on knowledge utilization in his or her organization. Our partner company is a knowledge

intensive organization operating as technical consultancies in the construction industry. Being entirely project based, a secondary objective is to relate knowledge management to the context in which they operate. In addition, we hope (like last time that) this case study will provide us with insights assuring academic progression and how real life organizations operate, forming a third sub-objective.

1.3 Research question

From the project thesis we had developed a solid foundation for further research comprising knowledge management, which were based on several adjustments and loads of questions surfacing from our work. We early this semester developed several loose and vague questions as potential research questions, and initiated a thorough brainstorm early on. Does knowledge sharing and utilization happen unconsciously? Is the culture responsible for handling knowledge utilization themselves? Should management influence these processes? What about governance, is knowledge sharing and utilization something for management to steer? How valid are the theory analyze in a KIPOO context? As we already knew from earlier study and practice, some organizations usually implement massive databases of “best-practice” where experiences from already conducted projects get distributed in the form of documentation. Does these initiatives work and being used as intended? Should they be organized differently? Is maximal knowledge sharing necessarily optimal? Do traditional master/apprentice relations have any roots in reality as of today’s complex work environments? Does virtual communication hinder knowledge sharing or strip away some of the knowledge? These questions are just a handful among the enormous “question bank” we were left with when we quitted our project thesis research. Hence, questions raised in the front end of the master thesis were many and comprehensive. We needed to brainstorm and “cut to the case” so to speak. We had to choose what we wanted to pursue and how we were to go about it. We used both our advisor from NTNU and our case study organization to pin down and single out interesting topics to address in our thesis. A difficult process it was, skimming the fat and leaving out interesting and appealing subjects. Anyhow, the eagle did land, eventually.

So, to manifest our interest and motivation in one all-encompassing research questions was challenging, and as for our Project thesis, it required additional supporting and descriptive sub-questions to form a cohesive whole. The main research question, or “umbrella” research theme, remained pretty much the same as we have argued extensively for earlier. It’s a research question you in all respect cannot really answer. You can say that we did bite over a lot this time. But as for the project thesis we don't necessarily go for the answers, we want insights and new questions to research further. Having this wide and comprehensive main research question provide us with leeway to alter our route as we go, this fuels us with motivation to pursue whatever gets thrown at us. So, this time around there was the sub-questions and how we conducted our research that differentiates and pretty much constitutes our thesis. Hence, in order to fully make use of the findings of this master thesis, the main research question must be viewed in accordance with the sub-questions, in addition to limitations and assumptions addressed in chapter 2.

We found from the project thesis that just sharing experiences doesn’t deem this particularly knowledge being utilized as intended. In this regard, what we have chosen to term “knowledge utilization” is as for our project thesis a wider term, not just comprising the sharing and identification of knowledge. As the word itself implies it covers how “to utilize”

or benefit from it, spanning capturing, acquiring, sharing, applying, integrating and re-usage of knowledge. Hence, we still focus on how to make use of the transferred knowledge, not on the transfer process itself. In order to fully understand how management could contribute (facilitate) to knowledge utilization we thus need to address the underlying theories and dimensions of knowledge and how to manage it. We need this as a foundation to conduct empirical research, which hopefully will help answer some of the abstract and difficult research questions. It is therefore our intention to investigate research conducted within the area constituting our sub-research questions, and see what insights we can obtain through assessing knowledge management literature in relation construction. This will be helpful in later real life endeavors in the form of empirical evidence.

We do acknowledge that the possibility for reviewed literature being less concerned with specifically “how management could contribute” is present. In that case the research questions lose some meaning if interpreted wrong by the reader. We want to provide with actions and measures for management to pursue, but these are not at all truths or may not be directly researched as valid measures from a theoretical perspective. We want this time to provide the reader with conceptual issues as the project thesis did, but this time around recommendation and discussing tangible actions will spice up the thesis. This does not at all make them all right for all conditions and contexts. As intended by us, the “how management could contribute” in this manner is best viewed, not as precise actions that you must do as a manager, but more as alternative and issues management should concern themselves with. Managers of construction should investigate if it fit their own organization, still being free to pursue what they deem most applicable to accomplish increased knowledge utilization.

The sub-questions are “pillars” or areas of research of which we deem tangible and highly relevant for management in the construction industry to address. These particular areas of research were also topics that our case company wanted investigated, dating back to our project thesis initiation in the spring of 2013. All sub-research questions we chose are relevant areas of research that might turn into measures relevant for management to use in order to facilitate and enhance knowledge utilization in a knowledge intensive context. Mentorships, leadership, the virtual context and the portal database for distributing knowledge is something that have been, and still is, very hot topics and initiatives that most KIPOOS already has put in place or are aware of today, both through real-life practice and academic literature. We chose the topics we thought would illuminate the manager’s role in enhancing knowledge sharing and utilization and help him along the way. This topics being utterly research from a theoretical standpoint makes our literature review easier to conduct, so that we can focus our efforts on the discussion and empirical investigation.

Main research question

“Looking beyond just sharing experiences, how could management in a knowledge-intensive context like the construction industry contribute to increase the utilization of knowledge embedded in their organization.”

Sub-research questions

1. Does a virtual work setting strip the message of valuable knowledge, does it put a cap of knowledge utilization and does it provoke increased attention from management?
2. To what extent is traditional mentorship or apprenticeship theory valid in the construction industry?

3. Should construction firms organize their portal solutions more people-oriented and in that case how involved should mid- and high level management be in the processes of organizing these portals?
4. Do mid and- high level managers increase knowledge utilization by exercising governance and being more involved in knowledge management initiatives, and do they need specific leadership traits, characteristics or qualities for this initiatives to succeed?
5. Is knowledge utilization practices something emergent and culturally oriented, or is it something more deliberate handled best through increased governance?

Research model

We chose to use our basic and banal illustrations to pinpoint our conception of reality. Our initial hypothesis from project thesis work was that knowledge utilization could be improved by increased awareness among management regarding the importance of their managerial efforts towards knowledge management. This was, and still is just to illustrate our basis standing on ground zero. Other factors does also probably affect knowledge utilization as well, some of we will address. We acknowledge that all efforts aren't equally effective, but again, this was our initial research model where we try to illustrate that increased and dedicated knowledge utilizing effort from management will enhance it. Hence our initial resource model:



Figure 1: Initial resource model

We believe this model will help satisfy our motivation, interest and hopefully the objective of the thesis.

In addition to this banal model, we set out to find out to which extent governance is the appropriate way to handle knowledge utilization. Maybe knowledge utilization is something of a totally unconscious behavior, happening emergent in day to day cultural interactions. This is somewhat two ends of a continuum, or paradoxes if you will. Emergent vs. Deliberate (or culture vs. governance). From here on out we refer to these opposites as Governance and Emergence. This continuum puts knowledge management in a broader strategy perspective. We could have taken another approach, looking at management, strategy or similar ways of influence as the deliberate side of our continuum. But we want to address the organizational governance put forward by leaders and top level management as “frames” and principles for knowledge management practice. Not as something as actionable and tangible as direct measures, control or strategies.

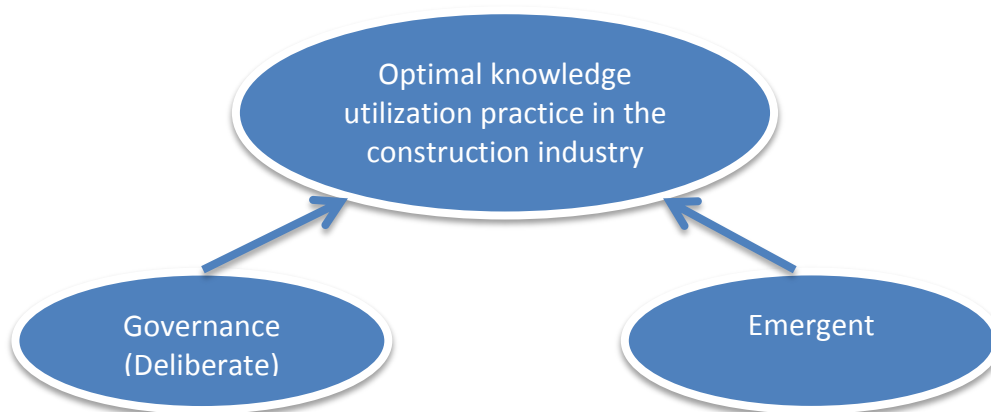


Figure 2: Resource model, step 2

Our sub questions also have to fit our research model. The interesting thing is that we from our point of departure do not know if this sub questions (or subjects if you will) fit either one side of the continuum or the other. Which “strategy” fits the sub-question? Take research question number 2 for example. Should mentoring relationships be something formally initiated from management through Governance, or should this be handled informally without management intervention, where junior - senior relations happens naturally through the organizational culture. This will be extremely interesting to find out if we could pin down at some point. A description and elaboration of what we put in the different aspects or pillars in our research model will be presented in chapter 2.

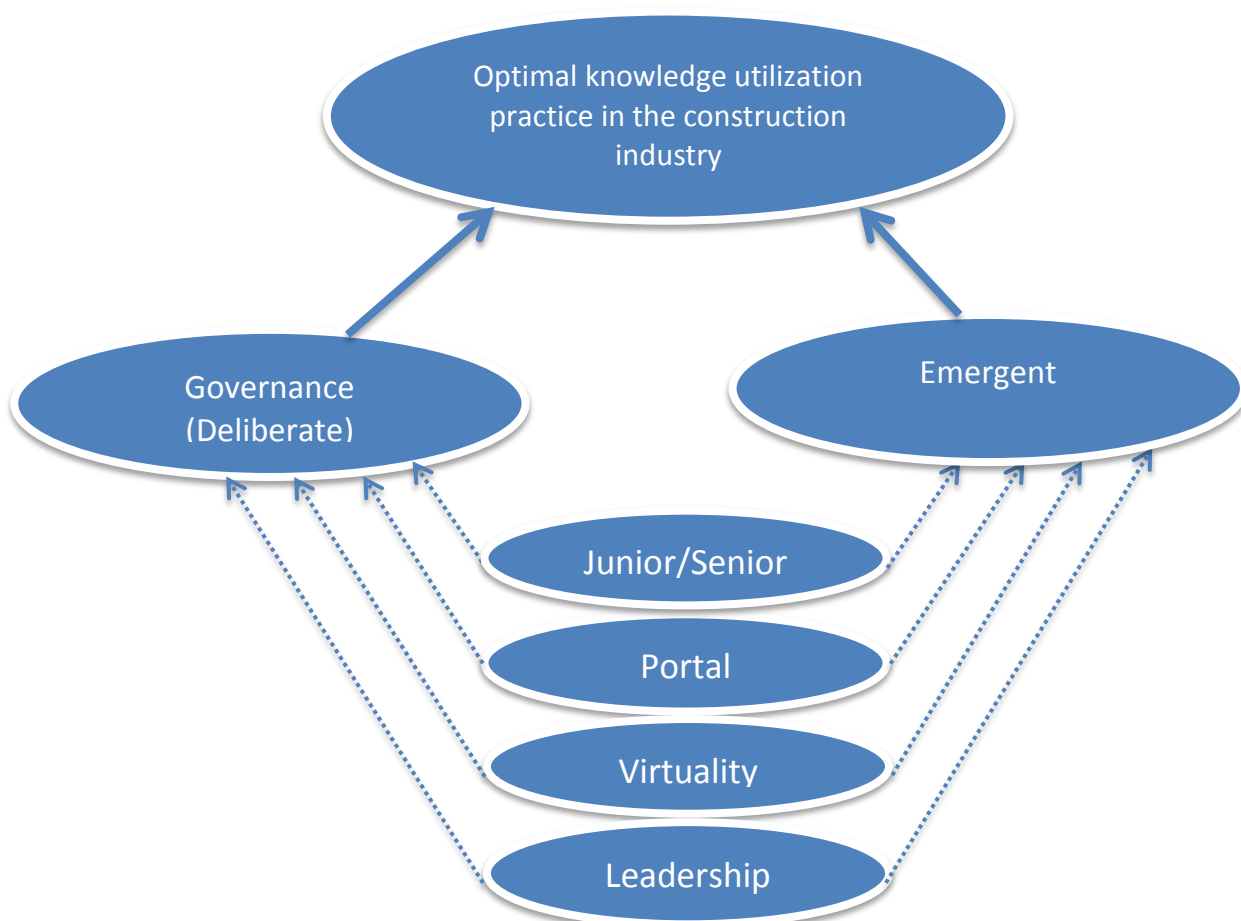


Figure 3: Final research model

1.4 Scope of the thesis

The scope covers managing knowledge in a knowledge-intensive context, more specifically in construction. The issues we're addressing throughout this thesis are extremely complex, depending on multiple variables (potentially dependent). To study organizations is arguably one of the most complex endeavors to undertake conducting research. So, to find cause and effect relationships are therefore difficult. We do not aim to provide direct answers, but rather raise awareness and to provide the reader with hopefully some valuable insights and suggestions to how a manager can handle this.

Knowledge management is, as mentioned, a widely researched field. So, for us to narrow it down to a sizeable study requires both assumptions and limitations:

1. Since our main goal is to address knowledge utilization looking beyond sharing experiences, we neglect the knowledge creation process per se in the master thesis as well and view knowledge as something already existing embedded in the organization.
2. Related to the first assumption we mainly view knowledge not as an element but as something more intangible. Even so, we do open for knowledge being codified and "attached" to a medium in our discussion, hence something tangible.
3. Knowledge is exclusively based on experiences and not "research".
4. We mainly address internal knowledge distributed and analyzed by employees and management inside the organization.
5. We assume an initiative to knowledge management already exist to the extent that knowledge utilization is something organizations is aware of and practice more or less.
6. We have mainly tried to conduct research from managerial sources and standpoint.
7. We comprise the master thesis to apply to technical consultancies and planning side of operating in the construction industry
8. Our empirical investigation was limited to a tangible amount of respondents in one single case company. To attack a subject like knowledge management, studying organizations the list of limitations and assumptions need to be long and constricted. Our scope in summary consists of a comprehensive literature review in addition to a single case company investigation.

Limitations associated with the literature review and the empirical investigations itself are further discussed in section 2.1 and 3.1, respectively.

This thesis comprises subjects (research questions) recurring in the knowledge management literature, and is also based on our own observations and practical insights as of working within this particular industry. We mainly focus on those subjects. Even so, we acknowledge that there are other important subjects and concepts not included in our scope. In addition this research should arguably comprise issues presented in the vast literature of "learning", "learning in projects" and "organizational learning", but as our research is as comprehensive as it is already we chose to exclude this as isolated topics from our research. This might be critique worthy as practitioners are known to not differentiate much between "learning theory" and "knowledge management theory" as they intervene greatly. But, since these branches of managerial literature do overlap, you will as a reader (especially in the empirical investigation) find some underlying and disguised "learning" relations.

1.5 Structure of the thesis

The thesis is divided into four distinct main parts; Introduction, literature study, empirical investigation and discussion. The introduction section consists of research- motivation, objective, question, scope and a theoretical foundation in order for the reader to grasp the basics constituting our research. The literature review, spanning chapter 2, starts off with the methodology and the choice of method. This is followed by an elaboration on emergent vs. governance theoretical approach to manage embedded knowledge. In section 2.3, each sub question or “pillars” is presented respectively. Why we chose these particular pillars or areas of investigation are further described in the literature review and section 2.3. In the literature review we strive to derive key insights related to our field of interest while keeping our own opinions to a minimum. A new concept we introduce in our master thesis is that we offer reflection questions along the way to trigger thought processes and reflection from the reader as well. This we think is a good idea to keep the reader occupied, inspired by Hislop (2013). To conclude each section, we have presented some immediate theoretical implication for management in the construction industry. In Chapter 3 we present our empirical investigation, starting out with methodology, followed by the results for each “pillar” in the same order as for the literature review. In chapter 4 and 5, the discussion and recommendations based on both theory and the empirical results are presented respectively. Chapter 6 is the concluding chapter, which consists of a final conclusion, challenges / implication for managers and a proposal for further research. So, as you can see there are pretty distinct parts of this thesis, and you need to understand this structure in order to find what you look for. We pursued this structure to differentiate easily between what we obtain from theory and what we investigated empirically. The discussion does compare these two, making it a perfect closure in relation to structure at least. This way, you as the reader have the possibility to easily dig deep into one pillar and know where you find theoretical perspectives as well as empirical results. We have tried to nit ourselves back to our problem statement were we can, but the discussion section is where we mainly compare our findings to our point of departure. We have tried to include figures and tables throughout the thesis as best we can to make the thesis more lively and easy to read.

1.6 Theoretical foundation

This theoretical foundation section of our master thesis is by intention designed to provide an overview of key debates, themes and issues relating to our unit of analysis, sub research questions and diversity of knowledge management literature and practice. The theoretical foundation is not a part of our literature review, it is just an introduction presented to the reader, defining what we see as knowledge and so on. You will need this foundation in order to make full use of our literature review in chapter two. The chapter spans terms, insights and definitions important to follow our train of thought when arriving at our literature review. You will not find less evidence chasing back to our problem statement in this section, that’s present partly throughout the literature review and mostly in the discussion section comparing theory and practice relating to our research questions. Some people might claim that it is foolhardy to seek to cover the full range of the literature within one volume (Easterby-Smith and Lyles, 2011), and it supports that knowledge management is a huge and complex subject. This could potentially explain why we have such a hard time finding a suitable scope and satisfying size for our master thesis. In this chapter we elaborate on the very basics of knowledge management. We look at knowledge and management completely isolated, we elaborate on knowledge workers, KIPOO and technical consultancy within the construction industry. Keep in mind that our perception of these key dimensions is not all-encompassing or necessary right. This is our interpretation given the vast and abstract literature comprising

both knowledge management and knowledge isolated as concepts. There are others way of viewing knowledge management, attacking issues from a completely different angle.

1.6.1 Knowledge

We want to highlight that this view of knowledge is what we deem appropriate for our master thesis. It's not by far the only way, or necessarily the right way, of perceiving the concept of knowledge. There are many ways of viewing knowledge, among others the "justified truth believes" concept. What about mathematical knowledge, religious knowledge, scientific knowledge? Ways of conceptualizing knowledge is many and wide spreading. This is our interpretation, we do not address all branches of this enormous oak tree. As the project thesis covered, to fully understand the concept of knowledge management, it is necessary to isolate knowledge as a concept and use several definitions from several different authors. Björkegren (1999), Nonaka and Takeuchi (1995) and Davenport and De Long (1998), states that knowledge has become an important issue in the new era of doing business, and is therefore central in most organizations today. Knowledge is now recognized as a key competitive asset that forms the basis of firm growth and sustainable competitive advantage (Easterby-Smith and Lyles, 2011). However, this does not simplify the explanation of knowledge. It is in fact very difficult to describe and define. The range in definitions is vast, from very simple to more comprehensive and abstract definitions. However, in this master thesis we don't approach knowledge from a philosophical perspective but more related to an organization context. As observed by Alavi and Leidner (2001), the knowledge-based theory of an organization was never built on a universal truth that of what knowledge really is but on a pragmatic interest in being able to manage organizational knowledge. The most appropriate definition of knowledge management is, as for our project thesis as well, the one provided by the much cited and well acknowledged work of Davenport and Prusak (1998):

"Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms."

Acknowledging this definition of knowledge, we still need to divide into more tangible and well known concepts. The definition in itself contains a lot of elements, and could to some extent be too wide. However, it shed lights on the complexity of knowledge, and is therefore useful. Hislop (2013) presents and assume an objective view on knowledge, and follows the assumption that it is possible to develop a type of knowledge and understanding that is free from individual subjectivity. This could apply for some types of knowledge, but far from all. In the project thesis we elaborated on the perspective of Andersen (2000), who states that it is essential to include data and information in order to understand and define knowledge. We continue down that trail but acknowledge that the misunderstanding of the differences between knowledge, information and data is present in practice and something we need to be aware of when conducting the empirical investigation. Especially "knowledge" and "information" are often used interchangeably within both literature and practice. So, in the following section the difference between these concepts are mapped out. In the project thesis we used the traditional explanations of data and information. This time we will try to provide a wider perspective more appropriate to our research and thesis.

Reflection questions:

Is it possible to develop knowledge and understanding independent from individual subjectivity? Doesn't all knowledge to some extent depend on the subjects own perception about the world around him, his or hers cognitive maps built from experiences and cognitive capability?

Data

Beveren (2002) says that even though some argue that knowledge mainly can be acquired, stored and used outside of the human brain, knowledge cannot exist outside of the human brain, and is therefore individualistic dependent in that matter. Only information and data can exist outside of the brain. Data is more or less raw, and can only be applied (and transformed into information) after providing the string of data with context (Widding, 2006). Davenport and Prusak (1998) states that “data is a set of discrete objective facts about events. It provides no judgment or interpretation and no sustainable basis of action. It says nothing about its own importance or relevance”. Data represent a special characteristics (or a group) of objects and occurrences in the real world. Data could to some extent be named the “first phase” of knowledge. Data is arguably a necessary input to information and constitutes the basis for knowledge.

Info

Information is defined as data which have been arranged into a meaningful pattern, and is a mean to reduce uncertainty (Davenport and Prusak, 1998, Widding, 2006). But information only reduces uncertainty if it provides knowledge contribution to the receiver. In other words there need to be productive use of data and information. Information flows through an organization, often through hard or soft networks. In contrast to data, information provides “meaning” in a way and is easier to apply. If someone wanted to find how a person looks like right now, then he or she would have to go look for themselves. This is because even if there existed one document with your personal data and a picture, then the information about looks would in theory be lost a year after because people change appearance, but the data is still there isn't it. You are still born in 1989, five feet tall and live in London, but god knows how you look at 04.00 the next morning (Infogineering). Figure 4 shows the relations between data, information and knowledge

Reflection questions:

Why is it so important to differentiate between data, information and knowledge? Is it like data is always right but information can be wrong? do information necessarily reduce uncertainty, or is it something as “too much data and information” creating even more uncertainty do you think?

Knowledge application

Knowledge is then the application and productive use of information. It's the next step beyond information and depends on cognitive maps of the individual utilizing this information. At least this is how we see it. There is a wide consensus in knowledge management research that you distinguish between the explicit and tacit dimension

knowledge. This was a central topic in our project thesis, further a distinction between the two dimensions is provided in order to get the perspectives needed to understand the concept of knowledge

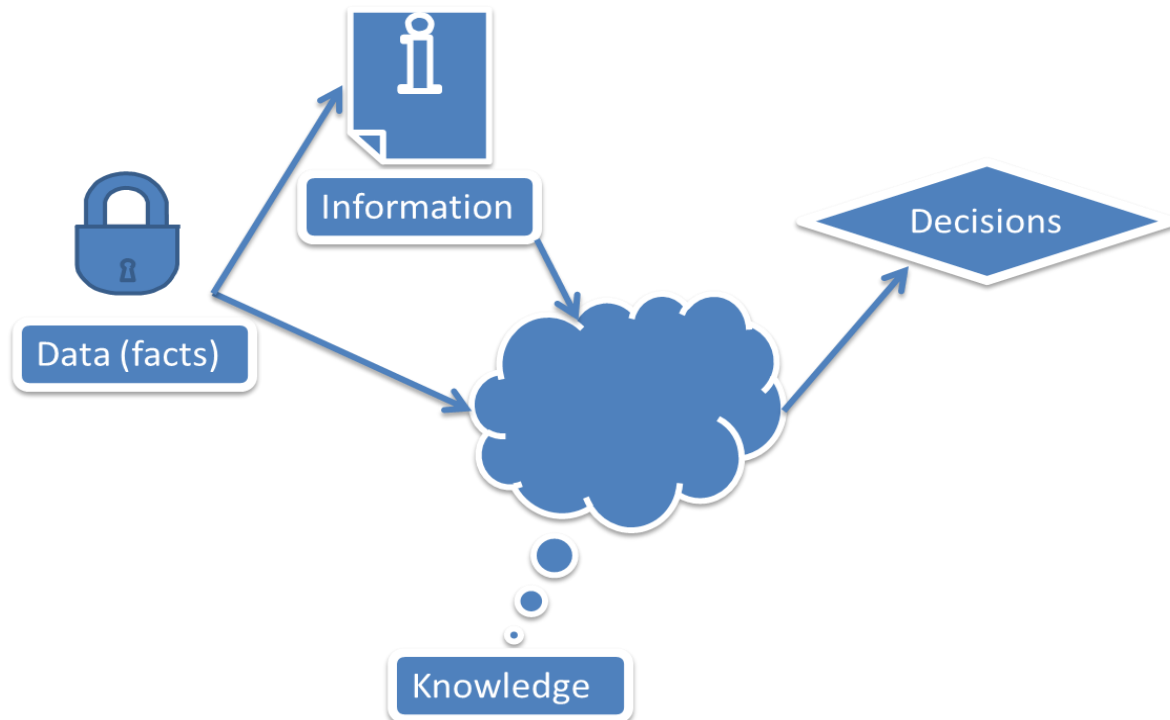


Figure 4: Data, information and Knowledge, inspired by (Infogineering)

Tacit knowledge

It is recognized that much knowledge is tacit, either within individuals' heads ("know what", experiences, skills, etc.) or as social processes ("know-how", "know why", and shared experiences) (Pauleen et al., 2007). The assumption is that it is possible to develop a type of knowledge and understanding that is free from individual interpretation (Hislop, 2013). Tacit knowledge represents knowledge based on the experience of the individuals, expressed in human actions in the form of evaluation, attitudes, point of view, commitments and motivation. In other words, tacit knowledge is linked to the individual. Hence it may be difficult, possibly even impossible to articulate. Polanyi (1967) is one of the "godfathers" of researching acknowledging the tacit knowledge dimension. He stated famously that "we can know more than we tell". Researchers also argue that tacit knowledge resides in human beings, which is obtained by internal individual processes like experience, reflection, internalization or individual talents. The conversion of tacit knowledge into a tangible explicit form, suitable for transfer, is possible only through transformation processes that include interaction of employees such as work in teams (Lakshman, 2007), and typically involves substantial knowledge loss (Grant, 1996). In other words, tacit knowledge represent knowledge that people possess, which may importantly shape how they think and act but cannot be fully made explicit (Hislop, 2013). We will come to the explicit dimension in the following section, but we state here that because of the characteristics of tacit knowledge it cannot be managed and taught in the same manner as explicit knowledge. Even more so in KIPOO which is known for their reliance on tacit knowledge in their daily operations (Pathirage et al., 2007).

We present a sample from our project thesis (Faugstad and Melby, 2013) and quote ourselves to illustrate an example: *A practical example from Polanyi (1967) may put tacit knowledge in a simpler context all human beings should be familiar with, namely facial recognition: “We know a person’s face, and can recognize it among a thousand, indeed a million. Yet we usually cannot tell how we recognize a face we know, so most of this cannot be put into words.” Another example of tacit knowledge is Nonaka and Takeuchi’s example of a famous Japanese baseball player who simply couldn’t express how he became such a good player. You simply “have to feel it” were his final response after trying to express it in figurative words and body language. People actually encounter tacit knowledge on an everyday basis in how to ride a bike, drive a car, make pancakes etc.”*

Reflection questions:

Do this description of tacit knowledge harmonize with our definition of knowledge earlier? Is it possible to develop a type of knowledge and understanding that is free from individual interpretation, meaning knowledge being standalone from individual subjectivity? What’s to say that a knowledge receiver is to make sense in accordance with the sender's intention? If tacitness is so individually concerned, how could we make this tangible without stripping it of all sense?

Explicit knowledge

When considering capturing knowledge and such, explicit knowledge is often put side by side with technological solutions. In short, explicit knowledge is codified in documents, database, or other systematized form that can easily articulate and disseminate within an organization (Lee and Choi, 2003). Dasgupta and Gupta (2009) and Davenport and De Long (1998) also promotes the importance of explicit knowledge as an easily transmitted knowledge. Meaning that it is easily transferable, and could in theory be read and understood by anyone, Some even suggest that explicit knowledge is more valuable than tacit knowledge, which is conflicting entirely with the behavioral and tacit point of view presented earlier (Bohn, 1994). Explicitness favors enabling technology in managing knowledge and argues that explicit knowledge is the easiest knowledge to handle in a system. Explicit knowledge is regarded as objective, standing above and separate from both individual and social value systems and, secondly, that it can be codified into a tangible form (Hislop, 2013).



Figure 5: The Conduit Model of Knowledge Sharing (Hislop, 2013)

An example of explicit knowledge that could easily be codified into a document and utilized by another human being is a list of the Capital cities of Europe, used for example to take a study test in preschool. But this is not the case for more complex knowledge is it. The simple model in Figure 5 shows how a sender supposedly easily transfer explicit knowledge to the receiver, even if they are in some way isolated from each other (Hislop, 2013). From there, the receiver takes this knowledge and is able to understand it and use it without any other form of interaction with the sender. As an explanation to this, it is assumed that no important aspects are lost in the transfer process, and that both sender and receiver derive the same meaning from the knowledge (Hislop, 2013). This is an aspect dwelled and discussed in

detail in knowledge management research, and a perspective we don't support ourselves but feel obliged to include. We argue that in this codification and transfer process, a lot of valuable knowledge get stripped or lost in transmission.

As the presentation above states, tacit and explicit knowledge is different by nature. As tacit and explicit are regarded as two distinctive and separate types of knowledge (Bohn, 1994, Davenport and De Long, 1998, Hislop, 2013) it is naturally two fundamentally different sharing processes for the two. We will throughout the thesis concentrate mainly on tacit knowledge and the utilization of this complex dimension of knowledge.

Reflection questions:

Is it that easy to differentiate between tacit and explicit knowledge? Where do you draw the line? Is it entirely impossible to learn how to ride a bike from codified knowledge written on paper?

1.6.2 Management

Our work in the project thesis, as well as researchers within the mainstream knowledge management literature, is often weak at defining the term “management”. Often the meaning of management in this perspective is typically being regarded as both self-evident and unproblematic to comprehend. So, we discuss the concept isolated and don't want to make the mistake of taking anything for granted (Hislop, 2013). The master thesis should be even more explaining than the preceding project thesis anyway, so a short definition seems to be in order.

Management as a term can be used as both a noun and an adjective (Hislop, 2013). The term “management” in itself, used as a noun, refers to a group who has the responsibility for managing people and other organizational resources. As an adjective, management could refer to the process by which people and organizational resources are controlled and coordinated with the intention of achieving particular objectives. There are different approaches to how management could be seen, according to Hislop (2013). They differentiate between management philosophies focused on directly controlling and monitoring worker's behaviors versus those concerned with controlling and shaping worker's attitudes. Taylorism, or Fordism, is arguably the most widely used managerial system of the twentieth century, and is an archetypal example of a behavioral control system. Those methods are really strict, and provides an environment for the workers with little play-room. The opposite is management concerned with human relation and providing employees with more responsibilities and leeway. Both two are shown in Table 1 below.

Reflection questions:

Where do we differentiate between managing and leading? Is there any difference at all? Might there be more to it, hence more dimensions between managing and leading?

Well, for once we answer our own research question and deem managing as the tools, processes, control and mechanical aspect of management. Leadership on the other hand is “the art of managing” comprising influence, motivation, politics power and similar that we will elaborate in great detail throughout the master thesis. Even though one might argue that politics, power and so on do apply for management also.

	Closed environment	Open environment
Mechanistically closed	Taylorism: <ul style="list-style-type: none"> • Structure • Control • Short-cycle work 	Contingency-approach <ul style="list-style-type: none"> • Strategic management • Process-control • Short-cycle work
Mechanistically open	Human relations: <ul style="list-style-type: none"> • Leadership style • Social climate • Teamwork • HRM 	Organizational development: <ul style="list-style-type: none"> • Values • Culture • Human-management • Commitment-empowerment

Table 1: Different organizational theories, adapted from (Van de Kerckhove, 2011, Scott, 1978)

1.6.3 Knowledge management

Reflection questions:

So, we have all the concepts isolated. But what is knowledge management really? Do you even have a clue without a discussion of this elements combined?

As mentioned earlier, the organizations today has gone through a shift in the last five or six decades, evolving from a pure production-based system to an intellectual, skills-based one, where organizational performance rely on employees intellectual resources. However, there is an enormous diversity in the strategies that firms utilize for their knowledge, and therefore a range of ways in which organizations attempt to manage knowledge (Hislop, 2013). The end of the twentieth century witnessed an enormous social and economic transformation which resulted in knowledge becoming the key asset for organization to manage (Hislop, 2013). This is also confirmed in the appearance of several “special issues” and topic-specific journals such as the “Journal of Knowledge Management” and “Knowledge Management Research & Practice”, which published their first articles in 1998 and 2003, respectively (Begõa Lloria, 2008). Begõa Lloria (2008) states that creation of noteworthy forums for discussion and commenting on the internet, seminars, event and conferences has increased in volume which, in addition to journal publication, also contributes to knowledge management research.

Their definitions and concepts are many and vague, and few definitions can say to cover the whole range of knowledge management research. There is simply no single, agreed definition of knowledge management. The definitions spans from the simplest ones to the scientific extremes. Some of them also highlight the importance of technology or some are solely

dependent on people factors. However, central to them all is managing knowledge and encourage individuals to share and utilize their knowledge (Begõa Lloria, 2008).

But, as for our project thesis, we chose to present the reader with a more nuanced picture of what has defined knowledge management literature from the humble beginning. Simply one definition is not enough to capture the essence of this enormous branch of management. So here are a few more, all of them widely cited and acknowledged visualizations of term knowledge management.

#	Definition of Knowledge Management	Source
1	Knowledge management provides us with approaches, perspectives, and visions for putting the knowledge we have to better use by finding out where it is needed, how we can access and leverage it better, and how we can control its eutrophication. It also allows us to decide where, how, and when to build, create, and cumulate new knowledge.	(Wiig, 1994)
2	Knowledge management is a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets. These assets may include databases, documents, policies, procedures, and previously un-captured expertise and experience in individual workers.	(Duhon, 1998)
3	Knowledge management is managing the corporation's knowledge through a systematically and organizationally specified process for acquiring, organizing, sustaining, applying, sharing and renewing both the tacit and explicit knowledge of employees to enhance organizational performance and create value	(Alavi and Leidner, 2001, Davenport and Prusak, 1998)
4	The process of creating, acquiring, capturing, sharing and using knowledge, wherever it resides, to enhance learning and performance in organizations"	(Scarborough et al., 1999)
5	Knowledge management can be subdivided into creating or developing new knowledge, retaining the knowledge, and transferring knowledge	(Argote et al., 2003)
6	Organizing and distributing an organization's body of knowledge to the right people at the right time	(Robbins, 2003)
7	Knowledge management is one of the key enabling technologies of distributed engineering enterprises. It encompasses a wide range of organizational, management and technologically orientated approaches that promote the exploitation of an organizations' intellectual assets.	(McMahon et al., 2004)
8	Knowledge management is the deliberate and systematic coordination of an organization's people, technology, processes, and organizational structure in order to add value through reuse and innovation. This coordination is achieved through creating, sharing, and applying knowledge as well as through feeding the valuable lessons learned and best practices into corporate memory in order to foster continued organizational learning.	(Dalkir, 2005)
9	Knowledge must be shared and created during process execution and made available throughout the business. Preferably knowledge should be captured at each business activity.	(Hawryszkiewicz, 2010)

Table 2: Knowledge Management definitions

How we personally interpret the knowledge management definition needs to be aligned with the purpose and limitations for the master thesis as well. Again, we choose to highlight the managerial activities, because this is still such an important aspect of it all. Therefore our own definition will stem partly from Begõa Lloria (2008), Alavi and Leidner (2001) and Davenport and Prusak (1998) found in and above Table 2.

Our interpretation of knowledge management

“Knowledge management is basically how to deliberately handle knowledge in a given context. It’s an activity related to utilization of past experiences, both tacit and explicit, in order to help yourself and other individuals make the best possible decision”.

Applying this definition harmonizes with our approach to the research questions. Assessing knowledge management as an activity corresponds to our unit of analysis - manager’s role and responsibility in utilizing knowledge by initiating or performs activities and measures helping the organization to utilize knowledge. Knowledge management is not only a managerial activity, everybody perform this activity to some extent. But defining knowledge management as an activity is useful to relate it to managerial efforts. Since our working title is “beyond sharing experiences”, popular traits as “knowledge” and “knowledge transfer” are excluded and replaced with “past experiences”. We thus focus on utilization of knowledge or experiences already existing internally embedded in the organization. We want to express that utilization is, as explained earlier, an including and wide term. The definition covers both explicit and tacit knowledge, in addition to experiences. However, as promoted earlier, we would like to focus mainly on the tacit dimension of knowledge in this paper.

Reflection questions:

The topic, abstract as it is, varies in definitions. So, how could you maneuver in this jungle and cling on to one as the most valid one? And how do you know if you perceive the definition the way it's intended to be? Is tacit knowledge even possible to manage?

Behavioral perspective

Easterby-Smith and Lyles (2011) states that it is common to make distinction between a behavioral and technocratic perspective related to managing knowledge. This was our approach in the project thesis, where we compared those two opposite continuums in relation to KIPOOs. One general distinction that can be made in terms of how to manage knowledge is between technology-centered and people-centered approaches (Hislop, 2013).

The behavioral view is a perspective dealing with people and individuals regarding how their behavior and attitudes affect knowledge management activities. The behavioral perspective is mostly related to the tacit knowledge. The technocratic view on the other hand mainly involves the use of computers, databases, administrative tools and similar to manage knowledge. It contrasts to the behavioral view as it emphasize on managing and facilitating knowledge utilization by extensive use of IT-systems instead of focusing on people management practice and processes. More or less, we concluded that the behavioral perspective needs most attention in a KIPOO. So, in the master thesis we focus mainly on the behavioral aspect of knowledge utilization, as is obvious as we choose to address the tacit dimension in more detail. The technocratic perspective simply doesn’t open for the kind of research we want to conduct.

The behavioral perspectives are wide and encompass both opposites of our Governance vs. Emergent approach. Inside the scope you find behavior management, governance, Hierarchy and procedures as well as the cultural, social, organic, emergent and horizontal aspects of organizing. Behavioral pretty much comprises every aspect that includes humans and their behavior. We look for goal-oriental behavior and cause effect relationships that will enhance utilization of knowledge in a knowledge intensive context.

1.6.4 Knowledge Intensive Project-Oriented Organizations (KIPOO)

In order to grasp what constitutes a KIPOO you must grasp the definition of a project.

Project

A project has a defined start and end. According to Pinto (2012), traditional project organizations engage in continuous day-to-day activities which are internal and based on repetition, existing systems and capabilities. As indicated in the outline a project is a temporary endeavor, with a predefined scope. So in comparison a project-oriented organization conducts one or more unique projects not basing their operation on routine operations (PMBOK, 2013). These organizations use projects to organize their work and basically view projects as a strategic alternative for “organizational design” (Pinto, 2012). According to PMBOK (2013) there are five stages which a project needs to go through and is relevant for the project manager (Also called Project Management Process Groups):

1. **Initiation**, recognizing if a project is needed, should begin and committing to do so.
2. **Planning**, establishing the scope of the project, refine the objectives, and define the course of action required to attain the objectives that the project was undertaken to achieve.
3. **Execution**, to complete the work defined in the project management plan to satisfy the project specifications.
4. **Monitoring and controlling process**, required to track, review, and regulate the progress and performance of the project; Identify any areas in which changes to the plan are required; and initiate the corresponding changes.
5. **Closeout**, to finalize all activities across all process groups to formally close the project or phase.

Knowledge intensive

There exists no consensus on how to define a knowledge-intensive firm (Hislop, 2013), and many articles out there even “fail” to define what a knowledge intensive firm is at all (Von Nordenflycht, 2010). There has been a growing interest of such firms among organization theorists. If a company’s survival is based on access to and manipulation of large quantities of knowledge, then we considered it knowledge intensive. More specifically the management of employees in a knowledge intensive organization tends to be different from the management of “ordinary” personnel. Alvesson (2000) states that knowledge intensive organizations claim to produce qualified objects and/or services, using knowledge of the personnel as the major resource, given that a firm's output relies on a substantial body of complex knowledge (Alvesson, 2000, Von Nordenflycht, 2010). Based on Alvesson’s statement we perceive knowledge intensive firms in this thesis as organizations where the majority or the entire workforce consists of somewhat “experts” where their knowledge is crucial for organizational success.

To synthesize, KIPOO are organizations working mostly or explicitly in a project-based context with a specialized workforce. Since we highlight the workforce and expertise a great deal in this respect, we need further explanation not covered in our preceding project thesis. As the term “knowledge worker” is quite popular in the knowledge management literature we choose to present the major implications from theory. This hopefully provides the reader with a more nuanced picture of what constitutes knowledge management in a knowledge intensive setting.

Knowledge worker

The recognition and definition of the so-called “knowledge worker” by Drucker (1964) is among many researchers acknowledged as the start, forming knowledge management research. His research concluded with primary work of organizations being purely intellectual, creative, not based on routines and involving both use and development of knowledge (Hislop, 2013). This also gets support from Irgens and Wennes (2011), who states that knowledge work is anything but routine-based, difficult to standardize, and where the answer how to the tasks shall be performed primarily by using the professional knowledge the worker possess and evolve through practice. Examples of knowledge workers could mean being a consultant, engineer, art director, computer expert, lawyer, accountant etc. A knowledge worker is supposedly a committed, hard-working employee using knowledge, often expert knowledge, to perform daily operations (Alvesson, 2000, Gottschalk, 2002). From our perspective, there is not like knowledge workers only manipulate information and not physical objects. A knowledge worker might also work producing tangible objects, take for example the architect as acknowledged as a typical knowledge worker. He does produce drawings doesn't he? Same goes for a military pilot, he does get direct orders and is supposed to work within extremely standardized procedures and commands, he is supposedly a knowledge worker even so isn't he? In knowledge-intensive organization, in contrast to more hierarchically based organizations, the knowledge worker and manager relationship may not be that clear and rigid (Hislop, 2013).

The concept of knowledge worker has long been important within the construction industry, which is considered to be one of the most labor intensive sectors of the economy compared to other industries (Green et al., 2004, Pathirage et al., 2007). So, to pin down what comprises a knowledge worker is central to our master thesis. This is to visualize the difficulties of managing them and that we are to interview quite a few later on. This makes an appropriate transition to the next section.

Reflection questions:

But how could you really distinct between knowledge worker and an ordinary worker? Knowledge workers are from theory pretty much defined as one who perform “brain work” basically, isn't that a little bit vague? Isn't all work knowledge work really? We want you to reflect upon which occupations you will define as knowledge intensive, and ask yourself what you put in the term knowledge worker.

1.6.5 Construction

In our project thesis we used the somewhat wide term, KIPOO, as our point of reference. This is also the base for the master thesis, but we would like to break it down some more to make it more specific and tangible. Hence, we chose to specify a branch of KIPOO, namely what we choose to call the construction industry.

We define the construction industry as general creation or maintenance of buildings, roads, tunnel, bridges and so on and so forth. Our term represent all technical disciplines necessary to rise a building or other construction, like electrical systems, civil, piping, urban planning, ventilation, construction, architecture and so on. But, it's important to differentiate and we do term construction in this thesis not as all type of actors included in raising a building. We do only address the consultancies and planning part of the industry. Typically engineering

firms, technical consultants, managerial (project management) consultancies, architects and so on. Entrepreneurs and practical professions like plumbers and electrical installers are not included in what we term construction from here on out. This might though be difficult as other researchers may include this profession in what they term as the construction industry, but we will do our best point these weaknesses out when we encounter them.

There are obviously other ways of defining an industry, but this is ours as it simplifies our empirical work later on. Our definition does not necessarily comply with international standards and definitions. And some aspects of our definition might just as well be part of other industries. A pipe and ventilation engineer might just as well be part of the piping industry or otherwise.

Construction projects are becoming more and more complex, dependent on expert knowledge, and is often very difficult to manage (Berggren, 2001, Bryde et al., 2013). The reason for the complexity could be caused from a number of sources (Dubois and Gadde (2002), Gidado, 1996):

- The resources that are employed,
- The environment in which construction takes place
- The level of scientific knowledge required
- The number and interaction of different actors and parts in the workflow

Some construction projects last only a couple of weeks, while some could last up to several years and involves multiple technical disciplines and subcontractors. However, our focus will mainly involve the consultancy and entrepreneur of such projects, arguably the most knowledge intensive ones. The customer/operator often lack both managerial and technical capabilities to execute the project and therefore hires a consultant or main-entrepreneur to act as a project manager and technical advisor for the projects. Pathirage et al. (2007) states that the construction industry is considerably more fragmented than other industries. The services are characterized by being highly dependent on tacit knowledge, involving a wide range of professionals involved working in interdisciplinary teams delivering specific parts of the cohesive whole (Løwendahl, 2000 , Pathirage et al., 2007). Pathirage et al. (2007)'s perception might differ from our own, but the thoughts do apply just as well.

This research paper mainly appeal to organizations in construction of a certain size, involving different disciplines and what you can categorize as an organization managing numerous employees. Hence, our findings and research does not appeal as much to smaller organizations, say for instance consisting of one founder and three-four employees.

2 Literature Review

As one of the four distinct parts introduced earlier, chapter 2 comprises a literature review and thus an important and comprehensive section. A description of what constitutes our literature review is thus in order. In chapter 2.1 we will present the methodology for the literature review followed by “Emergent- or Governance approach to knowledge management” where we present literature regarding a governance or emergent approach and what this implies in chapter 2.2. This is due to our sub-research question and curiosity to which approach management should pursue to facilitate knowledge utilization. The intention is to visualize if knowledge utilization as an activity is something deliberate and conscious or something emergent in nature. In addition to this overarching discussion that permeates our master thesis we follow up in chapter 2.3 with a thorough literal investigation of the “four pillars” we chose to investigate. An explanation of why we chose those particular areas or topics are vaguely outlined in chapter 1, but will be further elaborated in section 2.3. The structure and what fields or issues that is included in the different sub sections, or “pillars”, will be presented under the respective sub chapter. We consider the literature search and review of our project thesis a success. Hence we found it reasonable to utilize a similar methodology and approach in the master thesis as well. However, some adjustments were made to streamline the process

2.1 Methodology

Methodology constitutes methods and techniques to answer, or to come up with new interesting questions regarding scientific questions. In this thesis as for our last we interpret it as “the path to the goal”. There are many different methods spanning data- and information collection, where the suitability will vary for different tasks and research questions (Yin, 2013). During the specialization- project and course in the fall of 2013 we became utterly aware of several reasons why theory is important for researches and practitioners. Theory provides- a framework for analysis, an efficient method for field development, clear explanations for the pragmatic world (TIØ5225, 2013). We don’t necessarily look for best practice or direct answers to our problem statement this time around either, as we cherish curiosity and the value of raising new research questions along the way. Theory and practice differ in application, and since the master thesis consists of both theory and practice, the outcome is more practically oriented.

In the following chapters we account for our choices and approach to investigate the given problem statement and sub questions, in addition to address limitations and weaknesses.

2.1.1 Choice of method

Since we already had a theoretical foundation beforehand, it was easier to find the best possible approach to further evolve our master thesis. Even so, because our field of interest is so diverse and comprehensive, we chose to conduct a new and comprehensive literature review in order to gain more perspective. In order to have the necessary basis for investigating our research empirically, we found it reasonable to broaden our theoretical foundation. A literature review is defined as “a selection of available documents (both published and unpublished) on the topic, which contain information, ideas, data and evidence written from a particular standpoint to fulfil certain aims or express certain views on the nature of the topic and how it is to be investigated, and the effective evaluation of these documents in relation to the research being proposed” (Hart, 1999). We conducted this literature review to provide the reader with an overview of relevant literature relating to our research questions and unit of analysis. We describe measures, barriers, issues and

approaches to manage knowledge in KIPOO, more specifically the construction industry. Hence, our research is mainly explanatory and illustrative.

The sources included in the review are fairly balanced in applying primary and secondary sources, but we distinguish between the literature gathered. The literature we gathered regards one way or the other one of these subjects, all of them related to knowledge management:

- Junior/senior relations
- Leadership
- Portal solutions
- Virtual work

Theories included in the introduction are mostly conceptual- and secondary sources. Literature used to address our particular research questions and subjects above are, on the other hand, first and foremost obtained from primary sources with some elements from secondary conceptual ones. An extension in form of empirical field research was needed in the master thesis, making this thesis in contrast to our preceding work, new and original research.

2.1.2 Search for literature

Especially the methods applied for the search itself was something we were utterly satisfied with in our project thesis. As there should be no need “to change a winning recipe” we applied the same method for this report as well.

Reviewed literature is chosen based on an evaluation of relevance and quality. In order to map existing literature, unanswered questions, relevant concepts and approaches within our research, literature has been collected from academically recognized databases and journals. We chose this particular strategy as this, in addition to be ease documentation, grants us an easy and controllable mean to find sufficient literature without manually screening/skimming through huge amounts of journals hoping to find something relevant. There are numerous electronic databases relevant for management. As last time we mainly utilized “Scopus” database as it in addition to cover a comprehensive collection of relevant journals and independent articles, it angles the cross-section between management, knowledge and the subjects we were researching. Thus the brother part of articles analyzed is downloaded from or via the Scopus database.

Keywords were used to isolate the relevant articles and were therefore carefully considered. We started of wide like last time, searching for one relevant keyword in either article title, abstract or keywords in published articles dating back to the early 1990s. This strategy in combination with isolating publications from relevant “subject areas”, “document types” and “source titles” (journals and so on) helped us a great deal in obtaining conceptual secondary sources and some well-grounded theories used to grasp the concept of knowledge management and phenomenas related to our sub-research question subjects. To narrow our search targeting more relevant and modern articles comprehending our specific unit of analysis we used a strategy of combining relevant keywords using Boolean operators like “AND” and “OR”, varying the search fields among title, abstract and so on. We also regulated the maximum time frame to only include literature published the last 10 years. However, as to literature being obtained from other sources than just the Scopus database, references might be older than 10 years as well.

As research builds on previous work, citations can reflect the relative importance of different articles and their support in the academic society. Databases offer citations as a sorting mean in their advanced search engines, which we used diligently in this case to obtain the most appropriate literature. We are aware of citation indexes primarily illustrate popularity, and had this in mind while doing our literature search. Even so, they often define new paradigms and leading views in their respective research, which usually deem them appropriate and applicable. Anyway, we used this method to sort out well anchored research before deciding whether or not it was relevant for our research. This leads us to our exclusion “criteria’s”.

To reassure fewer man-hours getting lost in reading irrelevant literature, some additional exclusion criteria’s or “measures” were applied. The first criterion comprised that the article had to be easy accessible, either as a download directly from the database (or direct link to a download-site), through NTNU’s library system or open accessed from the web. A second criterion was a more open one used to exclude unrelated articles. After compressing the sample provided by the database (by keywords, sources, citations etc. mentioned) we conducted a manual screening of the title and abstracts, evaluating whether the articles apply to our area of interest and uses concepts and keywords the way we intended. Hence, articles outside the scope were excluded. The last measure was to restrict search to include English and Norwegian journals only, primarily for practical reasons. Consequently, the final sample included 23 articles, as shown in Table 3. For a more detailed and complete overview of keywords, criteria’s and literature sample, see Table 4.

Number of articles from keyword search:	41
- Number of articles not passing 1 st criteria:	7
- Number of articles not passing 2 nd criteria:	11
= Number of articles included in final sample	23

Table 3: Final sample of articles through SCOPUS

In addition to extensive use of search engines and databases, the majority of books and articles are obtained otherwise. For example, a considerable portion of literature stems from references in conceptual or secondary articles we found interesting and applicable, also from the articles conducted in table 2. This way we work ourselves backward to the original literature regarding issues we felt was poorly covered through the articles we gathered ourselves. The paper also includes articles and insights from various courses conducted during our MSc at NTNU, either directly or at least as inspiration for a subject. Our supervisor also contributed with a sizable amount of literature of which we have applied directly and also obtained other relevant articles from reference lists. Table 5 and Table 6 illustrate these correlations.

The search for literature was comprehensive due to the variety of articles that provides interesting insights- or at least touching our area of research. The challenge was to eliminate the irrelevant ones. The following table shows the correlation of used keywords in obtaining the literature analyzed:

Keywords	Knowledge management / knowledge	Project	Human aspect	Knowledge intensive / sharing
Virtual	Pyoria (2009)	Yoo & Kanawattachi (2007)		Assudani (2009)
Virtual teams	Pauleen et al. (2007) Both et al. (2007)	Haas (2006)		
Portal	Benya et al. (2004) Coakes (2006)		Net et al. (2010)	
Network				Baalen et al. (2005)
Knowledge management			Moffet et al. (2003) Josef (2008)	
Apprenticeship	Klaus (2009) Winkelen & Mcdermott (2010)			Erginer (2009)
Junior/senior				Murphy (2012)
Maximum	Karkouliau (2008)			
Emergent	Buuren (2009) Toni et al. (2012)			
Managerial actions	Riege (2005)			
Initiatives	Watanabe & Senoo (2008) Bishop et al. (2008) Raub (2004)			

Table 4: Literature included from Keyword-search

Literature included

Article/ book title	Author(s)	Year	Source
Learning Across Business Sectors	Green et al.	2004	University of reading
Project Complexity	Gidado	1996	Construction Mgmt. and economics
Strategic Mgmt. of Prof. firms	Løwendahl	2000	Handelshøjskolen, CPH
A design theory for emergent	Markus et al.	2002	MIS Q.
Diagnosing cultural barriers in KM	DeLong & Fahey	2000	Academy of Mgmt. Executive
Understanding Computers and Cognition	Winograd & Flores	1986	Ablex. Publishing, New Jersey
KM: Theory doesn't equal practice	Drucker	2001	Techweb
Cultivating Communities of Practice	Wenger et al.	2002	Harvard Bus. School, Boston
Virtual Teams: Tech and Workplace	Townsend et al.	1998	Academy of Mgmt. Executive
Communication and trust in VT	Jarvenpaa & Leidner	1998	J of Computer-Mediated Comm.
The Mutual Knowledge Problem	Cramton	2001	Organization Science
Competing for Attention in Knowledge Markets	Hansen & Haas	2001	Administrative Science Quarterly
Generating data for Emerging Tech.	Yoong et al.	2004	Springer US
Action learning and excellence in Mgmt. dev.	Margerison	1988	Journal of Mgmt. Dev.
Managing Complex Networks	Kickert et al.	1997	Sage Publications
Collaboration Process	Thomson & Perry	2006	Public Adm. Review
Eliciting Knowledge from Experts	Hoffman et al.	1995	Org. Behavior and Human Decision
Moving Forward with Reverse Mentoring	Greengard	2002	Workforce
Towards Conceptual Clarity for Tacit Knowledge	Gourley	2006	KM Research and Practice
"I don't have time to think!"	Raelin	2002	Reflections
Corporate Initiatives for KM	Clarke & Rollo	2001	Education + Training
People and KM	IRS	2000	Eclipse Group
Nature of Managerial work	Mintzberg	1973	Harper & Row
R&D Project Leaders	Bain et al.	2005	Leadership, Mgmt. and Innovation
Managerial process and org. behave.	Filley et al.	1976	Glenview
Getting Everyone on board	Joshi et al.	2009	Organization Science
Fleishman & Harris	Fisher & Edwards,	1988, 1962	

Obtained from

Article/ book title	Author(s)	Year	Source
Tacit kn. and org. performance	Pathirage et al.	2007	Journal of KM
The cons. Ind. loosely coupled system	Dubois & Gadde	2002	Construction Mgmt and economics
Tacit kn. and org. performance	Pathirage et al.	2007	Journal of KM
Knowledge sharing in Emergent network	Van Baalen et al.	2005	European Mgmt. Journal
Corporate portal: A tool for KM	Benbya et al.	2004	International Journal of Info Mgmt.
Knowledge sharing in Emergent network	Van Baalen et al.	2005	European Mgmt. Journal
Corporate portal: A tool for KM	Benbya et al.	2004	International Journal of Info Mgmt.
Knowledge sharing in Emergent network	Van Baalen et al.	2005	European Mgmt. Journal
Discovering and articulating: KM Strategy	Pauleen et al.	2007	Learning Organization
The impact of knowledge coordination on VT perf. over time	Kanawattanachai & Yoo	2007	MIS Q.
The impact of knowledge coordination on VT perf. over time	Kanawattanachai & Yoo	2007	MIS Q.
Acquiring and applying Knowledge in transnational teams	Haas	2006	Organization Science
Discovering and articulating: KM Strategy	Pauleen et al.	2007	Learning Organization
Discovering and articulating: KM Strategy	Pauleen et al.	2007	Learning Organization
Knowledge for Governance	Buuren	2009	International Public Mgmt. J.
Knowledge for Governance	Buuren	2009	International Public Mgmt. J.
Learning Expert Thinking Process	Van Winkelen & McDermott	2010	Journal of KM
Reverse Mentoring at Work	Murphy	2012	Human Resource Mgmt.
Learning Expert Thinking Process	Van Winkelen & McDermott	2010	Journal of KM
Learning Expert Thinking Process	Van Winkelen & McDermott	2010	Journal of KM
Ensuring effectiveness of KM	Bishop et al.	2008	Journal of KM
Ensuring effectiveness of KM	Bishop et al.	2008	Journal of KM
Leadership and Trust	Lee et al.	2010	Mgmt. Learning
Leadership and Trust	Lee et al.	2010	Mgmt. Learning
The impact of leadership style	Huang et al.	2008	J. of Global Info. Mgmt
Learning Across Boundaries	Argote et al.	2011	Handbook of OL and KM
The impact of leadership style	Huang et al.	2008	J. of Global Info. Mgmt

Table 5: Literature included obtained from reference list in other articles or books

Literature included				Obtained from	
Article/ book title	Author(s)	Year	Source	Course	Other
The nature of managerial work	Mintzberg & Waters	1973	New York: Harper & Row	Strategic management course (NTNU)	
Doing a literature review	Hart	1998	Sage Publications	Programme- and portf management (NTNU)	
Case study research	Yin	2013	Sage Publications	Spec. Course (NTNU)	
Exploring virtual teamwork in construction	Rezgui	2007	Interacting with Computers	—	Internet sources
Using mentoring and storytelling	Swap et al.	2001	J. Manage Inf. Syst.		Internet sources
Phases of mentor relationship	Kram	1983	The Academy of Mgmt Journal		Internet sources
The Mentor perspective	Allen et al.	1997	Journal of Voc. Behaviour		ScienceDirect
The Nature of leadership	Barker	2001	Human Relations		Internet sources
Implementing Knowledge Management	Raub & von Wittich	2004	European Mgmt. Journal		ScienceDirect
The impact of leadership style	Huang et al.	2008	Journal of Global Info. Mgmt		Internet sources
Role of leadership in KM	Singh	2008	Journal of KM		Internet sources
Designing and managing a research project	Polonsky & Waller	2005	Sage Publications		Supervisor
KM in organizations	Hislop	2013	Oxford		Supervisor
Handbook of org. Learning and KM	Easterby-Smith & Lyles	2011	Chichester, West Sussex		Supervisor
The construction industry loosely coupled system	Dubois & Gadde	2002	Construction Mgmt. And economics		Internet sources

Table 6: Literature included from other sources

2.1.3 Review process

Some alterations were made in order to streamline our review process. We had acquired a lot of experience in reviewing literature from previous project thesis and agreed to approach it more or less the same way, with some alterations especially related to the “template” (see Appendix B: Reading template for the new and updated checklist). We found the template from our project thesis a little too comprehensive and thus stripped it down to the essentials, still ensuring that we as co-authors analyze the literature equally.

The literature review has been through several iterations, as shown in Figure 6: Review process model. In addition to being an inconsistency in our work, the work of the authors we reviewed is probably not “airtight” either. We cannot assume that authors works completely logical. Their assumptions and findings could somewhat be based on sloppiness, data inconsistencies, incompatibility and so on. This is completely natural due to the fact that our work builds on already conducted research by someone else, which again probably is based on someone else’s work and thoughts. We cannot be guaranteed relevance and chain of evidence all the way, especially since much of our literature is not directly addressing our research or exact angle in how to approach the different subjects.

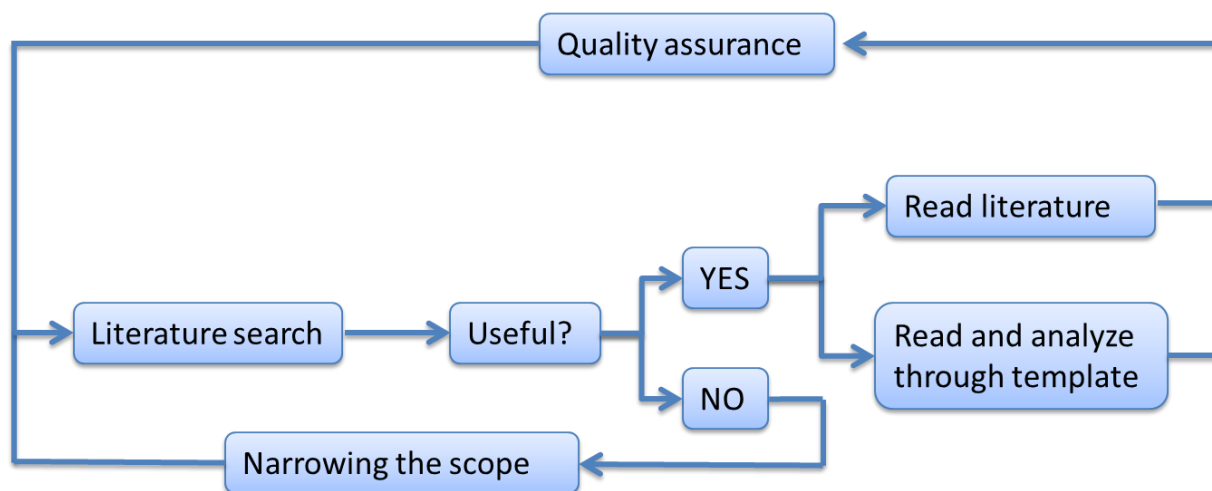


Figure 6: Review process model

To assure articles being assessed on the same basis and criteria's a checklist known as the "template" was applied. The template is a set of pointers and questions applying to the researchers as he skims through the chosen literature. The checklist functioned as a catalyst and to help keeping key questions in mind when analyzing. In addition, the checklist provided guidelines on how to view the article critically and assess its appropriateness to our research.

Articles and concepts were first assessed separately and independent in order to understand the different aspects on a stand-alone basis before they were put up against similar as well as contradictory approaches.

2.1.4 Critique, reliability and validity

This critique covers only the literature review alone. A description on methodology and limitations of the empirical investigation is presented in chapter 3. We anyhow present some explanation to what constitutes reliability and validity in this chapter, as this is placed first in our thesis. This will be taken for granted when reading the empirical methodology section. The limitations of this study does apply for any student research and master thesis we propose, so you will probably encounter severe similarities to the critique presented in our earlier academic work (Faugstad and Melby, 2013).

According to Yin (2013) the reliability of a research study basically boils down to the ability to repeat the same study with similar results at a later point in time. "If a later researcher follows the same procedures as described by an earlier researcher and conducts the same case study over again the later investigator should arrive at the same findings and conclusions" (Yin, 2013). Following that thought by document our choices and procedures, it will hopefully minimize errors and biases in our study. As for validity, it could be described as the degree to which a research study measures what it intends to measure (Yin, 2013).

Some of the theory presented in this thesis has their roots in other units of analysis than construction, especially within consultancy, of which we found very little research on in the databases. This could potentially contribute to a decrease in validity as a significant part of our theoretical foundation are relating to other similar contexts, but analyzed and interpreted

as applicable to construction by us as authors. However, we hope that evidence from the empirical research could help to uncover some of these gaps, assuming they exist.

The thesis's limited scope and timeframe as provided by school will necessarily weaken its reliability and validity. In addition, due to the enormous amount of literature regarding knowledge management and the related subjects, sources that should have been assessed are potentially left out. So, we acknowledge that there may be interesting and highly relevant literature not included in our review, thus implying our thesis can be deficient in relation to literature that may exist on the subject. The complexity and lack of common accepted paradigm associated with our research topic makes it impossible to arrive at the same level of reliability and validity as for narrower topics or for example classical physics (which can to some extent be more accurately measured in a laboratory).

In addition, other issues, not necessarily related to reliability- and validity, might also be worthy of critique and mentioning. First, although the majority of the review are based on well-established and frequently cited articles, we have also, in some minor instances used master- and doctoral thesis and other not as reputable sources as well. Second, after the first search samples we noticed a potential journal bias due to a large portion of the articles being published by the same journals. Third, some of the sub questions were quite specific and could lead to some lack of direct investigations, at least in theory, and also difficulties on finding perhaps more suitable articles.

Biases are a natural and maybe inescapable phenomenon, some of might just as well happened here to a certain extent. Nevertheless, we have tried to analyze the literature as objectively as possible, communicated our views more freely in the theoretical implication section in the end of each subject, and also later on in the final discussion and recommendation section comprising empirical evidence as well.

2.2 Emergent- or Governance approach to knowledge management

In this subchapter we will present a brief literal presentation of the concept of Emergent- or Governance approach to knowledge management. This continuum is something that permeates our whole study and relates to all our pillars and research question. The emergent vs governance approach is applicable to all activities and measures that we investigate through our topics in chapter 2.3. So, this is an important and central description, hence a dedicated subchapter.

Our project thesis revealed that there are different ways to handle knowledge in an organization, we want to relate those to well-known strategies presented in management literature, most famously by Mintzberg and Waters (1985). These are well acknowledged strategies in general but could potentially shine a light on perspectives in how knowledge utilization is perceived and handled in KIPOO line construction. Deliberate and Emergent may be conceived as two opposite sides of a continuum and could be perceived as a paradox in how to handle knowledge management strategies (Mintzberg and Waters, 1985). A visualization of the concept is shown in Figure 7.

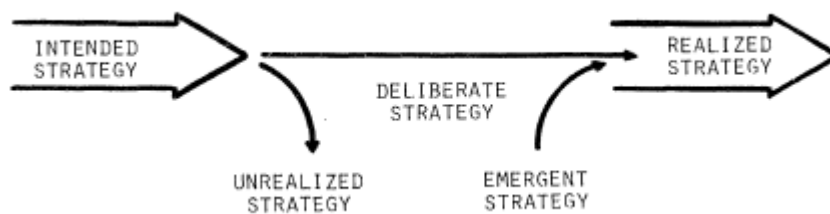


Figure 7: Deliberate and Emergent strategies, from Mintzberg and Waters (1985)

2.2.1 Governance

If something is to be perfectly deliberate, as shown in Figure 7, the intended plan needs to go exactly as intended (Mintzberg and Waters, 1985). In other words, it needs to have a set of guidelines or norms. The relation to the concept of governance is striking. Governance consists of creating of rules, guidelines and routines, as well as their implementation in a system, in this case the system refers to knowledge management (Schimmelfenning and Sedelmeier, 2004). According to several authors, we live in the era of governance. The classical institutions of the state are supplemented by myriad and actor-coalitions struggle for objectives, problem definition, and the organization of collective action (Kickert et al., 1997). Some also promotes that meta-governance has become a phenomenon, which means in short an application of both deliberate management strategies to facilitate interaction between actors and proven process-oriented norms like openness, participation, fair play, and equality to organize collaboration (McCreary et al., 2001, Thomson and Perry, 2006). However, there are three conditions for such a deliberate initiative to be satisfactory according to (Mintzberg and Waters, 1985). First, it has to be precise intentions beforehand in the organization, articulated in a concrete level of detail, so there is no doubt about what was desired before any actions were taken. Secondly, since organization means collective action, there must be no doubt that the initiatives have been common to virtually all the actors, either shared as their own or else accepted from leaders. Thirdly, these collective intentions must have been realized exactly as intended. In a knowledge management matter, there has to be clear from day one that a knowledge initiative should take place, and it has to be done collectively by everyone in the organization.

Reflection question:

Could leaders achieve success applying such a rigid strategy on such an abstract concept as knowledge management?

2.2.2 Emergent

To create a perfectly emergent strategy, there has to be a consequence in action over time, in the absence of intentions about it (Mintzberg and Waters 1985). It is hard to imagine that efforts manifests themselves this way, which could put to question if pure emergent strategies exists in organizational life. But again, some of Mintzberg and Waters (1985) research showed that some patterns come rather close to being emergent, as when an environment directly imposes a pattern of action of an organization. Some argue that achieving inclusion between knowledge components ultimately has more to do with an emergent, interactive, and self-organizing process between the various actors involved than with a deliberate, well-considered strategy implemented top-down by managers (Buuren, 2009). Knowledge

management from this point of view calls for creating the specific preconditions needed to facilitate development of usable facts and frames, as well for the development and mobilization of relevant or potentially relevant competencies. The actual processes of fact-finding and framing are in essence self-organizing processes between expert and lay persons, between stakeholders and public authorities (Buuren, 2009). You could say that emergence from a knowledge management perspective describes a vision of employees being unaware of sharing knowledge, it's rather something that just happens naturally and unconsciously at all times. Something organically growing inside self-organizing cultures. Self-organization is a result of a bottom-up dynamic process, based on local interactions and without centralized control. The process permits that a complex system in an instability state reorganizes its basic components and forms a new configuration. This configuration is constituted by basic components and emergent properties (de Toni et al., 2012).

Reflection question:

How is it possible to design an organization to enable emergent creativity? Or formulate initiatives to facilitate and strengthen this process for that matter? What is the management's role on this side of the continuum? Could there be underlying structures we don't understand explaining emergent behavior?

2.3 Socio-Behavioral issues related to Knowledge Management

This subchapter is the heart of our literature review and comprises the four pillars and topics of our thesis. Those four pillars are: leadership behavior, junior- and senior relations, the human aspect of portals and knowledge utilization in virtual settings. The reasons for choosing this particular area of research started with a desire to investigate knowledge management internally and something that intrigued the case study company. In the initiation of our project thesis we had some brainstorming meetings with the case company, of which they mentioned these topics, among others, as interesting for them to investigate. We thus chose those topics we had most personal interests in and did a quick literature search to reveal if there was enough research to do a decent literature review related to our unit of analysis, the manager. The four pillars do relate very much to either an emergent or governance approach to knowledge management, and thus fit our purpose like a glove. Leadership behavior was something we in particular wanted addressed, as this is a field of great interest to us. We wanted to see if there were certain traits and styles which affected knowledge utilization in a knowledge intensive context. In addition we found strong evidence in our project thesis supporting involvement of leaders and top level management in knowledge utilization practices and initiatives. We wanted to empirically test those findings and relate them to Deliberate or Emergent leadership behavior. Junior- and senior relations were chosen mainly because of the relation to formal or informal relationship, which again could be interpreted as either deliberate or emergent. But also this is also relevant because we are becoming juniors ourselves within just a couple of months. Portals were chosen because we both knew from our project thesis, observation and practice working as project engineers, that it is usually difficult to benefit (knowledge related) from these as intended upon implementation. How to utilize knowledge in virtual settings was chosen because of the technology available today, and the way it gradually becomes a more natural and usual way of working in the construction industry this days.

The pillars are not deemed equal and are not given the same amount of space and resources in our investigation. You will witness that Leadership behavior and Mentorships are given much more attention in our thesis, compared to portal and virtual communication. This is due to us becoming aware of that the two first were most fruitful to discuss in relation to our main research question. A short description of the structure and topics assessed within each pillar are presented in the outline of the respective sub-chapter. The pillars have the same structure, first there are some key issues, and then concluded with implications for managers.

2.3.1 Leadership behavior

This subchapter represents how leadership behavior can affect knowledge utilization in a knowledge intensive setting. It starts off with an introduction to leadership research, thereafter:

- The fundamentals
- The responsibility for fostering a knowledge utilizing culture
- Organizational design and characteristics
- Leadership roles, styles, traits and characteristics
- Reward and recognition
- Leadership in the construction industry
- Knowledge management initiatives
- Strategy and actions of a Knowledge leader

The chapter is concluded with theoretical implications for management in construction

“The canon of industrial-era leadership theories is an adaptation of the hierarchical view of the universe adopted by the early Christian Church, and presumes that leadership is all about the person at the top of the hierarchy, this person’s exceptional qualities and abilities to manage the structure of the hierarchy, and the activities of this person in relation to goal achievement”

We open this chapter with this quote from Barker (2001) to spark the readers thought processing, and start reflecting on whether this has a foothold in modern reality or not. Knowledge management is a doubled-edged sword, which some say is on the horns of a dilemma. A recognized survey conducted by KPMG among European organizations revealed that 80% of the respondents consider knowledge as a strategic asset. Simultaneously, 78% of the same respondents believe that their organizations are missing out on business opportunities by failing to exploit their knowledge base successfully (KPMG, 2003). The findings of this survey illustrate the difficulty leaders and top-level managers, as our unit of analysis, encounter when dealing with knowledge management. Not exactly easier in a knowledge intensive context as construction is it now?

How knowledge flows in an organization can, according to Raub and Von Wittich (2004) be compared to a football game, and we think this illustration is describing in an interestingly fashion how the roles manifests themselves in a knowledge utilizing environment. Football players pass the ball to each other and interact in constantly changing formations. In a similar manner, knowledge workers constantly pass data, information and relevant knowledge to each other, engaging in dynamic organizational networks. Leaders and managers on different levels combine the roles of a whistleblowing referee and screaming coach. Backed up by key actors, management delimits the space in which knowledge management evolves and the borders that should not be crossed in order to keep it all in in line with organizational goals, values and vision. By indicating some fundamental rules, in the shape of governance, they

keep the ball in play and the game under control. In addition, like an effective coach they identify and develop promising players in-house (Raub and Von Wittich, 2004).

Reflection question:

How far does this metaphor go? Are there any other roles we could compare to a football match or team? What about injuries, field, goals, a keeper or striker, and what about the sponsor? We want you to have this metaphor in the back of your mind also when reading the empirical section of this paper.

The vast majority of the literature reviewed argues that certain leadership styles, characteristics, attitudes, values and behaviors can support and facilitate knowledge management activities. Organizational leaders can arguably impact the culture embedded in their organization. We want to elaborate on these styles, traits and actions leaders possess and act upon, and dedicate this chapter to discuss their impact on knowledge management activities and initiatives.

Before we continue, the study of leadership is maybe one of the most critique worthy collection of literature and studies there are. Both theory and empirical research can be put to question. For example, the generalizability of some of the data is either anecdotal or case study evidence related to a single organizational, national or human study. Leadership, as we experience it, is a continuous social process. So, since leadership studies are usually conducted by isolating a single event as though this event has a defined start and end, and by analyzing as though this element is subject to cause–effect relationships, it becomes harder to swallow and accept. The assumption that an analysis of a collection of these discrete events is equivalent to an analysis of continuous leadership is not valid alone. Neither is the assumption that the actions of one person, may it be a CEO, senior engineer or king for that matter, are the equivalent of many individual wills and the cause of outcomes. Both these assumptions result directly from the application of empirical methods to the study of leadership (Barker, 2001). Further, the literature has been criticized to make universalist assumptions about the relevance of certain styles of which they neglect to adequately account for context, being weakly theorized, making use of questionable research methods, and providing weak empirical supports for the claims made (Barker, 2001, Hislop, 2013). One leadership style may work for one setting, but may not work if altering just one variable or maybe not even the next day in the exact same setting. Few studies can say they have provided strong convincing evidence in this respect, hence we highlight from the beginning that the study of leadership has to be taken with a pinch (or bucket?) of salt. The value lies in the reflections, proposed actions and elaboration of the diversity of leadership literature.

Leadership fundamentals

In the project thesis we thoroughly addressed how mainstream literature define leadership and how we differentiate between leadership as the “art of managing” and management as the “tools, process, formal, administrative and more mechanical aspect of management” (Faugstad and Melby, 2013). Still, the definition of leadership usually addresses the nature of the *leader*, and not the nature of *leadership*. For example, Wills (1994) definition: “The leader is one who mobilizes others toward a goal shared by leaders and followers”. This definition, or older and similar, were incidentally not developed further but taken to be self-evident. Relating back to our initial quote, the assumption that the leader is the source of

leadership also implies that the leader is defined by position in a hierarchy. We argue, in line with acknowledge authors as Barker (2001) and Hislop (2013), that it is more to it, and that there could be a difference between what traditional literature define as leadership and what we experience as leadership in a knowledge intensive project oriented organization.

Back to our thoughts from the project thesis, leadership is a process of energy and inspiration, not formality and structure. Leadership is in essence very different from management – managers pursue stability, while leaders often pursue change and are needed in transformational processes. Leadership, in line with PO thoughts, can be defined as “a process of transformative change where the ethics of individuals are integrated into the mores of a community as a means of evolutionary social development.” (Barker, 2001). According to this definition one can believe that, if there is no need for change or new initiatives, there is no need for leadership. This is not our intention to promote, we see the point but argue, as will be presented in the subsequent sections and empirical investigation that leaders do play an important role also in times of no radical changes or upheavals. There is not only in turnaround operations, or when implementing a severe initiative, a leader is needed for his inspirational qualities. Even though, this might be when he or she represents the highest value for an organization.

Reflection questions:

Does leadership evolve as a consequence of the environment responding to its demands, or as a creator of the environment, or both?

What is the purpose of leadership, and how is it entwined with the purpose of life and the adult search for meaning? Do you think leaders must play different roles and act in line with different expectations depending on context?

So, at this point, we could present a brief summary of how we perceive the leadership context in order to frame it before we proceed:

1. Leadership is not about control, but rather transformation, motivation, influence and inspiration.
2. Knowing the environment does not mean that its elements are known and one thing might work in one setting at one point in time and not in the next.
3. The context of leadership is continuous, progressive and not repetitive.
4. Sophisticated issues and complexity should not be perceived as problems to be solved, they spark organizational evolution, adaptation, and renewal.

Leaders' responsibility for organizational culture

Several authors (Donate and Guadamillas, 2010, Hislop, 2013, O'Dell and Hubert, 2001), do somewhat agree that a culture prone to utilize knowledge hold certain characteristics:

1. Knowledge sharing and utilization is regarded as a norm.
2. Organizational staff has a strong sense of collective identity.
3. Colleagues have a high level of trust in and respect for each other.
4. Organizational processes are regarded as fair.
5. Staff has high levels of trust in and commitment to management.

Reflection questions:

Can an embedded organizational culture really be radically changed to fit this characteristics? Is the only way of doing this by exercising black magic? Should organizational culture be altered to fit leadership and knowledge initiatives, or the other way around, framing an initiative to fit the organizational culture?

In our Project thesis, a topic we dwelled on was the issues of building a knowledge sharing culture, which among other measures involved a sense of collective group identity. As concluded in then, research show that the extent to which people feel a part of and can identify with their organizations collective identity can significantly shape their participation in knowledge management initiatives and practice. This does apply to project teams, work group, departments as well as the organization as a whole. According to Hislop (2013), if the workers identity with a particular functional group or unit it can influence their knowledge sharing patterns. Common for people who develop a strong sense of identity with their function or business unit is to be unwilling to share and utilize knowledge with people from outside of this function or area. So, obviously this does only directly affect the functional manager negatively, but for a top-level manager or leader this could be catastrophic in the big picture. So they do have to be aware of the power of these collective identities and try to create a collectivity that includes the whole organization and not just loyalty towards your own function or department, or project for that matter. Leaders arguably come a long way by hiring employees with personal values that are compatible with the existing organizational culture, and also select people with personalities that fit a knowledge utilization practice. New recruits are then likely to develop a strong sense of identity with employer and colleagues and a good foundation for trust-based relationship, fostering knowledge utilization. But for already existing employees it is vastly important that the leader possess the soft skills necessary to change key worker's attitude towards culture and group identity. We believe that leaders should not force it. It's like fishing, you don't throw a stick of dynamite in the water. You have to be patient.

Reflection question:

Do management and leaders really have the power to control and influence their culture, or is this something organically that grows completely out of their reach? Relate this to the Emergent vs. Governance discussion.

Power balance

Power could well be one of the most contested concepts in social theory. Still, knowledge management literature in general illuminate the need to understand the power balance in explaining organizational dynamics, as well as the close relationship between knowledge utilization and power. There are loads of empirical evidence suggesting that power and internal politics influence who a person is willing and unwilling to share knowledge with, and likewise utilize. (Hislop, 2013) Based on this statement and our work in the project thesis, we thus believe that while managerial power, to some extent is a function of the managerial position, it becomes clear that such power cannot be assumed to be automatically deemed as legitimate by knowledge workers. From histories, tales of kings, dictators and similar we know that leadership behavior as verbal abuse, not consulting subordinates, using fear as a

weapon and punishment may undermine knowledge utilization. The extent to which power related to formal position is deemed legitimate by knowledge workers is discussed thoroughly in leadership theory. We have yet to see a researcher fronting the positive effects of exercising positional power in a knowledge intensive context. In Construction and KIPOOs, the knowledge worker usually holds more power because their knowledge is valuable for the organization and scarce in nature. So, the simple concept of supply and demand provide knowledge workers with more power and results in them being lesser a subordinate in relation to management than other types of workers.

Leaders not being aware of the power balance, or lack the “social antennas” to harvest signals regarding power bases will certainly fail. Know your audience! Knowledge management initiatives often create conflicts and unwillingness, and power and politics is an unavoidable element of this process. It does require even more contemplation from a leader in a knowledge intensive context where this is more common.

Reflection questions:

Is conflicts inevitable? is conflict necessarily just bad in relation to knowledge utilization? How healthy do you think is will be for a KIPOO if managers had even more power to steer and control knowledge workers everyday work-life? Do employees, or humans in general for that matter, act altruistic or opportunistic in nature do you think?

Organizational design and characteristics

If knowledge management practice is most effective when tightly integrated within the organization’s processes or not can be discussed (as is basically the core to our thesis). But, if organizational characteristics greatly determine the relevant types of knowledge management initiatives, and if it shapes the organizational orientation towards knowledge management, are more certain. As a result, strategic alignment should, according to Magnier-Watanabe and Senoo (2008) be ensured by the congruence of each step of the knowledge management value-chain with the organizational characteristics of the firm. Top level management of organizations are often considered leaders, and do have to take organizational design and the greater characteristic of the organization into account when tackling knowledge management initiatives and barriers. We will briefly touch upon some that might affect either positively or negatively on knowledge management practice, depending on how leaders choose to design and organize it.

Relationships within the firm can usually be characterized as either systematic or ad-hoc. One visible determinant of relationships in construction is the use of ad-hoc taskforces tailored to tackle specific issues, most often a project. These customized teams bring people from different backgrounds and areas together, creating an interdisciplinary team favorable to solve whatever there is to be solved. So, leaders obviously should reflect and dedicate resources to team composition and customize cross-functional teams to solve projects. The team composition will naturally affect the knowledge utilization in projects.

In the area of job design, there is, according to Hislop (2013) a strong consensus about the best way to structure jobs to facilitate appropriate knowledge utilization attitudes. Work should have three distinct features: Interesting and challenging, high levels of autonomy with regard to decision making, and finally it should encourage and require interpersonal

collaboration. The job should not only be challenging and interesting, it should provide opportunities to further development of skills and responsibilities in the organization. Providing training or other appropriate opportunities to develop is essential to keep key personnel from quitting. Especially in KIPOOs like construction, autonomy are regarded as very important for consultants or project engineers. It means a lot to be able to freely choose projects, training, development activity, work clothing, patterns and so on. In relation to interpersonal collaboration, this is something that comes with the job in a project oriented organization which we don't need to dig deeper into. So, even though Hislop (2013) do not target the construction industry directly, we argue that this design characteristics are highly valued, maybe even more so, in construction than other types of organizations.

Leadership roles, styles, traits and characteristics

Research of leadership traits and styles has had its ups and downs in popularity, but from our point of view we find appealing to see if leaders in construction should possess certain traits, characteristics, play specific roles and have certain styles of leading, only considering the effect on knowledge utilization. This particular section is the main body of this chapter, essentially trying to answer our sub-problem statement outlined earlier. And, as (Hofstede, 1998) suggests, employees ultimately will follow their managers' instructions if they want to be members of the organization. And so leaders' values become followers' practice. Furthermore, our perception of leadership theory is that there is an assumption built into concepts of leadership such that the leader would affect his/her subordinates' task and social behavior. Banally maybe, but without that precondition our sub-problem statement are rendered moot. Indeed, different leadership traits, actions and styles hopefully are a manifestation of a manager's values, which we believe to have different effects on employees' behavior towards knowledge utilization. Management policy has a direct influence on communication culture within the company, so leadership style should necessarily affect employees' behavior. Hence, if managers are more inclined towards one leadership style, role and so on, the subordinates of these managers will correspond by behaving in a manner that is oriented towards the exercised style (Huang et al., 2008).

Role of a knowledge leader

One approach to better understand leadership in Construction and KIPOOS' is to conceptualize it as a set of roles to manage key tasks and functions essential for organizational performance and effectiveness (Lee et al., 2010, Mintzberg, 1973). It's important to acknowledge that the perception of construction industry as presented by researchers might differ from our definition, but we have been choosing statements related to the planning part of the industry as best we can. Examples of such roles as presented in literature include organizing, envisioning, spanning and social maintenance. The knowledge leader is to provide strategic visions, motivate others, effectively communicate, act as a change agent, coach others around, model good practices, and carry out the knowledge agenda. In order to be an effective leader of knowledge he or she must also have a sound understanding of people, processes, systems and business principles which shape business decisions in the organization (Lee et al., 2010, Singh, 2008). Moreover, it is also a consensus in literature regarding that knowledge leaders should rigorously explain the goals and visions of knowledge management practices and initiatives to all those concerned, so that people can identify their roles in achieving those objectives. Leaders have to provide guidance on any alteration in the processes and also priorities needed to reach those preset objectives (Lee, 2010). So, in order to be a knowledge leader you basically need to be "perfect", almost like a superhero. To be the perfect leader of knowledge is of course not easy, but signaling enthusiasm, drive, dedication and energy are critical factors in building commitment from

employees. One popular and overarching role identified in the literature is the knowledge leader as a “knowledge builder”, and we here provide some of the mentioned responsibilities and characteristics of a good knowledge builder.

According to Bain (2005) and Lee et al. (2010) leaders who act as knowledge builders provide and discuss their own advice on technical issues, develop new networks and the team’s expertise through involvement, scan the environment for new ideas, provide feedback, monitor the quality of the team’s work and initiate new approaches to team tasks, both technical and soft tasks. Knowledge utilization in construction could as argued be hard due to cultural characteristics, not something automatic to take for granted. The leader therefore has the potential to strongly influence the extent of knowledge sharing and utilization. By engaging in the mentioned knowledge builder behaviors, leaders also actively act as a symbol for best practice or role model of good knowledge management. Setting the example and signaling that the open sharing of ideas and information is important and valuable for the team, project, department or organization is something we believe could have a major impact on knowledge management performance in Construction. The role of the leader and the level of influence depends on the subordinates can be influenced or at least willing to be.

Style of a knowledge leader

In the literature there are basically two sides of a coin when it comes to leadership styles, two opposites if you will, which interestingly do relate of either governance or emergent approach to knowledge management. There are of course others branches of styles, but in essence this is the two extremes at least. One is structure and task oriented, the other more people oriented. These two sides of a continuum is something most students of management know of. So we will not go deep into describing them. But, some explanation is needed in order to proceed. The first is often referred to as the Goal or task oriented style, Taylorism, Initiating structure or similar. This style refers to “the extent to which the leader is likely to define and structure his or her role and those of subordinates in the search for goal attainment. It includes behavior that attempts to organize, work relationships and goals” (Huang, 2008). The latter is often referred to as HR-approach, consideration approach or similar and refers to the “extent to which a person has job relationships characterized by mutual trust and respect for subordinates’ ideas and feelings” (Huang, 2008).

When a knowledge leader is more inclined to use an initiating structure approach, he or she is likely to prefer subordinates to obey a standard set of rules and procedures, putting a task as the most important thing. Such leaders ultimately pay less attention to employees’ feelings and thoughts, and do instead see employees as the means and instruments to carry out a task essential to organizational performance. Leaders and managers executing this kind of style try to create a serious atmosphere for the work group, and through supporting a governance deliberate approach they pressure their subordinates to perform through observation and control. This approach might be less and less used in knowledge intensive settings, especially in the west, but when used it often result in employees being affected to perceive the task as their most important activity (Huang, 2008).

When a manager is more inclined to a people oriented approach, he or she will, in contrast, express more concern for human capital and will acknowledge the importance of close relationships among the groups in an organization. This is achieved through respecting subordinates and paying attention to their interests. (Huang, 2008). This will arguably, according to those who support this approach, make for a warm and caring atmosphere inside the project, department or organization. When leaders exercise “high consideration”,

employees tends to behave in a more harmonious fashion, and according to Huang (2008), corresponds to reduced level of employee turnover, when compared to high initiating structure. This is supposedly due to a higher satisfaction level experienced by subordinates (Fillee et al., 1976, Lee et al., 2010). But, as we see it there might be downsides to this sort of leadership style also. It might be perceived as rather vague and too little tangible we can anticipate even though Huang don't address these issues directly. Some direction is necessary, if not then what about decision processes? They could potentially be difficult to handle and take way too much time if there is no direction or control from a superior figure. Some decisions are preserved for leaders and management; some could be decided further down.

One thing important to keep in mind when interpreting this research is that Huang's thoughts and empirical evidence are based on Chinese knowledge workers only, and due to culture and business philosophy this might not be so easily generalizable to Nordic KIPOOs, or western for that matter. Even so, in our experience his thoughts are not that far of, and since even Chinese organizations have been influenced over the last decades it seems legit to at least be aware of, and reflect upon, these two opposites and how leadership styles could potentially affect your business.

Reflection question:

How do you think personal leadership traits will have to be different exercising either one side or the other side of leadership styles?

Even if Huang's research where only explored in a Chinese context, his research resulted in a rather surprising finding. As his research showed that affect-based trust where suggested to have greater influence on the intention to share and utilize knowledge than does cognition-based trust, he follows up by saying "people may, due to this findings, think that a leadership style of consideration is more effective in facilitating knowledge sharing among employees. In fact, our research suggests that the function of initiating structure is as important as consideration in stimulating knowledge sharing. This is paradoxical, because prior research in Western contexts (Fisher and Edwards, 1988, Fleishman and Harris, 1962, Huang et al., 2008) has found that consideration is a more effective leadership style than initiating structure". As usual, the academics of management experience diverse results. However, this is good, as complexity and conflicting findings keeps it interesting. To which extent one style or the other is superior, or leaders should pursue a hybrid version or compromise in a construction context is reserved for our discussion in chapter 4.

Traits of a knowledge leader

Kirkpatrick and Locke (1991) identified six traits they believe differentiate leaders from other people, which we as knowledge workers and students of management find legit. Those where drive, motivation, honesty and integrity, self-confidence, cognitive ability, and knowledge of business. The assumption behind most literature related to leadership traits is that people are either born with them or will change their personalities and view of the world in order to adopt these traits and to become successful leaders. We were more intrigued by the thoughts of Barker (2001) and the research he refers to when he states that "the traits and abilities that presumably identify an effective leader cannot be substantially differentiated from those that define an effective manager, or an effective person". So, maybe in a knowledge intensive

context, it is not only about the traits of the effective leader, but maybe some traits that even the project participant need to possess in order for knowledge utilization to flow in the best possible manner. It seem plausible that all team members could, and should, engage in leadership development activities focused on knowledge-building skills, to deepen the project, department or organizations ability and confidence in knowledge utilization and in turn boost team trust and facilitate knowledge sharing (Lee, 2010). This is an interesting thought and do raise multiple questions. But, as literature in general doesn't seem to find it just as interesting, we haven't stumbled upon much research investigating this.

Reflection questions:

How can we be sure these are the right traits in a construction firm, are they generalizable? Can people who does not have these traits become effective leaders? Nelson Mandela where obviously an influential leader, but what traits do characterize him, and what knowledge of business (or other fields) did he hold? How could these traits have been measured, and evaluated as important for effective leadership when most research are conducted as single events in a pretty closed context?

Reward and recognition

As students of leadership theory, one cannot deny that rewards and recognition is an issue of which researchers differs greatly in opinion. Authors have both advised for- and against financial rewards, some recommending a bonus arrangement, while others swears to more intangible rewards as a fair substitute. Examples of such non-financial rewards could be peer recognition, more freedom and involvement in decision-making processes, prizes, formal and informal competitions, an honorary mention internally (monthly distributed magazines or portal posts), learning opportunities and greater autonomy in their work.

Reflection questions:

If involvement in decision-making is considered a valid "reward", what type of decision and which level of involvement do you think a knowledge worker in construction will consider fair?

Some of the main potential benefits to knowledge sharing and utilizing employees are that they may be rewarded, benefits at the group level, monetary or material rewards, or that a person's status becomes enhanced. Downsides to knowledge sharing and utilization speaks for a knowledge hoarding tactic, which manifests themselves as avoiding risk of giving away knowledge, power and status. This share vs. hoarding paradox is the essence of managerial challenges regarding creating a knowledge utilizing culture in an organization. Obviously, the desire of every leader in a knowledge intensive context is to create a culture for utilizing knowledge, not hoarding it. And, from both observation and theory, we see that the need for employee recognition and encouragement from their managers and peers, in order to stimulate knowledge sharing and utilization is ever present (Hislop, 2013).

A number of writers suggest that there might be severe negative consequences to directly linking individual, financial rewards to knowledge behaviors (Bishop et al., 2008, Hislop, 2013, Riege, 2005). Monetary rewards might result in people developing instrumental attitudes to such processes whereby they only participate in knowledge processes when they derive some form of financial reward from doing so. This may inhibit knowledge utilization

when such rewards are not available. Employees' attitudes to knowledge utilization were more strongly influenced by non-financial rewards in Huang's (2008) article. This was a study of Chinese workers only, but he is not alone in proposing non-financial returns as the proper alternative in knowledge intensive contexts. Hislop (2013) suggest that having a recognition program like "the most active knowledge blog", "knowledge utilizer of the year", "top rated forum post" or "best contribution to best practice on portal" or similar may be publicized on the company's intranet or newsletter as an effective way to make employees contribution visual and recognized. To some, this could potentially be more rewarding than a monetary sum given as a financial bonus to an individual.

Reflection questions:

What about individual vs. group based rewards? Which one do you think provide the best foundation to facilitate knowledge utilization if financial rewards were initiated as an incentive? How do we even begin to measure cost/benefits of such incentives?

This section does not exactly accentuate the use of financial rewards. But does nevertheless not provide much tangible actions in either direction. The section does raise more questions than started out with. Anyhow, whatever approach is taken towards establishing a reward system for knowledge management contributions, there will be extremely complex dynamics and human science involved. So, rapid and ad hoc "last-minute-whipped-together-solutions" are not appropriate. This kind of issues does require a thorough analysis and a precondition is leaders having some concept of how different reward systems will impact the organizational culture, based on the behavior they know from working in the organization. Careful consideration from leaders and top-level management of the roles played out by different people, groups and departments across their organization is important before even considering either financial or non-financial methods of rewarding knowledge utilization. However, there is not forbidden to use the better of two opposites.

Leadership in the construction industry

In line with the introductory statement that construction industry is one of the most "human dependent" industrial sectors, managing employees within construction organizations remains a complex and sophisticated issue. Nevertheless, these KIPOO are increasingly becoming aware of the vast potential tacit knowledge, embedded in the minds of the human capital has, and the need to manage or lead it (Bishop et al., 2008).

Reflection questions:

In construction, is it necessarily the old and rigid engineering specialists that should run the projects within their field of expertise? Is the specialist necessarily a good project manager/leader? Should a project manager, even in construction, be someone proper schooled with the characteristics of a good leader and not just evolve into a position through the hierarchy?

Sticking to the role metaphor regarding knowledge management in construction, typical for knowledge networks in such a setting is that they are supported with the hands-on management skills of a skilled general "contractor"; bringing together inputs from a variety

of “subcontractors” and making sure that their contributions are aligned. Finally, providing support for implementation resembles the work of a real “estate promoter” who closes the deal according to client needs (Raub and Von Wittich, 2004). So there are various roles to play in the puzzle of knowledge management practices. But, the matter of how top level management and leaders should behave in order to foster knowledge utilization and how this ultimately fits an emergent or deliberate view is another. We will elaborate on traits, styles and capabilities in general later on. However, research of knowledge management in construction identified two different opinions on the correct approach for integrating a knowledge management system into an organization’s processes. In an empirical investigation, Bishop et al. (2008) found that it was a difference of opinion between leaders in construction, of which some of the interviewees recommended integration with policies and procedures, whereas others suggested integration with daily and project activities. A key suggestion from the latter side was that it is important to integrate knowledge management with everyday activities rather than just simply plot it in rigid processes and procedures. They argue that knowledge management practices need to be intuitive and embedded, which means that its integration with policies and procedures, trying to force someone to do something, is ineffective (Bishop et al., 2008). So, once again we just encountered another complex decision ultimately resting on the leaders of construction. Where should they put the pressure, daily project activities or routines and procedures? The list of this ultimatums and difficult issues grows chapter by chapter.

As thoroughly emphasized, leaders has a responsibility for fostering an appropriate culture for knowledge utilization. However, research indicates that the culture within construction organizations often inhibits effective knowledge sharing and utilization. Researchers and practitioners describe a project-oriented industry with teams that quickly become disperse. This is cited as the main reason for the “blame culture” that often exists within construction organizations. In such it becomes important for leaders, on whatever level, to speak at startup of the initiative. He or she should speak to as many people as possible across the organization and to express the vision and objectives behind the initiatives and thus “spread the word” as to the benefits of participating in the knowledge initiative or practice (Bishop et al., 2008). We do have to address that this is not in particular related to technical consultancies and to which extent this applies to that side of the construction industry the researchers does not specify.

Reflection questions:

What do you think is the reason for construction industry being more prone to a competitive and destructive blame culture than other industries?

The necessity for top-level support was identified as one of the main criteria’s for success in both our project thesis as well as the majority of the literature analyzed leading up to this paper. Many acknowledged academics suggest that without top-level support, knowledge management will never work. The need for top-level managers to communicate the benefits of sharing and utilizing knowledge in the organization and to set an example by demonstrating that they are closely involved in every way are important in construction, as well as for other industries of a knowledge intensive nature (Bishop et al., 2008, Davenport and Prusak, 1998).

Reflection questions:

The literature all support top level management involvement, demonstrating their involvement and faith in knowledge management practices and initiatives. But how should they go about it? Through leading workbenches? Flyers or internal magazines or blog posts at the portal? Talk business and strategies with the low level employee? Seminars? How exactly is he or she supposed to express this towards employees? These questions are essential to our empirical research expressed in chapter 3.

Knowledge management initiatives

Knowledge management initiative is a term we have already used extensively throughout this paper and the project thesis as such. Even so, we felt it necessary to define it here, as it obviously fits the leadership chapter the most. Leaders and top-level management have the ultimate responsibility of the initiatives, so it felt naturally to discuss it further in this section of the thesis. A knowledge initiative, according to Clarke and Rollo (2001) and Bishop et al. (2008) is “the different approaches adopted by various companies, which incorporate the shared characteristic of a company’s commitment to developing the production and flow of knowledge, and the dissemination and use of knowledge to create economic value. A Knowledge Management initiative denotes a holistic approach to managing knowledge. This is different from the term “system”, which is often used in knowledge management literature to describe “IT-oriented approaches”. Knowledge management initiative in this master thesis is thus used to describe an organization’s approach to managing its knowledge and includes both soft human and hard system components, ultimately reserved for high level management and leaders to plan out and implement.

Gaining commitment among employees to embark upon an initiative set to life by top-level management or leaders requires support from senior management, the allocation of sufficient resources and funds, a dedicated leader/frontrunner and recognition of the behavioral types of those involved. The culture, behavior and motivation towards change of the subordinates are crucial to the outcome of every initiative in a knowledge intensive project oriented organization, whether it is knowledge related or not. The human capital has more power, and thus need to be receptive in order for this to be successfully implemented. However, research indicates that the most critical factor is ensuring that the staff members recognize the value of knowledge management in general, independent on the frames of the initiative. IRS (2000) provides a number of recommendations for supporting knowledge sharing and utilization, arguing that this is often the most difficult aspect of knowledge management to accomplish. It suggests that in order to gain enthusiasm and momentum for a knowledge initiative employees will want to see that their knowledge contributions is properly acknowledged and rewarded, through monetary or non-monetary means (Bishop et al., 2008). The debate of rewards is so diverse that we want to address it in detail in the next chapter.

Strategy and actions of a knowledge leader

Our literature review revealed three essential strategies leaders of knowledge should follow, all very popular in knowledge management literature. We have addressed some of these issues separately. First, effective knowledge leaders should target key actors in the organization, often senior management, and align them towards the support knowledge management initiatives. In extreme cases it is of great importance that knowledge leaders are capable of identifying those who are trying to block knowledge management practices and

initiatives. Second, build on existing initiatives and actively nurture other knowledge networks that generate a momentum of their own, being both informal and formal. Third, effective knowledge leaders should be able to communicate a purposeful message to their organizations, thereby be able to create or transform an organizational culture towards utilizing knowledge (Raub and Von Wittich, 2004).

In relation to strategies and actions, leaders should perceive themselves as a knowledge broker where one of their key tasks is to establish connections between “buyers” and “sellers”. Hence, knowing the internal market of knowledge and be able to target the right people at the right time, almost like a market transaction, is of fundamental importance for the knowledge leader. In addition, in the context of construction, the broker mentality requires substantial interpersonal and negotiation skills. As part of the strategy the knowledge leader should act as a consultant, a professional advisor, a service-provider and problem-solver. To achieve this, he or she has to downplay the significance of his own position within the organization and has to build a platform for knowledge utilization knowledge on the basis of mutual trust and sense of horizontal communication among equals (Raub and Von Wittich, 2004). Only a leader who acts as a transparent knowledge worker will be successful in practicing these strategies and the actions that follows.

One interesting result from the literature we reviewed is the plea that knowledge management is perceived as a management “fashion”. Both Hislop (2013) and Raub and Von Wittich (2004) do address this issue. Apparently, one of the reasons for the strong preoccupation with internal communication as a legit strategy lies in knowledge management’s status as a “fashionable” management concept. Raub and Von Wittich (2004) argues that for knowledge leaders this status is not necessarily a good thing, it is a mixed blessing. “While it ensures a certain visibility for their activity from the outset, it also implies a danger of negative perceptions. In a nutshell, Knowledge management may be seen as a fad without business relevance. The strategy most leaders employ to counter this tendency is clearly to demonstrate the tangible business value of knowledge management to a number of different target groups, while avoiding the “hype” linked to the concept.” In relation to this statement, it seem reasonable to suggest that leaders and managers should focus on “speaking the language” of their clients and adapt their reasoning to different targets. They could try to take on a more stakeholder-like type of approach. In such, leaders should take into account suggestions from key players and great care has to be taken to build a detailed business case. This should include communicating the concrete (positive) contributions of the knowledge management initiative, and how it could make a difference on an internal “head of section’s” or even customer’s bottom line (Raub and Von Wittich, 2004). As a result, knowledge management strategies are more likely to be aligned with current business strategies, which is maybe the most important implication of this chapter, even though we don’t take the time to elaborate too much on that. If this is realized, the strategy of a knowledge leader is to be focused on value-adding processes and to yield tangible business value for the internal partners and the organization as a whole.

So, in long term there are obviously advantageous to align knowledge strategy with the overall business strategy. But, even “quick wins” becomes more effective when “heads of sections” / Line managers, senior personnel and other key actors in the organization are given the chance to report and brag about their knowledge related successes. This could potentially trigger additional practices and initiatives and create some momentum of their own. For example, an action like putting an article on the intranet showing a knowledge utilization success story that directly resulted in profit or new projects/customers could foster

curiousness, a mindset and conviction that- together we can achieve something if we follow these principles of sharing and utilizing.

Theoretical implications for management in construction

We want to enlighten an alternative to the black magic of changing the organizational culture to fit some initiative, value or management system, and propose another direction being more prone to success. We suggest, in accordance with several theorists, to build the knowledge management approach/initiative and leadership style to fit the culture of the organization, not the other way around. Some hybrid, custom made solution could be successful, but a frantic approach to alter the culture to fit a forced initiative upon employees does not seem like the right way to go. One precondition for this approach to be completely successful is also depending on the organization having a suitable knowledge utilizing culture already in place. So, knowledge management initiatives should strive to reflect the organization's set of values, and should take into account the organic network of social relations.

If the culture is mature enough, one initiative popular in research analyzed, is to introduce formal performance reviews where employees are expected to capture, archive, use and share valuable knowledge. If knowledge utilization becomes "knitted in" in an employee's performance evaluation, one could see more potential in a financial reward of some kind. This way the knowledge and the total performance evaluation are so integrated that you could justify a bonus agreement. In other settings, where knowledge utilization is not that "natural" or culturally accepted if you will, a financial reward seems like a less an effective choice of incentive to utilize knowledge. A non-financial reward might then be much more applicable.

The way we see it, in light of a theoretical perspective, the utmost important concern for a knowledge leader in the construction industry is to ensure an alignment between knowledge management initiatives and the business culture and objectives. And to achieve this, the leader needs to play a role with a precise style and have a great deal of soft skills, personality and traits. Leaders must consider the type of work the organization carries out, its culture, dynamics, politics and practices, as well as the added value that is required from knowledge management initiatives. The ability to sense if the organization is ready or even fit for a knowledge management initiative at all is something a knowledge leader has to answer for. Will it be beneficial for my organization the way it is organized today? Is this something I can influence, or do I have to change my angle so that the initiative fit my organization? Internal marketing is much related to this sensing ability and is one of the key activities in being a good knowledge leader. In this internal marketing ability the most central skill may be to collect the support and goodwill from key actors/senior management in the organization. He or she must be a well-functioning salesman, selling himself and his initiatives to where the real influences are hidden in the organization. Other efforts, according to theory, range from publication of flyers and information booklets, information meetings and introductory workshops.

In addition to this sensing and "salesman abilities", the leader has to possess the ability to communicate to the whole organization just how important knowledge management is, and how the specific initiative or practices could benefit them. He or she has to make all employees understand what knowledge management is and why it is the difference between dying and surviving as a knowledge intensive organization. This is not a one-time effort, the nature of knowledge management practices and initiatives requires continual support and involvement from leaders to ensure that the value and outcomes of knowledge management are held firmly in contributors' minds.

When discussing leadership and communication it is impossible to ignore the power of a strategic vision, purpose or higher objective. The terminology is not easy to tell apart, but they all pretty much means the same and different researchers disagree on how to handle it. Most of leadership scholars have always assumed that a vision or goal must be present first, before the processes are shaped toward the achievement of the goal. This seems to be sort of an unspoken truth in the literature analyzed, and pretty interesting given that we investigate emergent vs. deliberate behavior in relation to knowledge management. We have to confess that it is hard to argue against the power a well communicated vision has upon employees, motivating them before the processes are unfolding. But even so, we want to shed a light on a possible more emergent process, just barely touched upon by Barker, 2001. He made us reflect upon the consensus based truth in the majority of management and strategic leadership research. What if we turned it around? Perhaps it would be more instructive to take the position that the vision emerges, at least in part, out of the dynamics of the unfolding processes. We don't say that in the case of a preset vision that there is no freedom to exercise creativity. The visions are usually guidelines where there is freedom to act and interpret the vision in line with operation.

So, we have covered some absolute qualities a leader should have, but how about styles? What's best in construction, a considering leadership style or a firm and structural approach? We discussed them both briefly in the "Leadership roles, styles, traits and characteristics" section above and did touch upon how they relate to leading knowledge. It appears to us, through theory at least, that effective organizational performance in relation to knowledge utilization requires a both considering and charismatic leader, as well as a structural and instrumental leader. As we see it, a charismatic and considering leader could create the energy, commitment and momentum to direct individuals toward new knowledge objectives while a more instrumental style is required to ensure that people really do act in a manner consistent with their new objectives. Once again we fall back to the "from the best of two worlds", but either one alone seem insufficient for the fostering of optimal knowledge utilization. This creates a dilemma, how could one single leader cover this spectrum? Since these dual approaches are associated with their own characteristics, traits, needs and personality it seems rather naive to believe some do. Often, a leader adept at one style may have difficulty executing the opposite, this is something I guess we have all encountered one time or the other. A charismatic leader may have a hard time achieving control and having to deliver unpleasant layoffs for example. And a rigid leader preoccupied with control may have difficulties reaching to the culture, influencing their behavior to change. A leader excelling in both styles is by far an exceptional human being, and they do not grow on trees. An alternative is to create a group of leaders complementing each other. An alternative is to create a group of leaders complementing each other. In this case the need to collaborate, stand on the same platform in terms of perspectives and knowledge, and catalyst their efforts into compatible decisions and solutions. To make this kind of collaboration work between two different characters is no easy endeavor.

2.3.2 The relationship between junior- and senior associates

This subchapter represents how the relationship between a junior and senior can affect knowledge utilization in a knowledge intensive context. The essence is to which extent master/apprenticeship tradition applies to modern and changing environments like construction. Formal or informal relationship, relating to either governance or emergent approach of managing is central to our analysis. We start of by a historical introduction of

such thoughts, and how those well-established thoughts can be applied in a KIPOO, thereafter:

- The framework of mentoring relationships
- Peers and younger seniors as an alternative source of knowledge
- Reverse mentoring
- Mentoring in KIPOOs
- Mentorships pros and cons

We conclude the chapter with theoretical implications for management in construction.

In modern construction firm the notions Junior- and Senior-associates are common terms to describe the difference between a new and inexperienced employee, being the junior, and an experienced employee with years of experience, being the senior. The terms are very intuitive to most of us, since most people are being raised in a similar manner, where our parents are the experienced human beings who have encountered a lot during their lifetime, teaching the young and restless sibling how to behave. From movies, religion, tales and legends we have been familiarized with Master-student, or Master-apprentice relationships which are often called apprenticeship or mentoring. They are basically two sides of the same coin where a mentor or master teach a student or apprentice to master a craft, profession or something completely different of where the master has some experience and preferably is an expert. Come to think of it, mentorship is very common in several occupations in life. People has always have felt the necessity of being consulted and educated by a relatively more experienced and acknowledged person. This brings to mind that most human beings have, or at least strive for the safety of a “pathfinder” or a master to whom they consult and refer when they hit obstacles in life or need advice. In this thesis we don’t really distinguish between the different terms used to explain this relationship. We treat- apprenticeship, mentoring, coaching, junior/senior- more or less the same and will use the different terms interchangeably. To us they are addressing the same issues and we believe that the value for modern organizations today do not lie in this differentiation, but in extracting useful practices from all topics. The methods and applicability to various aspects of life are many, but the principles have not changed much during the history of men. It is an ancient and traditional personal development approach, and we wish to study if it is still valid in order to build intellectual capital and utilize knowledge in a knowledge intensive project-oriented organization in the construction industry. But first a little trip down history lane.

The etymology of the word “mentor” can be traced back to Greek Mythology and Homer’s myth of Odysseus. The story is that the Ithaca King, Ulysses had entrusted his son, Telemachus to his trusted adviser and friend, Mentor, while the king himself was away fighting the Trojans. Mentor had educated and raised Telemachus in the best possible way during the absence of the king, 10 years according to the myth. This trustworthy and acknowledged friend (protégé) had become an “advisor, consultant, teacher, coach and mentor” for Telemachus (Mentee) (Erginer, 2009, Swap et al., 2001). As for mentor and Telemachus, apprenticeship was the chosen vehicle for transmitting the knowledge required for expert practice in fields from painting, blacksmithing, hunting and sculpting to medicine and law. It was back then the indisputable natural way to learn. In modern times, apprenticeship has largely been replaced by formal schooling except in: the learning of language, socially distinguishing between right and wrong, in some aspects of graduate education, and in on-the-job training. Especially in the setting we are analyzing, this exception is a normal and proven method (Collins et al., 1991). In knowledge intensive project oriented organizations like construction, mentoring programs pair novice and often fresh-out-of-school employees with experienced employees who can explain policies and

practices, share methods and materials, and help solve problems relevant for their present and/or future envisioned job position. Hence, mentoring is a means to support professional growth and development, which in turn hopefully empowers the mentee both professional and personally and thus benefits the project, department and organization as a whole. There is not a program carved in stone and there are as much variations as there are mentors. A broad range of mentoring relationships exists in both literature and practice, and it can be viewed as a continuum ranging from informal or spontaneous mentoring to highly formal and structured or planned mentorships (Bryant, 2005, Collins et al., 1991, Erginer, 2009, Karkoulian et al., 2008, Swap et al., 2001, van Winkelen and McDermott, 2010). In fact, approximately 70 percent of Fortune 500 companies offer formal, traditional mentoring programs (Marcinkus Murphy, 2012).

Reflection questions:

Does the fact that this method is ancient, traditional and well proven method deem it effective in modern organizations of fast moving knowledge barriers?

To conclude this historical introduction to mentoring research and practice we draw on a valuable and informative insight presented in Marcinkus Murphy (2012). “The study of mentoring has been related to social exchange theory due to its focus on dyadic relationships. From this perspective, individuals develop mentoring relationships if they perceive that the benefits outweigh the costs. Under communal norms, benefits are provided for the needs of others or to demonstrate a general concern without creating a repayment obligation. When traditional mentoring relationships move from exchange to communal norms, they are then classified as relational mentoring relationships, which enable mutual learning, growth, and development.” This is also an issue we wish to elaborate further in the discussion section, where we take a look at which rewards and benefits that prevails in this setting, and how management could organize and facilitate this in order to assure that benefits exceeds cost.

The framework of mentoring relationships



Figure 8: From Junior to Senior within a KIPOO

Mentoring programs, both formal and informal, is becoming increasingly common in research and practice as an effective way to facilitate knowledge creation and sharing (Bryant, 2005, Karkoulian et al., 2008). Academics argue that mentoring, apprenticeships, socializing and storytelling are proper methods for sharing complex tacit knowledge (Bryant, 2005, Karkoulian et al., 2008, Swap et al., 2001). The literature presents a divergent terminology including several stages of professional development. Some authors involve stages, starting from bottom to top, like novice, apprentice, journeyman, expert and finally

master (Hoffman et al., 1995, van Winkelen and McDermott, 2010), while others limits stages only involving master and apprentice.

As outlined in the preceding section, in apprenticeship or mentorships, the expert teach the apprentice how to do a task, watches as the apprentice practices portions of the task, and then turns over more and more responsibility until the apprentice is proficient enough to accomplish the task independently. At least this is the traditional approach and basic notion fundamental to mentoring or apprenticeship. In the subsequent section we will sequentially elaborate further on terminology, phases, and aspects and to what constitutes mentoring. This is simply a foundation the reader needs in order to fully grasp the discussion and recommendation part of this thesis.

Methods

According to Collins et al. (1991) and van Winkelen and McDermott (2010) there are important aspects or methods of the traditional apprenticeship model that still prevails and are inescapable when assessing mentoring relationships in an organization today. We present a rough definition of popular methods and terms in mentoring literature, just so the reader can follow our train of thought throughout the paper.

Modeling (Closely related to Demonstration and Observation) - In modeling, the apprentice observes the master as he demonstrate how to do different parts of the task. The master makes the target processes visible, often by explicitly showing the apprentice what to do. The same do not exactly apply for construction in which you cannot simply watch the mind work. In traditional apprenticeship at least, much of the learning occurs as apprentices watch others work.

Scaffolding - Scaffolding is a learning process designed to promote learning. It's basically the support the master gives apprentices in carrying out a task. Scaffolding is quite broad and can range from doing almost the entire task for them to giving occasional hints tailored to the needs of the junior apprentice (van Winkelen and McDermott, 2010).

Fading - Fading is a behavioral technique whereas the notion is to slowly remove the support, giving the apprentice more and more freedom to perform the task and increased responsibility (van Winkelen and McDermott, 2010).

Coaching - A training or development process of overseeing the junior's learning – including choosing and structuring tasks, evaluating progress, challenging, encouraging, and giving feedback (Collins et al., 1991, van Winkelen and McDermott, 2010). Coaching is present through the entire apprenticeship experience whereas the master coaches the apprentice both psychosocial and job oriented. In short, coaching is the process of overseeing the junior's development/progress and adjusting it to fit present need.

Sponsorship - (TheFreeDictionary) defines a sponsor as “One who assumes responsibility for another person or a group during a period of instruction, apprenticeship, or probation.” So in this regard, a mentor functions as a sponsor for the junior and becomes an advocate in with authority who uses influence intentionally to help the junior advance in his working context.

A question very apparent for managers involved in knowledge management initiatives and mentoring programs is the choice between a formal and informal approach to develop junior associates. The choices and applicability of the approaches in construction are discussed later, but they still need some explanation. According to (Karkoulian et al., 2008), formal mentoring arises when the organization provides the support structures to ensure that participants have clarity of purpose and the support they may need to make a successful mentoring relationship. On the other hand, informal mentoring occurs when two people

without the assistance and guidance of the organization establish a developmental alliance. So, from our point of view the formal mentoring approach fits the governance perspective, while a more informal mentoring approach illuminate a more emergent perspective. Empirical evidence from the same author shows that informal mentoring is positively and significantly associated with knowledge sharing and knowledge utilization in a knowledge intensive context. However, when formal mentoring was evaluated the evidence suggested a negative correlation when knowledge utilization was evaluated (Karkoulian et al., 2008). Naturally, scholars of knowledge management disagree in this regard, and literature based on empirical investigation differs greatly in their results, arguments and findings.

Stages in mentoring relationships

In explaining typical stages in a mentoring relationship, we elaborate on the thoughts of Kram (1983), who argues that although development relationship vary in length they generally proceed through four predictable, yet not distinct phases: The initiation phase, in which it all starts; a cultivation phase, where range of functions expands; A separation phase, where the nature of the relationship is altered by structural changes in the contexts and/or psychological changes; and a redefinition phase, where the relationship evolves to a new form different from the past, or it ends entirely. We will address the stages and their implications in more detail, as we argue this will enhance the holistic understanding that managers need in order to be adequately equipped to initiate formal or informal mentorship in their own function or organization.

Reflection questions:

How rigid and identifiable is this stages really? Are they the same for KIPOO's as other organizations? Do they apply in informal relationships in the same manner? Could it be more stages, equally important but neglected in this model? Something to have in mind while reading the following section.

Initiation

In this stage (6-12 months) suggest that the junior develops a strong positive fantasy about the senior, where he is admired and respected for competence and capacity to provide support and guidance. The junior hopefully begins to feel cared for, supported and respected by someone he or she admires, strengthening the psychosocial functions. The mentor's fantasy on the other hand evolves of someone who can become an object for the transmission of the seniors values and perspectives and is coachable and enjoyable to work with (Kram, 1983). This phase transforms initial fantasies into opportunities to work on a daring project for example, where the senior shows respect and belief in the junior, where the senior are motivated to develop. This creates momentum for the next phase.

Reflection question and elaboration:

In this particular phase, how important do you think an effort in selecting a good match between the junior and senior is? Recall our discussion regarding diversity from our project thesis (Faugstad and Melby, 2013) and reflect upon the importance of gender-, age and culture composition.

Cultivation

During the cultivation phase (1-5 years), the expectations addressed in the initiation phase are continuously tested against reality. Each individual discovers more and more of the real value of relating to the other. The relationship necessarily peaks during this stage, both regarding career- and psychosocial functions. Challenging tasks, coaching, protection and exposure are provided the junior. During this stage the boundaries of the relationship are clarified, and for some this is disappointing in discovering that the relationship cannot meet the needs of one or both parts (Kram, 1983).

Reflection questions:

To what extent is a great level of intimacy and friendship ideal for this stage? Do the interpersonal bonds need to be meaningful on a personal level in order to function optimally?

Separation

After some time significant changes in the functions of the relationship will present themselves, where some turmoil, anxiety and feelings of loss characterize this period as the equilibrium of the cultivation phase is disrupted. This phase is maybe extra interesting regarding our point of analysis, which is the manager. Separation could occur both structurally and psychologically and the consequences of dealing with this wrong could be a potential pitfall. Roughly, if structural separation is timed well, then the junior will function effectively without support. But if separation occurs too early, then he/she is forced out not feeling ready for it. If structural separation happens late, the junior is emotional ready and likely to resent his counterpart as the relationship does not change along with the junior's need (Kram, 1983). These signals should arguably be a priority for management. They should be detected early so that a convenient route could be planned early on and established timely to benefit both parts. This is especially important for the junior obviously, in order to develop further without losing motivation or feel that the work is meaningless, repetitive and boring. But, this is also crucial for the senior as he demonstrates to self, to peers and to superiors that, indeed, he has successfully developed a new and resourceful talent.

Redefinition

According to empirical evidence in Kram's paper, the redefinition phase is one in which the relationship becomes, primarily, a friendship. Both individuals continue to have some contact on a more informal basis in order to continue the mutual support. Ongoing sponsorship and counselling are expected to continue. The senior still takes pride in the juniors' accomplishments and the junior is operating independently of the senior on a more equal footing.

Reflection questions:

Isn't it a probability for this to go both ways? could not the relationship just as likely evolve into hostility instead of friendship if the relationship ends on unsatisfactory terms for one or both of the involved? Say the junior climbs over the senior on the organizational ladder? Is it obvious that the senior continues to support the junior?

Storytelling as an effective instrument in mentorships

The definition of an organizational story, according to (Swap et al., 2001), is a "detailed narrative of past management actions, employee interactions, or other intra or extra organizational events that are communicated informally within the organization", often including a plot, characters and an outcome of moral interest. Mentors may use this method as an instrument in the mentoring approach to dramatize critical systems, complain or talk-up managerial systems, norms and values and so on. They are by some deemed effective measures in teaching context have to make key points stick. Mental "nobs" and visualization is something often used in studying techniques, examples of dirty limericks and similar are not unusual in academia, as well as in military disciplines. We know that from being both students and prior military privates. The point is that you remember information better when you can elaborate it by constructing images drawn from our own mind and experiences to organize it. And the authors are not at all strangers to this type of storytelling, mental-visualization or exercises to enhance one's understanding of a subject or memorizing important parts of curriculum. Stories promote elaborations such as connections to the listeners' personal experience or evoke clear visual images of his past. If they do, they will be more memorable and hence be more effective carriers of (tacit) knowledge than listed and explicit knowledge. Rich and vivid stories are more likely to be judged as true or likely to occur (Swap et al., 2001).

Reflection questions:

So if you as an experienced senior want a senior to remember or take interest in what you present, is your best choice to provide that information in the form of a breathtaking story? Should you rather list up the information and present essential work related skills through codified mediums, like making the junior read through a 80 pages manual for how to use the printer in your department?

Stories, particularly those that are specific and easy to identify with, are particularly powerful for transferring rich knowledge in tacit dimensions. In addition, these types of stories often communicate tacit knowledge about more than one component of the company's core capabilities and such in just one story. An interesting argument regarding how we human beings are constructed is the logic that when an event is made more available from memory, there is a strong tendency to believe it is more likely to occur or to be true. An example from Swap et al. 2001 is "it is far more likely that a hiker will be killed by a moose than by a grizzly bear. However, because of the stories most of us have heard about gruesome bear mauling's, and scarcity of tales of moose tramples, we have vivid images of the former and tend to exaggerate their likelihood". Therefore, he argues, that if the aspects of corporate culture or systems are made more vivid, such as through a story, they will become more memorable, more thoroughly processed, and judged to be more true than those supported only by probabilities or abstract data (Swap et al., 2001).

Reflection question:

Bearing in mind (actually not a joke) the potential psychological power of a good story, should management or mentors exaggerate their stories to front their own or organizational goals and interests?

Peers and younger seniors as an alternative source of knowledge

From both observations and personal practice, our impression is that, from a junior perspective more experienced apprentices (or younger seniors) often helped ease the transition between the different contextual settings at the workplace. By facilitating and teaching the junior what to focus on, the junior could profit more from his or her time at training/mentoring. The literature shows signs of similar implications.

The mentoring literature mostly focuses on traditional mentoring relationship between senior and junior employees where career related benefits, job satisfaction and psychosocial benefits are researched. However, the recent organizational trends of downsizing and delayering have reduced the number of available seniors available to be mentors. In this situation several researchers (Bryant, 2005, Nielsen, 2009, Swap et al., 2001) points in the direction of new employees turning to experienced employees on their team who are more at the same level in the firm for mentoring. This “younger seniors” could be employees working in a function for two to five years which have probably recently encountered the same “startup problems” as the junior and could therefore be more effective at sharing certain kinds of knowledge - especially isolated technical issues, IT and practical information. These are in literature referred to as “peers”, which will need some further definition. According to Bryant (2005), peer mentoring is an intentional one-to-one relationship between employees at the same or a similar lateral level in the firm that involves a more experience worker teaching knowledge and skills and proving encouragement to a less experienced worker. Peers can help socialize new employees with equal colleges and help them become more confident and effective more quickly. Much of this knowledge that is being utilized through such relationships are often taken -for-granted knowledge of a tacit nature never being recorded in a database or procedure and similar (Bryant, 2005).

Senior experts or managers may simply lack the time and patience to guide a novice junior. Thus, from a junior’s viewpoint, there might be more advantageous to learn from someone more proximate in experience which hopefully has just encountered issues you struggle with more recently than old and rigid seniors. This is an issue we have sort of hypothesized for ourselves through personal experience and observation, and is as explained earlier been something we wanted to find out. The literature at least supports that there might be advantageous to search for some types of knowledge from peers or younger seniors.

Reverse mentoring

Reverse mentoring is basically about turning the mentoring relationship upside down. In this section we felt it would be natural to lead with a research question that recapitulates insights from this approach and probably the question once asked which led to a diversity of research addressing the method.

Reflection question:

Mentorships, is it really just a one way street? Should it be so?

Even though tradition dictates that the learning process should be top down, senior through junior, the other way around have been given more attention lately. Even though the applicability might be narrower it still is a valid approach that has their advantages. Reverse mentoring is, quoting Marcinkus Murphy (2012), “an innovative way to encourage learning and facilitate cross-generational relationships. It involves the pairing of a younger, junior employee acting as mentor to share expertise with an older, senior colleague as mentee. The purpose is knowledge sharing, with the mentee focused on learning from the mentor’s updated subject or technological expertise and generational perspective. In addition, there is an emphasis on the leadership development of the mentors”. Already it becomes visible to us that technology (especially computer technology) is the key in these sorts of relationships, and there is no way of denying that for construction firms this may be the only valid purpose for using reverse mentoring. At least, based on both personal observation and literature, this is mostly how it’s practiced. Anyhow, some argue that there could be other more technical reasons for reverse mentoring. An obvious reason is where the junior contribute with “fresh” insights from school, and share with the senior the latest development from academia and research. The junior could provide the senior with updates on current trends and a cultural injection to help to understand the younger generation, in order to function better in teams. One well known example from real life business is General Electric’s former CEO, Jack Welch, being credited with the introduction of a formal reverse mentoring program in 1999 when he ordered 500 of his top managers to look for younger employees who could teach them about the Internet (Greengard, 2002, Marcinkus Murphy, 2012).

Reflection questions:

Besides computer technology, isn’t there reason to believe that since people have different personal and professional properties, younger talent could teach the old and rigid managers a thing or two about leadership and how to managing employees and projects? Especially in construction industry the project (and line) managers are often former specialists put in a managerial positions without education on how to lead projects or people. Is this necessary? Who’s to say that it is a direct link between being an experienced technical expert and being a suitable project manager in the construction industry?

In addition to the GE example, research we have analyzed found that apprentices spend a significant amount of time helping fellow apprentices and older, more senior workers in a project oriented context. Furthermore, researchers found that tutoring done by unskilled peers in educational settings proved to be highly effective. While mentees also learn from mentors in traditional mentoring relationships, this expertise knowledge is usually based on accumulated experience rather than the current and cutting-edge technological expertise. A millennial junior, with fresh educational experiences or a different generational perspectives from school, IT-applications, magazines or other instances could potentially contribute with valuable knowledge (Kram, 1983, Marcinkus Murphy, 2012). So, given the vast changes in organizational processes and the nature of work, it has become more and more visible that senior employees, who traditionally are the mentors, are novices to new IT- technologies and

services. Consequently, junior associates, which traditionally are the mentees, have a great deal to offer senior employees in terms of sharing updated information and knowledge of IT. Hence, mentoring others can serve as an avenue of continual skill development for senior employees as well as junior associates (Allen et al., 1997). Hopefully this creates a more balanced and even more inspiring relationship for both parts. In all aspects of life, even if it's your fiancé, friend or colleague you want someone to “spar” with, someone who challenge you, not only a one way street.

Mentoring in KIPOOs

As outlined earlier, In a traditional apprenticeship, the processes involved in carrying out a task like blacksmithing or baking were usually easily observable and therefore easily be passed on to an apprentice. In today's knowledge economy, and especially in knowledge intensive firms like a technical consultancy, the task is of a more complex and intangible nature where direct observation without access to the mentors mind and reflection is less effective. Theory examined does at least to a certain degree acknowledge this feature. van Winkelen and McDermott (2010) says that exploration of how to translate and adapt the features of traditional apprenticeships to the teaching and learning of cognitive skills has identified the importance of deliberately bringing the thinking processes of the expert to the surface, making them visible to allow the learner to observe them and then enact and practice them with help. In knowledge intensive setting like construction, which often includes professions like engineering, the seniors reasoning is essential for the junior to really learn the profession. In engineering the handwork and physical invention is probably just a fraction of the total package, where out-of-the-box thought processes, technical insights, curiousness and cognitive abilities prevail. In the world of engineering, it is not about the outcome per se, but how you arrive at the solution. That is, at least what we are told at academia, but our work experience as project engineers in consultancy firms supports this urban “truth”. In terms of developing the tacit knowledge dimension, there seems to be consensus among researchers that interaction, personal contact with and observation of others is of high value. In the case of expertise development, it involves a complex process of working under experts' guidance, discussing and interacting with them and adjusting own performance accordingly (Gourley, 2006, van Winkelen and McDermott, 2010).

Reflection questions:

Referring to an earlier reflection question whereas the ability an employee has to really reflect on what he or she knows comes to question, how could the mentor then, pedagogically explain the junior how he reflects and uses his tacit knowledge to solve a problem? If a senior doesn't really know what he know, how could he then teach it to the junior?

It seems logical to us to assume that in order to achieve optimum (not necessarily maximum) knowledge utilization that benefits both master and apprentice (including organization, which have their budgets) the apprentice needs to really “get under the masters skin” and get a glance of what is stirring inside his mind. There is not enough for the junior to watch the senior's hands perform a physical task or technical calculation on paper, he needs to follow his thought patterns and be involved with the cognitive and tacit “clock-work” of the senior. Obviously this is a challenge for both sides of the relationship, including our viewpoint, being the manager's.

Employees in construction have the possibilities to learn more informally and emergent from several different sources, as there is multiple seniors with different specialties. The sociology of the learning environment presented in Collins et al. (1991) paints a picture of how we perceive some of the dynamics in a knowledge intensive project organization, even though this particular example is from a less knowledge intensive setting. The example is from a tailoring shop, “where tailoring apprentices learn their craft not in a special, segregated learning environment but in a busy tailoring shop. They are surrounded both by masters and other apprentices, all engaged in the target skills at varying levels of expertise. And they are expected, from the beginning, to engage in activities that contribute directly to the production of actual garments, advancing quickly toward independent, skilled production. As a result, apprentices learn skills in the context of their application to realistic problems, within a culture focused on and defined by expert practice. Furthermore, certain aspects of the social organization of apprenticeship encourage productive beliefs about the nature of learning and of expertise that are significant to learners’ motivation, confidence, and most importantly, their orientation toward problems that they encounter as they learn.” (Collins et al., 1991). In a construction firm, you follow the same ground rules. Even though you are a fresh junior associate, you are still expected to produce something, or at least contribute to a project. May it be technical drawings, tension calculations or so on and so forth? We think this example recapitulates to some extent the situation a junior meets as a freshman in construction. You work, interact and learn from different seniors and associates and are expected to perform and contribute from startup.

Reflection questions:

Is it possibly more effective for a junior to have (at least some) access to a “pool” of seniors for knowledge and guidance instead of one dedicated mentor? Should organizations throw a junior directly in a project and expect him or her to produce valuable tangible or intangible products or services from the start?

Influential researchers as Davenport and Prusak, Nonaka and Takeuchi, Leonard and Sensiper, and the research community as a whole often point out that knowledge develops through experience. As we covered in the project thesis, Davenport and Prusak sort of defines knowledge as “a fluid mix of framed experience, values, contextual information and expert insight”. Since our unit of analysis is KIPOO and more specifically the construction industry we wish to shed a light on especially the end to this definition, namely the expert insight.

Reflection questions and elaboration:

Again with the abstract questions, how does one become an expert? Who’s to say that you are or aren’t? Is it a question of definition or quantity in years or accumulated results? Swap et al. 2001 among others argues that becoming an expert takes at least 10 years. And even though history are packed with examples of true born geniuses, even they had a significant journey of practice and preparation before achieving that kind of status. Take chess prodigy Bobby Fischer (American grandmaster and world champion) as an example. Even Fischer required almost 10 years of intense preparation to gain necessary momentum to attain international stature as the number one chess player. Say we could analyze two identical human beings of equal abilities provided from nature, isn’t it obvious that the one who becomes the expert (more at least) is the one who lays down more man hours in practice and engages in the activity or profession the most?

One intriguing finding (Swap et al., 2001) presents is that they found surprisingly little in mentorship literature about informal learning of technical skills, which we argue is critical to a construction firm. They argue that technical expertise is built up in part through the mentor feedback or in coaching and that juniors primarily sought technical expertise through by asking others - mostly supervisors and seniors, which was often obtained by direct inquiry and not through monitoring or observing mentors. The literature provides much more evidence of mentors conveying knowledge about organizational routines, norms, values and managerial systems. Basically assisting the junior in learning the ropes of organizational life and in preparing for career advancement opportunities. This kind of knowledge is transferred through mentorship functions like sponsorship, coaching, protection, exposure and visibility, and challenging work assignments. In this sense, besides the sort of symbol for appropriate behavior, the maybe most important role of the mentor in a KIPOO or construction firm is the informal political function the mentor undertakes with or without being aware of it. Swap et al. (2001) refer to this as the "power perspective" where the mentor give access to privileged information and familiarize the apprentice with the non-formal aspects of the organization or department he is a part of. The mentors are here, as discussed in the outline of this chapter, a pathfinder, teaching the junior how to navigate through the subtleties of the political system of the organization. The "know-who" as touched upon in the project thesis is essential in this regard (Faugstad and Melby, 2013). As we see it, the mentor play a significant role in introducing a junior to the flow of the organization, and one crucial point for management is that this senior that is to teach the junior about the "organizational clockwork" and how to behave, should obviously be supporting the managerial system himself. The mentor should be one that management trust is supporting management and their initiatives, and not one to impose his dissatisfaction about systems, management, routines etc. upon the newly employed junior.

Reflection questions:

How successful do you think a formal (or informal for that matter) mentorship program is going to be if the mentors constantly express their disapproval of the mentorship program or knowledge management initiative as a whole upon a fresh and naive junior? If we believe anything that has been researched regarding power and influential theory, isn't the young and unexperienced junior likely to swallow the seniors arguments raw? He/she has most likely never been integrated in a organization like this, has no reference point, and is therefore pro to agree isn't he/she?

Mentorship pros and cons

In the majority of mentoring literature, most of them praise the advantages of a solid mentorship program or similar ways of transferring knowledge from experienced employees to the new blood of the organization. The pros spans from career and psychosocial support resources including salary, promotions job satisfaction, learning , and organizational commitment important for the career success of juniors as well as benefiting the mentor by increased visibility, learning and a loyal base of support (Kram, 1983). Less present in the literature analyzed is the disadvantages of mentoring relationships. Swap et al. (2001) presents a few, and we ask ourselves if the cost/benefit analyses done prior to such initiatives in construction firms really do take this into account. They might just as well blindly believe the "truth" that mentorships has worked throughout history and will still do in the intensive and ever changing environment of the construction industry.

A huge disadvantage of mentoring is of course the negative economic issues. Who is to pay for the mentoring? Training in general, and mentoring is in most cases not billable, at least anything that could be debited. A senior devoting a lot of his time to train a junior will necessarily take up a lot of hours in which he could bill client enormous hourly rates. But, even allowing a junior to simply shadow a senior requires the presence of two people where only one is strictly required to perform the work (Swap et al., 2001). So, the most visual disadvantages of mentorships are in the “time is money” kind of issues. In a project oriented organization the focus is rushing from one project to another, and more often than not handling multiple projects at the same time (Faugstad and Melby, 2013). Making time to think or analyze knowledge processes and engage in reflective practices with or without a junior is the antithesis to the reactive and results driven culture of many construction organizations today (Raelin, 2002, van Winkelen and McDermott, 2010). Researchers yet deem time an essential requirement in an effective expertise development program, and ultimately this is management’s problem.

In addition to this ever present and nagging issue, there are disadvantages that are of a more variable nature. It is likely, especially in construction, that an employee has several developmental relationships during his or her career, of which provides various models of expertise, career- and psychosocial functions. This variety arguably help juniors to understand that it might be multiple solutions to a problem or ways to perform a task, where they recognize that no one individual, even an authoritative senior, embodies all knowledge or expertise. The strive for matching one senior manager to one junior will most likely generate major disappointments for management and the organization. (Collins et al., 1991, Kram, 1983). Problems of human relations and the good old “can’t stand his face” attitudes and a hostile culture of the construction industry are also something that could put a lid on knowledge utilization. But, a deeper dig into these issues at this point will be outside the scope of this thesis.

Reflection question:

Is mentorship of a formal nature economically defensible in a rapid and “stressful” industry like construction, where employees are changing teams and project often and there is always “the next project, let’s go” kind of mentality?

Theoretical implication for management in construction

As we stressed in the project thesis and tried to carry on in the preceding sections, tacit knowledge is uniquely constructed and personally interpreted within the mind of each individual. An unaltered transfer of tacit knowledge from one person to another is close to impossible, independent of the apprenticeship method or whatever. That is at least what we concluded with then, and still believes apply in real life. Some alteration is unavoidable. This does not at all deem it worthless in anyway (Faugstad and Melby, 2013). So, the conditions for making it accessible as far as mentoring goes includes, according to van Winkelen and McDermott (2010) interaction between the individuals concerned, the motivation of both parties to actively engage with the process, time to allow reflection and integration of the knowledge with what is already known, and conscious attention to the communication methods being used. As expertise is dynamic, especially in a knowledge intensive context, experts need to continuously maintain their knowledge base and continue to refine their thinking processes on how to utilize that knowledge, both in terms of applying it and sharing

it through interaction with a more unexperienced individual. Reflection on practice and personal tacit knowledge is a necessary part of developing expertise in general, and crucial in a mentoring relationship.

An inescapable truth about mentoring and similar activities is that it takes time and continuity for all involved. The need for expert knowledge, forces of time pressure in organizations, the hunt for profit and the increasing tendency for individuals to swop work and accumulate experience from many different organizations are particularly strong in KIPOO organizations like construction. But this pressures and trends just deem mentoring activities and knowledge utilization in general more applicable. So, as higher value is placed on expertise and knowledge, management in construction must become increasingly skilled in recognizing the potential for juniors and fresh seniors to teach and encourage knowledge utilization (Swap et al., 2001). In such, mentoring initiatives requires a light and smart managerial hand. Just implementing a formal mentoring program may accomplish insignificantly little if for example the culture of the organization hasn't been accounted for and the "pool of mentors/seniors" are uninterested, swamped in work, unskilled pedagogically and not rewarded for their mentoring efforts (Faugstad and Melby, 2013).

As addressed in the outline of this chapter, informal mentoring got supported as a more effective approach to knowledge sharing and utilization. We suggest that once again the difference between simply sharing knowledge on one side, and utilizing knowledge on the other, cannot be interpreted the same way. We have up to this point partly supported Karkoulia et al. (2008), among others, and argue that regarding junior / senior relations, the more employees practice mentoring informally, willingly and emergent, the more the knowledge will be shared and used in an organization. Formal mentoring obviously results in knowledge sharing, indeed, but the knowledge is not necessarily utilized as intended. Sharing is partly "forced" upon employees in this setting, but there is little attention to whether the knowledge is really utilized. This could be the result of the formal structure. Either way, the essence is that formal mentoring requires knowledge embedded in the organization to be shared between mentor and mentee (or junior and senior), but that does not deem the knowledge that is shared, is really useful to the mentee. Through theory we do see the fruitfulness of a formal arrangement as well, but in order for this to function properly, knowledge and awareness among managers and certain cultural measures needs to be put in place first. It shall be interesting to investigate our thoughts in a real life context (see 3.2.2).

Reflection questions:

How could management, in a formal setting, control or even understand if junior associates interpret and utilize the knowledge provided from a senior the way it is intended? And how about the juniors themselves, do they have any "tools", personal (mental) or organizational, for helping themselves in this regards?

The maybe most difficult but also the most pressing concern a manager must ask himself is probably to what extent his project, department or organization will benefit, or even function as intended in initiating a formal mentoring program. An informal program claims just a fraction of the efforts, and more or less happens naturally if sufficiently nurtured. Management must recognize the limitations of their organization and ask themselves if this is

a plausible and feasible initiative. In the following section we discuss issues essential for management to ask themselves before even considering implementation of a mentorship program (both informal and formal).

There are several principles which are valid in such settings:

1. Seniors are probably hesitant to take responsibility for a mentee in turbulent- work environments or times when their own, and the junior's job security is in jeopardy.
2. In modern times, the focus is on horizontal communication and the flattening of organizations. If this is the case there might be few individuals suitable to provide this kind of mentorship.
3. Organizational downsizing will pressure seniors to perform more visible tasks to ensure they are appreciated. Thus ignore mentoring initiatives.
4. In most KIPOOs, time is money. The work pressure is high and the time constraints borders to what is even legal. Time to undertake a mentoring assignment is often non-sufficient and just an extra burden for the "chosen".
5. Based on our findings in the project thesis, individuals who perceive they have management and coworkers support for mentoring others will be more willing to mentor others. Mentoring initiatives require the advocacy and active support by executive leadership. Visible and sincere support by upper management signals the significance and importance of the mentoring program. Participants need to feel that the program, in addition to knowledge management incentives altogether is something important, an organizational priority and worthy of their time and efforts. The efforts aren't over at implementation, the ongoing support by leaders and management at all levels of the organization is necessary to encourage the continued commitment of employees.
6. If you don't have the financial muscles or resources to pull this off right from the start, it isn't worth it. Seeing it half way through or with just partial organizational effort is a sure catastrophe. Organizational leaders or management who pursue a formal mentoring program must consider the up-front resources required and how to manage the process to best support all participants' professional development.
7. Basic social research tells us that if employees are involved and consulted in the preparation process they become more motivated to participate and probably contribute more heartily. In KIPOO's especially, a considerable portion of the human capital are often young and dynamic. Frequent replacement and disloyalty are not unusual, and they are prone to a career drive that is maybe not as healthy in respect to building others up and cater them on their way. An organization with more elderly seniors who are satisfied with their current status, not climbing the career ladder themselves, are probably more inspired to support a young individual in their quest for a future position and knowledge base. For more elaboration on culture and political issues that might hinder an effective mentor program in knowledge intensive project oriented organizations see our project thesis (Faugstad and Melby, 2013).

So, in respect of these issues management need to devote attention to, the insights from exchange theory could be valuable and even the essence for understanding attraction to the mentoring role and key to success. As suggested by Allen et al. (1997), Exchange theory views an interaction between two people as an exchange where the costs of participation in the relationship are compared to the perceived benefits.

Mentors, even if they unconsciously reflect on it or directly act upon it, expect reciprocation from both the junior and the organization as a whole for their mentoring efforts. The nature of

this “exchange relationship”, at least from a theoretical standpoint suggests that mentors will select mentee’s whom they believe can bring certain desirable attributes, competencies and other perks to the relationship, which will result in a relationship of mutual satisfaction. So, the benefits that comes from mentoring others is not necessary monetary as there could be other non-financial incentives as well. This is a topic we address further in the empirical 3.2.1. Specific categories of benefits that could emerge includes the building of support networks, job-related rewards that focused on human capital and wellbeing, job-related rewards that focused on others, and self-satisfaction.

2.3.3 The human aspect of portal solutions

This subchapter represents how and if knowledge in portal solutions can be utilized more optimally if they were more human- and less explicitly oriented. As of today, most portal solution do not get utilized as intended in relation to knowledge utilization. We want to enhance our understanding by digging into portal solutions and which alternatives that might surface as opposite to the traditional approach. The subchapter starts with an introduction, thereafter:

- Portals and the humble beginning
- Portal difficulties
- Portal design
- Cost effectiveness

We conclude the chapter with theoretical implication for managers

As we have seen from both theory and practice, portals are often used in knowledge intensive project oriented organizations. Portals are more related to the technocratic view of knowledge, but we would try to analyze this concept from a behavioral view, and thus address the human-orientation towards the portal. According to Benbya et al. (2004), portals can be viewed as a way to access disseminated information within a company since information chunks can be stored in various systems using different formats. That could also be the problem of such portals according to several authors. There potentially exist too much information and knowledge throughout the organization, and it could be difficult to actually reap benefits from it. To design effective knowledge portals, you as a manager have to gain some perspective of your organization, especially the culture and how the organization is organized and interact with each other over time (Collins, 2003, Neto et al., 2010).

Portals and the humble beginning

Earlier, portals in relation to business were basically simple ways to communicate, via real time chat or search engines like Yahoo! (Benbya et al, 2004). Nowadays there could be easier to compare a portal with a website, but the biggest difference is that the portal is usually “tailored according to the user needs”. Most modern portals are supported by data repositories where we can find information, not only about the organization and its objectives, but also, and more important, about the people and the activities they undertake. This establish relations between employees along the way and promote efficient business decisions (Benbya et al., 2004, Neto et al., 2010). Knowledge within an organization is considered to be held in technical systems such as databases, but is also considered to be held in culture, processes and structure (Coakes, 2006). However, despite the potential benefits from these systems, the report from Benbya et al. (2004) also finds that companies were experiencing difficulties in effectively utilizing these technologies. Trust is also essential in the social contexts for communication of knowledge. The level of trust that exists between the organization, its sub-units, and its employees greatly influences the amount of knowledge

that flows both between individuals and from individuals into the firm's portal (Benbya et al., 2004, DeLong and Fahey, 2000). Therefore it is important for knowledge intensive project oriented organizations to pay attention to the supporting norms and behavioral practices that manifest trust as an important organizational value (Benbya et al., 2004). van Baalen et al. (2005) article addresses the emergence of networks of practice and the role of knowledge sharing via knowledge portals, and shows the way knowledge could "flow" across the organization both by portals or the network itself.

Reflection question:

To what extent is lack of trust an actual barrier for knowledge management?

Portal difficulties

Our initial skepticism towards the whole "portal concept" is the technological focus of it, forgetting the human side of it so important in KIPOO. For instance, tacit knowledge were stated/concluded in our project thesis (Faugstad and Melby, 2013) to be difficult to codify, so how do we implement it in a portal solution without losing the human orientation and tacit "touch" of it. An organization trying to codify it may lose valuable tacitness in the process, stripping it from a lot of its sense and benefits. van Baalen et al. (2005) states that "we did not find a direct effect of the knowledge portal on sharing tacit knowledge". In other words, it confirms our initial hypothesis that portals as it is today have difficulties handling tacit knowledge, due to the necessity of codifying it to make it compatible with a technical solution. Knowledge, as they put it, "is always a result of the interpreter, which depends on the entire previous situations and on its position in a tradition" (van Baalen et al., 2005, Winograd and Flores, 1986). So, it seemed essential to us from the beginning to provide a more human oriented perspective on portals. Wellman and Gulia (1997) states that several writers have expressed fear that high involvement in virtual communities like a portal will move people away from involvement in "real-life" communities, which are sustained by face-to-face, telephone and postal contact. Even though the article is from 1997, it could have some valid insights. Whether or not virtual communities has become such a phenomenon as Wellman and Gulia states, may be up to each individual. On the other hand, van Baalen et al. (2005) provides some insights on what characteristics a relational and rich information design should have. For instance, it should not only address the needs of the individual user, but also the expectations of a potential social network. The potential network actors should be informed about this (e.g. by advertising or arrange meetings). It should also be as rich as possible as it is impossible to predict how the actors in the network will communicate. They develop and transform over time (van Baalen et al., 2005, Wenger et al., 2002). In other words, the design of knowledge portals should dynamically match different social profiles of the network (van Baalen et al., 2005), which should include people factors and not blindly be made up of platform common in these industry or "off the shelf" software. Perhaps the most important requirement for the design is to acknowledge that people share a common "base" in this case the knowledge portal. Markus et al. (2002) argue that traditional information system design - theories are badly equipped to deal with emergent knowledge processes, and could be problematic for some organization.

Reflection questions:

Baalen et al. states that a portal should be as rich as possible, where should you “set the bar” so to speak? We have all heard the phrase “quality over quantity”. Would that apply in relation to portal solutions and databases (known to involve “tons of best-practice”)?

Portal design

As there are a lot of focuses on how a portal should be designed, this does mainly cover the technological aspect of it. The articles covers the way portals should be effective, and how they focus on codifying, and then distribute it, but not much about the human side of it, at least not directly. As we have previously stated about tacit knowledge in the project thesis, things you don't know you know is especially difficult to transfer and make use of for the organization (Faugstad and Melby, 2013). When facing deeply contextual, tacit information, the best way to share can be using technology to connect people to experts and then let them exchange information (Benbya et al., 2004, Drucker, 2001). However, this is obviously easier said than done, it does require a lot from the organizational culture to make it work. Only relying on “codified” documents could to some extent provide too simplistic solutions, since there often are tacit elements to knowledge. For fostering effective knowledge utilization there might be an idea to rely more on direct interactions between two individuals, rather than grasping a document or drawing in constructions firms. Van Baalen et al. (2005) states that knowledge transfer within and between organizations is not a one-way activity (this is also valid for portals), but a process of trial and error, feedback, and mutual adjustment of both the source and the recipient of knowledge. Knowledge and expertise that exist in organizations in organizations generate more value when they are rapidly applied, emphasizing mainly the role of expertise transfer (Tiwana, 2003). However, the problem is perhaps that for a portal to fully align with the culture and responsibilities from the behavioral perspective, the portal needs to be verified and monitored at all time by a person or leader. But that takes time, and time is money. Even so, in order to make use of this knowledge there needs to be invested time. A knowledge map is a “guide not a repository” (like a portal), and can be supported by form of online “Yellow Pages” or an electronic database with guidance (Davenport and Prusak, 1998). Yellow pages are basically a way of knowing who to contact and grasp what they know. Those solutions are also adaptable to continuously editing.

Reflection questions:

It clearly is a tradeoff here. Should a manager use his or hers valuable time on portal solutions, updating and capturing knowledge and information? Or should they invest time in creating a knowledge map or yellow pages and communicate this otherwise?

Knowledge Portal

Information:	Collaborative:	Applications:
Documents Best-Practice	Discussion boards E-mail	Collaborative work on applications

Figure 9: Example of a Knowledge Portal

Cost effectiveness

One of the major factors inhibiting portal's adoption from a managerial perspective is their cost effectiveness (Benbya et al., 2004). The method is cost-effective because portal technologies use artificial agents, tiny programs developed to find and organize information, rather than salaried employees. In what way the mid- and high level management should be involved in the processes of organizing portals were some of the issues raised in the project thesis (Faugstad and Melby, 2013). There is no obvious answer to it, but more or less the literature promotes collaboration throughout the whole firm, to get the full benefits. Time is valuable for everyone (but maybe more on a high level), so there could be discussed who actually should "sacrifice" their time to update and maintain the portal. However, some so-called administration services gained from portals could provide valuable aids for management, in the form of taxonomy management, role management, best practices and such (Collins, 2003).

To sum up, the theory doesn't answer the question directly whether or not the portal solutions should be more people oriented. It's difficult to fully grasp what the literature reviewed actually presents regarding this issue. This might be because there hasn't been done, at least to our knowledge, any research in that particular direction. How involved mid- and high level management should be on organizing the portals is also something that is difficult to find obvious answers to. For now they are more or less based on our own thoughts and pointers from the project thesis. Our perception of theory in this respect lays in the way management promotes a human oriented portal. Mid- and high level management should at least be involved by "promoting" or arranging meetings for getting the employees encouraged to share. As for updating and adding knowledge into a portal, it could supposedly be collaboration between management and employees at participant level. However, the two "problems" are perhaps better suited to practice in an actual organization than theory.

Reflection question:

If no one uses the portal solution (the knowledge related functions at least) as it is intended, how could it be cost effective and economically viable?

Theoretical implications for managers

The portal is in itself not directly related to behavior, because of its technical nature. However, we still find it appropriate to discuss in this regard, because of its potential human factors it could have. We found the lack of direct investigations or research on such factors on portals interesting, and wanted to elaborate further on it. Portal can, if implemented in the right way provide benefits for the whole organization. As we perceive it, portal nowadays are implemented in a technological matter, and is not used that much to share and utilize knowledge. Hence, it has in general limited knowledge value for an organization. This is our perception analyzing relevant literature. It could of course differ from organization to organization, that's why we want to do both literature research and empirical research on the subject to gain a more nuance picture. van Baalen et al. (2005) promotes the way such portals are not a one-way activity, which there could be when reading a document for instance. It requires interaction between individuals and not between a human and a machine. A central question could be whether or not a knowledge portal facilitates the diffusion of knowledge among rather loosely defined and often disconnected innovation projects. The leader should be aware of to which extent employees in his organization, department or project utilize the

portal for knowledge enhancing behavior. We hope that both observation and interviews could propose a better understanding and input concerning the behavioral issues of portal solutions.

As Markus et al. (2002) states, traditional portals doesn't suit the emergent knowledge processes, thus meaning that if all knowledge evolve maximally and throughout the organization, portals will be a poor choice. In this matter, it could be more suitable with the solutions with a yellow page instead of a knowledge repository. This is because we perceive this as a more suited solution to maintain the behavioral view, and also to provide better odds at sharing tacit knowledge since codification of tacit knowledge per se is difficult. This may also easier for managers to control and manage. Knowledge that exists in organizations generates more value when they are rapidly applied, and could also promote the emergent processes (Tiwana, 2003). This could also be the reason why for instance some organization are beginning to implement systems designed specifically to facilitate the generation, culture, integration and such. However, this "promotion" of emergent, doesn't necessarily rule out deliberate processes. But, perhaps an emergent way of exchanging knowledge relating to portal could be the way to go.

2.3.4 Knowledge utilization in virtual settings

In this sub-chapter we try to align virtual settings and communication with difficulties regarding knowledge utilization. There might be barriers to optimal utilization of which the virtual medium might put a cap on, or enhance the possibilities of mis- understanding and interpretation. We want to assess to which extent it could function as a substitute for face-to-face interaction in relation to knowledge sharing and appliance. We start off with an introduction, thereafter:

- Issues with virtual communication
- Virtual work and management

We conclude with theoretical implications for managers in construction

Working virtually has become a natural way of working today. It is especially common in construction firms. We often talk about local or dispersed projects, where local are within the "four walls" and dispersed are outside the office (Boh et al., 2007). However, it could put a cap of knowledge utilization and it could be discussed whether or not management needs to increase monitoring regarding knowledge utilization in these settings. Some organizations rely heavily on virtual teams for key operations, such as product development, strategic analysis and customer service (Kanawattanachai and Yoo, 2007). Townsend et al. (1998) and Malhotra et al. (2007) define **virtual teams** as "groups of geographically and organizationally dispersed co-workers that are assembled using a combination of telecommunications and information technologies to accomplish an organizational task". Jarvenpaa and Leidner (1998) adds the requirement of temporary in a virtual team as well, but we would more or less focus on working virtually every day and not on teams per se. Argote et al. (2011) confirms that organization learning and knowledge transfer pose challenges with geographic distribution of organization unit, which we define as virtual work. However, we would like to align our perception of virtual teams as Malhotra et al. (2007) proposes it. He states that even if individuals are working on routine problems and can often have face-to-face team meetings, we would focus on the subset of virtual teams whose objective is innovation with collocation, and what could potentially hinder knowledge utilization in such situations. As stated earlier in the thesis, we would therefore mostly like to focus on employees mainly located in the "mother office", but work outside or from home

now and then or use virtual communication on an everyday basis, as shown in Figure 10 for instance.

Reflection question:

Argote et al. (2011) states that knowledge transfer is difficult with virtual work, could “codification” of tacit knowledge decrease the difficulties or does the dispersed settings hinder the possibilities?

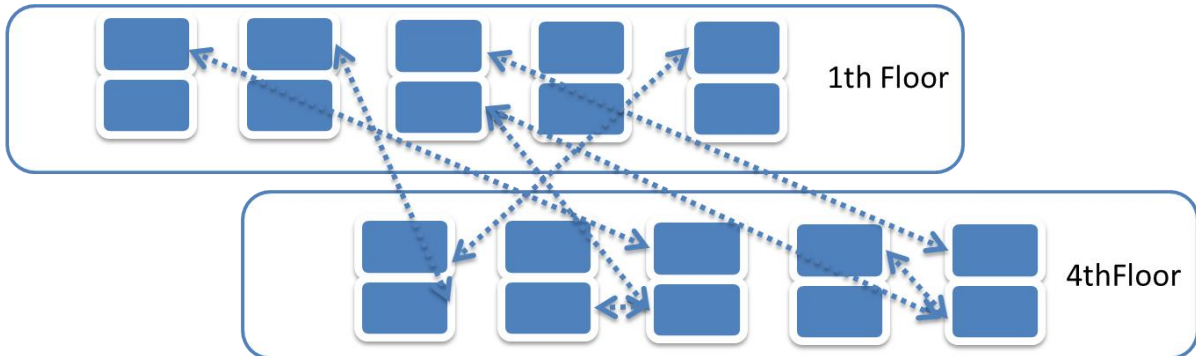


Figure 10: An illustrative example of virtual communication

The construction industry is as mentioned in 1.6.5, a project-based industry, and is often related and suitable to working virtually. This industry works in projects, consisting of situated and distributed knowledge based on embedded practices, know-how and organizational culture. Earlier literature states project-based industries have difficulties of extracting, distributing and applying knowledge across both cultural and structural boundaries, and those issues could evolve even further when working virtually. Organizations are currently facing important and unprecedented challenges in an ever dynamic, constantly changing and complex environment (Rezgui, 2007). The construction industry is no exception. In such organizations, which are usually pretty huge, it is common courtesy to communicate through Microsoft Lync, e-mail and similar when dispersed.

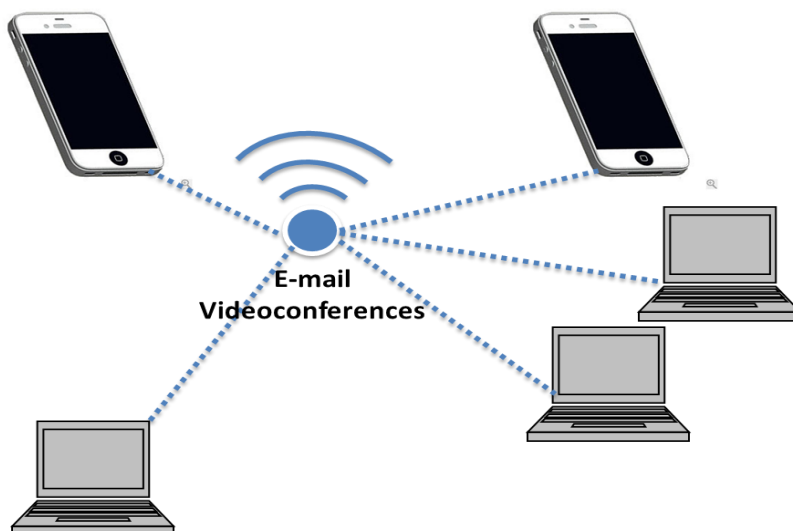


Figure 11: Communication through smart phones and laptops

Issues with virtual communication

When facing virtual issues or approaching in general, learning from both direct and indirect experience can occur in a mindful or less mindful way (Argote et al., 2011). Reflecting on experience, such as after-action reviews, would be an example of a mindful process. Concerning learning from indirect experience, an example of adapting knowledge to a new context would be mindful while “copy exactly” approaches would of course be less mindful. However, when members are dispersed across different locations or divisions, they may not share common knowledge and taken-for-granted understandings that facilitate information exchange and learning from experience (Argote et al., 2011). As mentioned in 2.2.1, leadership does affect the success of most organizational units, and this includes geographically distributed ones or when virtual work is a part of your everyday work. (Argote et al., 2011, Joshi et al., 2009) found that inspirational leaders fostered attitudes and relationships critical to the success of geographically distributed teams. Those leaders could enhance member’s trust in each other and commitment to the team, which in turn increase team performance. To maintain trust in such settings there might be necessary to create norms for what should be shared outside the team, to avoid breaches in confidentiality outside of the team or organization (Malhotra et al., 2007). Geographical dispersion of an organization dramatically affects how it develops and utilizes organizational expertise (Boh et al., 2007). Knowledge gained or developed outside the main office could potentially be difficult to handle.

Reflection question:

Argote et al (2011) talks about being mindful, which is an abstract term. How are you supposed to relate to this term in practice?

Virtual work and management

When we compare traditional work setting when people are gathered at the same location with working with someone at the «other end» of the computer, there are several differences naturally. Those differences could potentially pose a challenge for management, and it could be necessary to promote more attention for utilizing knowledge through virtual work for management. Recent studies suggest that knowledge coordination in virtual teams is problematic due to temporal and spatial separation among team members and the use of computers of communication (Kanawattanachai and Yoo, 2007). The latter would be the most focused in our thesis. In the years from 2007 and further we expected greater organizational efforts to prepare future leaders for such settings (Malhotra et al., 2007). Again, we use some of the theories and results found as a basis to our cases, since we do not focus on virtual teams per se. However another thing that can put a cap to virtual teams is that they are often short-lived and consist of members who are not familiar with one another, factors that exacerbate the problems of distributed knowledge (Kanawattanachai and Yoo, 2007). The general principle about communicating virtually with persons you don’t know that well is a common issue with virtual communication. Malhotra et al. (2007) states that virtual teams in general shall have norms for communication, and this could also prohibit that knowledge gets embedded in the organization. These norms describe how often to check the team’s knowledge repository, how to ensure the repository is a “living” team room, rather than a place to store old documents. Mutual knowledge is a central issue in understanding how virtual teams perform and develop (Cramton, 2001). For instance, as promoted earlier in

the project thesis, tacit knowledge is difficult to transfer, and especially in virtual settings, because most of the social aspects get removed as well. You do not have the opportunity to chat by the water cooler when you are dispersed or located in another division for instance. Haas (2006) confirms that knowledge in general is more difficult to transfer if it is more tacit or casually ambiguous. For instance, codified knowledge could be transferred more effectively via documents, mails or such to attract attention (Hansen and Haas, 2001). Every successful operation needs a strong infrastructure and a socially stimulating environment, and for this purpose it must have its own local base and focus. The telecommuting in itself isn't the hardest "obstacle", but the main obstacles are the availability of competent staff, customer contact and transport links (Pyöriä, 2009). The literature has suggested that the difficulty in exchanging and creating knowledge in a dispersed context (as compared to a face-to-face context) arises because of the structural dispersion of knowledge across these different physical locations (Assudani, 2009).

Reflection question:

Pyöriä states that telecommuting isn't the hardest obstacle for virtual work, but why is competent staff, customer contact and transport links such hard obstacles for managers?

When working partly virtually, team members need to establish mutual credibility and invest time to share each other's views of the team's distributed activities as represented by explicit or information in order to achieve this shared understanding (Gibson and Cohen, 2003). Kanawattanachai and Yoo (2007) promotes that virtual work pose particular knowledge coordination, as knowledge is distributed across team members. This could also pose difficulties for sharing tacit knowledge. Tacit knowledge and skills may be taught through imitative learning and through trial-and-error performances critiqued by the experienced mentor rather than through knowledge fully conveyed by communication of words and actions alone Gibson and Cohen (2003). Management could also, as mentioned above, have issues facing the social aspect, but also the royalty of knowledge worker. For instance an employee could lose the loyalty bond to the mother organization when he or she is "rented out", maybe not so comfortable to share knowledge when "coming home". Managers should monitor when situations like this occurs and focusing on lessons learned. There are also situations where employees end up quitting their job and instead start working for the firm that they were rented out to. Management should be concerned with finding ways to prohibit it. We know that knowledge is difficult to coordinate when having to deal with several different actors in a construction project, both inside and outside a company. Pauleen et al. (2007) promotes a set of principles for team leaders and management where virtual work is involved.

- Work and gather on real issues and problems associated with virtual team leadership
- Reflect and improvisation of their skills and knowledge
- Interlink their action and reflection
- Share their action and reflection with others
- Create and sustain a supportive and challenging community of critically informed virtual team leaders

These points should apply to how virtual teams could benefit and learn from previous experiences.

To sum up, virtual work setting does to some extent put a cap on knowledge utilization, according to theory. Based on this, it could be interesting to conduct empirical research to check if the theory answers to reality. It could potentially provoke increased attention from the management as well, but again it could be necessary to check in practice.

Theoretical implications for managers

Tacit knowledge in virtual settings does not differ that much from traditional settings, at least not in our opinion. Virtual settings could hinder the social aspects and could to some extent hinder trust and well-being when employees works from home or on-site helping a customer for instance. It could be difficult for management to monitor and having control over the knowledge that flows “here and there”. Common platforms are not necessarily get utilized as intended by all employees, and managers does not have time to follow up on these habits. For instance, when working for a customer which has several actors and the work is carried out at their office, and not the mother office, it could be difficult for the manager to monitor the work. It will be up to the individual knowledge worker to capture the valuable knowledge and bring it home.

How suitable virtual work is for project-based construction work could be discussed. In our opinion, it is suitable due to the potential huge group of actors to control, negotiate and keep pace with. It is important for both the knowledge worker and the manager to always have in mind that knowledge could and should be distributed and utilized cross functional. Synchronizing the efforts done for knowledge workers and managers could be difficult, and sometimes very time-consuming, and will not happen magically. Building good relationships where team members freely will share knowledge are suitable internally in an organization. But how about when some of the actors and team members are your competitors? Imagine that there are a lot of actors within a project, and you came up with several good ideas worth keeping. You did not capture them yourselves and bring it back to your organization but your competitor does and gains a competitive advantage that you yourself partly created.

Several researchers states that communication through computers and such is highly inefficient and should by all means be avoided in order to hinder that knowledge disappears or gets stripped due to the limitations of not being there face-to-face. In our opinion, it is wrong to think that all knowledge should utilize without technical aids face-to-face. Think about the time and resources spent on always interacting face-to-face if employees are geographically dispersed. Think about the consequences of travelling to a location every time there is a problem instead of just passing through on a mail or two or taking a virtual meeting through a medium like Skype or Lync.

It may be that there should be norms or routines for virtual work and communication, because it could prohibit knowledge utilization in the organization if it didn't. However, those norms have to align with the culture, and could differ from person to person. For instance, some like to use laptops to take notes but some likes sheets, and this could potentially be a wall or barrier for some. In other words, virtually could to some extent be aligned with norms, and provide promotions for a deliberate perspective. But it could also be linked with an emergent perspective because people have their preferences and way of doing things.

3 Empirical investigation

In this chapter we present the methodology and empirical results from conducting our case study. We start off by elaborating further on the methodology applied before- and after conducting our interviews in chapter 3.1. The following chapter, 3.2, we present the results of our empirical investigation in the same structure as for our literature review, and without our personal interpretation. Starting with leadership behavior in 3.2.1, mentorships in 3.2.2, Portal solutions in 3.2.3 and Virtual communication in 3.2.4. Ending this chapter is the results to knowledge utilization practice perceived as something deliberate or emergent, and the relation to the pillars in the preceding sections.

Even though it's thoroughly covered in our methodology section, we mention it here as well as it's rather essential. Due to only interviewing eight employees in one single case company, our empirical research (and interpretation when it comes to that), is something that can only be perceived as exemplification of the literature and not something tangible as an isolated manner. Keep this in mind when reading.

3.1 Methodology

In addition to the literature review, we found it both necessary and obligatory to include empirical evidence in the master thesis. There are simply some aspects you cannot address through literature only, and we therefore want to clarify whether or not the literature reviewed had some validity in practice. We want to see if our subject has evolved to be a purely academic one, losing foothold in the business world. In addition to addressing elements of the theory we are also looking to examine our own observation and assumptions rooted in reality. Our investigation was not purely to map and uncover today's practice as much as exploring the reality as it should be through the eyes of both managers and project participants in a construction firm. We wanted to explore the applicability of the vast knowledge management research in practice, while searching for new insights and answers to our own theories as observers and practitioners of construction. We did not want to map out organizational weaknesses and then recommend a certain route to happiness for that particular company. We had a wider perspective and rather wanted to address the applicability of theoretical methods, using the case company to illuminate these issues. This chapter describes how we went along conducting this empirical investigation. We present methods chosen, data collection, analysis, validity and weaknesses in addition to a short evaluation of our empirical investigation

3.1.1 Choice of method

As a precondition for the master thesis, we were obligated from the university to include empirical evidence in addition to theory. There are several methods for gathering empirical data. Some can even be combined and used intertwining each other (Yin, 2013). Each and every method has its strengths and weaknesses, and will naturally work better and be more applicable in certain situations. Empirical data could be based and carried out like experiments and observation, where the results in the end are often concluded by the researcher or the results states for itself. The investigation could also be divided into two: quantitative- or qualitative research. Quantitative research is often used when things can be counted for, and is often used to study correlations, causality and effects (Yin, 2013). This is more often conducted as questionnaires or experiments. Qualitative research are in general more vague and flexible compared to quantitative research, which is severely context-sensitive, often based on interpreting texts or situations for instance (Yin, 2013). Field experiment and interviews are central and common choices of approach.

Since our master thesis is, as you can see, heavily based on our project thesis, in addition to addressing a subject as abstract as this, it was only natural to use qualitative research as our point of departure. We chose hence to conduct case study for several reasons. First, case study is preferred when examining contemporary events, but the relevant behaviors cannot be manipulated by us, and is therefore context-specific (Yin, 2013), fitting our purpose. Case study could also rely on many of the same techniques as a history, but adds two sources of evidence not usually available as part of the historian's repertoire: Direct observation of the events being studied and interviews of the persons involved in the events. Also, and we cannot stress this enough, the organization fits our description of a KIPOO entirely. In the succeeding section we describe case study as a research method.

3.1.2 Case study

A case study is defined as an empirical inquiry which investigates a topical phenomenon in depth and within its real-world context, especially when the boundaries between phenomenon and context are blurry. Case study is an appropriate approach to address "how" or "why" type of research questions. (Yin, 2013). This differs from the above mentioned methods. For instance, history does not focus on topical phenomena, experiment control its contexts and survey's ability to investigate a context is limited. Case studies copes with many more variables than data points, relies on multiple sources of evidence and benefits from the prior development of theoretical propositions to guide the data collection and analysis. The path to doing a good case study is rigorous and should start with a literature review and carefully accounting for research questions or objectives.

A case study is not as easy as it may sound like, it needs a well-developed and formulated plan. However, there are prejudice about the lack of specific ways of doing a case study, and how data should be handled and evaluated thereafter. Hence, much depends on the researcher own preferences and ways of doing things, and his or hers capability to distinguish between important data could vary greatly. Another reason for this skepticism is that it is not possible to generalize from one simple case (Yin, 2013). Responding to this, Yin (2013) proposes that case studies, similar to experiments, are generalizable to theoretical propositions, and not to populations or universes. It does not represent a "sample". In addition to be appropriate when the phenomenon and context is blurry, it's also suitable when there are multiple variables, which there is in our case.

Qualitative research

Qualitative research is prone to study humans and organizations in their natural habitat so to speak and therefore fit our purpose. In qualitative research you arrive at the results gradually and highly flexible, as opposite to quantitative, where you know what to look for (Yin, 2013). This type of research tries to highlight phenomenas and situations based on the response and description that human or organizations provide the researcher. As researchers utilizing this research method we have to be aware of the fact that people of this planet perceive phenomenas and situations differently. We want to explore causes and insights, interpreting their explanation, and try understand how they perceive the issues they are presented with. In this master thesis the empirical data is mainly consumed from person interviews (as we will elaborate further in subsequent sections), documents and observation, and are therefore exclusively qualitative.

So, summarizing the above we are conducting a explorative and interpretive single case study, not trying to describe and push forward "rights or wrongs" of any kind. Using this research method makes us able to thoroughly examine issues and relationships of interest. We conduct a qualitative study, conducting interviews and observations to gather data, and from this contribute

to illuminate our problem statement and research questions. As you will see, our investigation may have elements of an explanatory nature as well.

Interviews and observation

There are several strategies to conduct a case study, some already presented. We choose to conduct interviews in addition to direct observation of the workplace environment, and will present an elaboration on these specific strategies.

Observations have been done continuous through two year long part-time employment and full-time summer intern. Even though some insights surfaced during observations, semi-structured interviews with employees in the KIPOO are the main source of evidence in our master thesis. When there is only one “subject”, it would be most relevant to conduct those kind of interviews (Kvale, 1997). Yin (2013) also believes that interviews are one of the most important sources of case study information because most cases are relying on human factors or events involving humans. Semi-structured interviews is a widely used qualitative study technique where the interviewer has some predefined subject or main questions he wants to discuss, but with blurry frames and a lot of leeway in which and how to ask questions. So, these Interviews as a method is much less structured and could therefore give the researcher the possibility to be flexible in his interpretation of the response provided. It gives us the opportunity to gather in-depth responses that reflect the insights of the interviewee and probe deeper into issues and pursue unexpected or expected revelations as you go (Polonsky and Waller, 2005). We, as interviewers, could more easily explain the questions in more detail, clarify misunderstandings and steer the interview in the direction desired by asking relevant sub questions.

We used two interviewers, each with a clear role and purpose. One asked the questions and guided the interview along, while the other took extensive notes, sort of processed the data continuously to get the immediate thoughts from the author on paper right away. A lot of the sensing does get stripped away if you just were to listen to the interview and then transcribe. You risk missing out on valuable physical expressions and interpretation from the interaction.

Open ended questions

We used open-ended questions to surface the respondent’s real views, opinions or description of reality. Every open-ended question did have a specific purpose and was meant to shed a light on a particular theoretical statement or sub-research question. Hence we tried to formulate the questions without leading the respondent to a pre anticipated answer (Polonsky and Waller, 2005).

3.1.3 Collection of data

Both authors had prior connections to the case company, and request of interview objects from different levels in the company has therefore been unproblematic. We have chosen to interview the Vice President, a Line Manager, two senior employees of which one was a project manager, four Project Participants with various years of experience (two of them juniors with less than a year of experience, the two others had 3-4 years and were later defined as “younger seniors”). We wanted to investigate various levels in the organization to provide both width and depth in our empirical evidence, attacking our research questions from different perspective and angles. Luckily, we got hold of all the objects that we needed, and the interviews were conducted on sight without any problems.

We developed an interview guide in advance, with the intention of explaining the reader of how we went ahead with the interviews. The guide also worked as a support tool for the authors in the interview process by being a checklist, question sheets and guide in how to collect data. In

addition to this, it gave us room for gaining a precise feedback from our supervisor before the interview process was to take place. The questions were made in advance (see Appendix A: Interview Guide), but spontaneous follow-up questions and sub-questions were asked as well when needed. Every interview lasted for about one hour, independently of the employees' position. Keeping track of time during the interview was essential, and therefore "checkpoints" were made in the interview guide, to alarm the interviewer where he should be at a certain point in time. Both voice recorder and personal notes were utilized during the interview, of which the interviewees were informed in advance to avoid privacy issues. These gadgets and methods were used to gather data and also ease the analysis of the material for ourselves later. All interviews, eight in total, were done in two days, face-to-face with the interview objects, at the case company's office.

Before planning and conducting the interviews we had the five principles from Yin (2013) in mind:

1. Ask good questions
2. Be a good «listener», not trapped by existing ideologies or preconceptions
3. Stay adaptive
4. Have a firm grasp about the issues being conducted
5. Avoid biases by being sensitive

3.1.4 Analysis and interpretation of data

"Analysis covers the assembling, cleaning, and examining of the data, whereas interpretation is making sense of the data that you have generated" -These are the words of (Polonsky and Waller). We present some theory regarding the methods applied in analyzing the qualitative interviews, before we elaborate on to which extent we employed this in our discussion.

Analyzing interviews could, according to Kvale (1997), be divided into three parts. First, structuring the interview, as of transcribing and systemizing the results. This was conducted in the days following the interviews, not transcribing the interviews word by word, but structuring the responses both in text and through a sound editor program. Second, preparing the material. This was done by eliminating and throwing away less interesting results and insignificant information. Lastly, the third and final analysis of the dataset. This is where the interviewees' own understanding are put forward and analyzed. There are various methods for handling this part of the analysis, and we present the ones we have utilized, more or less inspired by (Arnesen, 2005, Kvale, 1997, Polonsky and Waller, 2005, Yin, 2013).

We can start out by stating that we have greatly relied on **Thematic analysis** in this thesis, of which we engage the collected material to seek meaning, connections and insights. This is the most common form of analyzing qualitative research and emphasizes pinpointing and recognizing patterns within the dataset. Patterns important to the description of a phenomenon and associated to our research question(s) (Polonsky and Waller, 2005). As we see it, this is closely related to what Yin (2013) refers to as **Explanation building**, which is about building an explanation about the case, often concerned to "how" and "why" something happened, highly applicable to investigating theory vs. practice as for ourselves. This analysis, as we see it, goes beyond counting phrases or words in an interview and moves on to identify more underlying issues and insights, fitting our purpose and motivation like a glove.

Condensation of meaning - A method used to reformulate the interviewees statements to smaller and more tangible meanings that could be compared to others. Used to some extent through the whole analysis, but mainly as first point of departure after transcribing and structuring the interview material.

Interpretation of meaning - A method for further elaboration on the immediate answers, going deeper and more speculative into the data material. The results are indeed meaningless without our interpretation (Polansky and Waller, 2005). And in the work of interpretation we focused on interpreting what the results really mean, not assuming anything and follow what we want them to say or believe. We searched for alternative explanations as well as explanations we were familiar with from the literature review. We related our findings to our research question, theoretical foundation as well as other respondents and worked out an interpretation based on these three corner stones.

Eclectic and ad-hoc interpretation - As new to empirical research this method was applied widely in this thesis. This method basically constitutes a lot of different forms of analysis based on reason, more up to the researcher himself in how to conduct. It is applied throughout the whole thesis. The method may have various names in literature.

The combination of these methods gave us a nuanced picture of the respondents' situation, context and insights on the different subjects, laying the groundwork for our recommendation, discussion and conclusion.

3.1.5 Evaluation of the interview process

Reliability and validity

The interviews we conducted were in fact one of the first “real” interviews we had performed in our academic career, and could therefore pose a threat to both reliability and validity of the thesis. However, as an attempt to minimize the potential pitfalls of our lacking experience, we had our supervisor to give feedback on our interview guide a few days before the interviews were conducted.

Another weakness is the fact that we only focused on one single case company, which could threaten the external validity and therefore also the generalization in term of consultants in the construction industry as a whole. However, due to both time constraints and our relation to the case company it felt natural to only focus on this particular organization. As already mentioned above, our research objective was not necessary to generalize our findings to apply for an industry as a whole. Rather we are investigating if theory has any validity and foothold in practice, and from there draw some conclusions that could as well apply and be interesting to other organizations in a knowledge intensive context.

In addition to just one case company, we may have chosen too few interview objects, again due to time constraints in addition to availability of employees to be interviewed. The project participants and line manager interviewed are also working within the same division that both authors have worked within, and may not reflect the organization as a whole. This could threaten the validity and reliability as well, but due to the openness in the case company in addition to being one of the by far largest we deem it representing the organization. Ideally we should have several interviewees, spread among all disciplines and even locations of the company. However, we compensated by interviewing eight objects ranging from project participant and all the way to top-level management. So, we argue that, set aside from its

weaknesses, this provided a wide array of interesting perspectives highly relevant for similar organizations to make use of.

Critique

All the interviews and transcription were conducted in our mother language, Norwegian, while the report is written entirely in English. Some Norwegian keywords, words, sentences and hence content from the interviews and notes could be lost during translation. We risk overlooking important aspects that doesn't fit the English language. The languages are not compatible or comparable when addressing management terminology. Hopefully this weakness is negligible as English somehow is perceived as a "richer" language in terms of management theory. This was something the authors had in mind when conducting interviews as well.

There is always the danger of bias creeping into interviews, largely because we are human beings and not machines. Our manners may thus have an effect on respondents. Both authors have worked for the case company, one as a part-time associate and summer intern, the other as only summer intern. This could have the potential to become a subjective bias when conducting both the interviews and the case study itself. Objectivity has been maintained as much as possible throughout the thesis, at least we were aware of it beforehand and tried to suppress it.

Strengths

Not everything about this thesis is a threat to validity or reliability. Some aspects of our thesis are strong and enhance our findings more than suppressing it. We have through part-time engagements and summer-internships had the opportunity to interact on a daily basis with the respondents in their natural project habitat. This has undoubtedly strengthen our understanding and made it easier to interpret and reflect upon their responses in the interview sequence. We can arguably relate to their everyday work-situation without sticking the finger in the air, guessing. The interaction between the interviewers and interviewees is of great importance, and since we worked there for some time, getting to know the organization we think this strengthens our results as the respondents feel obligated to perform their best and not see this as just another student project not at all beneficial for themselves. The advantage of being two interviewers we think strengthens our thesis as much of the interpretation could be noticed directly by the one not asking the questions. Our time invested in making a solid and sophisticated interview guide arguably benefited to a stronger interviewing procedure.

3.2 Results

In this chapter, pure results from our empirical research are presented for each pillar of investigation. There are headlines- or sections within each pillar to provide the reader with an easier way to keeping track of the results. These sections do relate to the sections presented in the literature review in 2.3.

3.2.1 Leadership behavior

The leader's role and involvement from a cultural perspective

The impression in general among all respondents is that they miss more involvement from management. More dedication, leadership, formal systems and guidelines for knowledge utilization is consistently mentioned and fronted during interviews and observations. Respondents in the lower levels of the organizations agree that the organization is concerned with sharing and utilizing knowledge in the organization, but this is not communicated

sufficiently through the channels and settings where they meet and interact with their leaders. There are no initiatives directly addressing these issues. It's a cultural phenomenon and leaders only indirectly show occupation with the issue of knowledge as a resource. As a senior project participant states it short but aptly, "It's not communicated any formal system from the organization as I see it, we do it solely on personal initiative". For most project participants and senior associates, line managers and top-level managers are absent on an everyday basis. As one project participant said: "You don't hear much from them actually, it's just those guys on the third floor.... Those from who you have to ask for a day off". The subject of knowledge utilization is not explicitly communicated on the arenas where project participants meet high level management, and lower level employees clearly miss a more active role from their managers. "It hasn't been directly put forward, but I've might heard at one "Allmøte" (A monthly meeting where the whole office meets up for an hour where top level management address different issues) that seniors had to become better to involve new employees in their projects. That's the only time I can think of which I could vaguely relate to the subject of communicating anything knowledge related". One respondent, on the other hand mean that this is perfectly natural and relate to this as a cultural phenomenon of which employees themselves are responsible for. Management cannot be that involved after all. This opinion is though exceptional in our investigation.

It's in periods of less work and projects to carry out its most important that leaders involve themselves in this processes. Several respondents indicate and share this perception. "If the organization had systems to pick up this signals, measures like giving employees something to do even though it doesn't generate money would be something to strive for. Then, when employees had less to do, they could familiarize themselves with new knowledge instead of reading the online newspaper day out and day in".

So, the majority are not completely satisfied with the governance from management. The employee appraisals, career systems and similar initiatives from human resources are mainly empty praises which looks nice on paper, but less successful in practice. As a junior project participant says "if it's your line manager that detects signals that you are unoccupied, then you haven't been working for a long time to say the least. It's seniors and project leaders around you that monitor this and include you in projects when you have less to do". According to the career system it's the line manager that is intended to help employees with this kind of issues in addition to develop the predicted career path. The respondents in general doesn't necessarily accuse higher level management to deliberately overlook this or that it's their fault, they simply don't have the time to do this and a repeatedly answer is that top level management has way too much on their plate. Long term personnel issues hence becomes secondarily to other more pressing concerns to secure business. Project participants therefore argue that in order for knowledge management- and career developing initiatives to work as intended, management in general has to be liberated time and resources to address this in a more proper way than today. "We have employee appraisal meetings and dialogues, but as off today they are not even worth the paper it's written on".

One reflected project participant argues for a tighter communication between line managers and key personnel like senior associates in relation to knowledge utilization. "Seniors is somehow protected and do as they want as of today". As seniors have a more direct influence on the lower levels of the organization in the everyday work life, line managers as leaders should be imposed to communicate with the seniors and illuminate the importance of knowledge utilization. "It might be hard though, as line managers and project leaders are evaluated on project or department performance/profit, and they don't want the costs of

knowledge utilization practice or including juniors in projects”. It doesn’t show directly on the bottom line, ergo no one wants those cost.

The leader’s role and involvement from a leader’s perspective

From the leader’s perspective, the impression is similar to the views of the project participants. They acknowledge that they should be better to address these issues. They are not as involved in knowledge management practices and concentrate more on securing thriving projects, building good project teams and from there inspire them to work together. “Even so, we do probably leave too much of the responsibility for knowledge utilization directly on the culture instead of monitoring and handle it ourselves”. It would be valuable to exploit knowledge utilization, but it’s supposedly hard to initiate senior associates, which we could relate to the juniors perception discussed earlier in this chapter. According to the feedback survey, the leaders are not performing well on providing feedback and recognition. They acknowledge this issue and refer to a potential for improvement among leaders in the organization in order to front recognition and involvement in knowledge management practice and initiatives. But here, as well as argued by project participants, it’s not entirely the leader’s responsibility to recognize each and every employee for their efforts in utilizing knowledge. It’s a cultural accountability as well, where it should grow organically. Seniors and mid- level managers, as closest point of superiority should take on more responsibility for recognition and feedback in this matter. The leaders interviewed state that it is, especially in times of less project activity, easier to neglect long term issues as knowledge utilization and that top level management are more concerned with securing projects, cutting cost and hence secure money in the bank.

Even though the leaders interviewed agree that much more should and could be initiated, a lot of communication and involvement are indirectly put forward on the agenda. They work towards creating a proudness of the organization among all employees and as the vice president states: “We try to show that what they do is something others are willing to pay for”. They do communicate the importance of a knowledgeable organization. Maybe not directly and termed as knowledge management initiatives, but they express it indirectly through campaigns, successful projects as well as communicating the direction and focus of the organization, going for the most sophisticated and knowledge enhancing projects out there.

The leader’s own perception of influence

It’s clear to us that leaders on all levels interviewed do have influence on the culture for utilizing knowledge, or at least like to think they can. When asked if they do have influence and impact on their project, department and organization (depending on level) they all respond that they think and hope to have some influence. As one line manager states “it’s tempting to just say that I don’t, and respond with asking what can little me do in this big picture..... But that’s almost like saying we don’t need leaders, but I think we do... so leaders I guess do have influence on the culture for sharing. It depends of course on bureaucracy and positional power to which extent you can influence and initiate overarching initiatives and governance, but even me as a line manager can do something when faced with employees every day. I think it is possible, but I am not good enough myself. As line managers we are pressured towards dealing with issues that needs to be solved today or the day after. Too little attention is given to prioritize those things we know are more important long term. We do have a potential for improvement here, no doubt!”.

Traits and characteristics the culture looks for in a knowledge leader

According to project participants with various levels of both experience and position they somehow want to see same traits and characteristics in their leader, related to knowledge management that is. Some of them are a bit wider and all-encompassing than what you find in the literature. Still, several of well-known qualities were put forward during the interviews, and they don't differentiate much between junior associates and senior associates for that manner. The citations that follows are from project participants only and will not be quoted, we don't differentiate between senior- and junior associates here.

“He has to make himself likable, and he or she should be one with social intelligence”. This citation summarizes the response short but aptly. A knowledge leader supposedly must take pleasure in talking and uttering a message, at the same time able to both give and receive feedback. He or she must be visible for the organization, outgoing, have a genuine interest in people, the ability to engage others and provide a sense of pride among employees. “He has to be able to speak for himself and in a way that I can believe him, he needs communication skills!” These qualities, or traits if you will, were repeatedly fronted by almost every single respondent in the case study. Some respondents also want a leader that really knows their own department or organization, hence remembering each and every associate for his remarks and wishes relating to his work situation, career path and so on. Actionable and drive was qualities brought up by respectively one and two project participants, followed by an explanation - “he or she has to be able to put words into actions”. One reflected associate also call for the ability to assist or facilitate project participants by providing leeway and hence giving the employee a chance to utilize knowledge. He continues by emphasizing the importance of being able to explain, not just the benefits of initiatives, but also the foundation behind an implementation. And in this respect he has to be an honest man. A recurring, but vague response on questions relating to leadership was that the leader should have superior people skills and be a good “salesman” in order to “sell” or communicate a vision of sharing knowledge.

Traits and characteristics the leaders themselves perceive as essential

The answer from the leader's side of the table differentiates some from the response provided by lower level employees. Some indeed overlap, but the leaders did press towards other abilities as more important for being able to lead and communicate the benefits of knowledge management practice.

Personal realization and understanding was surprisingly important factors as brought forward by the leaders in the interview process. Being able to recognize their own knowledge and what constitutes knowledge, separating knowledge from data and information. This was put forward as something crucial in order to be an effective knowledge leader from the leaders' perspective. But, it is not only realization of their own knowledge and what knowledge really is that is important here. They also have to be able to monitor who knows what, and to make people that are not aware of their own competency, aware of what they possess. “A leader has to make them become aware of that they possess valuable knowledge that others may want to utilize”. So in this regard, a leader has to be involved and have the ability to see every employee for what he is and simply have the necessary overview of his project, department or organization.

As for project participants, the leaders do see the necessity to be outgoing, dedicated and a skillful communicator to really thrive as a knowledge leader. He must have the will and ability to communicate with a lot of different personalities, and influencing both culture and

overarching formal structures are important. Even though the majority of project participants prefer to have leaders with disciplinary expertise as well, the leaders themselves don't necessarily see it that way. According to leaders themselves, a leader has to understand connections and how to manage them, he or she has to know the business, market and the processes involved, but need not be a specialist in one or more disciplines.

Senior specialists becoming leaders

The most interesting finding in relation to traits and characteristics was that the majority of employees in the lower levels of the organizations want a leader that is disciplinary (technically or professionally) strong, but at the same time rejects the tradition that strong disciplinary specialists become managers or leaders responsible for human capital. This somewhat contradictory view was heavily represented in the interviews. Most of the respondents do want a leader who is disciplinary strong as well as a good leader. Arguments are in the direction of leaders being more credible if they are experts as well, especially since this is an organization of engineers. It isn't necessary that the leader comes from the same discipline as themselves. It's more important that he or she "comes from somewhere" and knows the ways of being an engineer. "I prefer that he or she has some professional ballast... I can only speak for myself, but if someone is supposed to reach out to me, then he or she has to understand the reality that I am working in and should have experienced it themselves". Only one respondent supports this tradition and express that it is a natural and necessary career path in an organization like this, but when confronted with further questions he acknowledge that a good specialist is not necessarily a good leader. For the rest of the interviewees they all reject the idea of taking a specialist out of his position and putting him in a managerial position just because he is on the top of the disciplinary hierarchy and has to become leader to further progress in the organization. The respondents are familiar with this tradition and do express concerns that experts in technical subjects is not automatically good leaders. "It's catastrophic"- one said. But, it is sort of having your cake and eat it too if it's the case that he or she is both, some answer. And as one project participant argues: "it's not that easy in an organization like this. But, what else is there? We are engineers all of us, so it's kind of a necessary evil for the industry as a whole. Engineers sit in all positions, but it is not all positions they belong in obviously".

Are leadership traits and characteristics something innate?

The ones who highlighted this question did answer with little differentiation. Some are just born with it and has a natural charisma that people are drawn to. Some of it can be developed as you go, but not everything is teachable they argue. Most of it is, according to project participants, just something you have. Something you are born with.

Leadership traits and characteristics as criterias for the employment

Even though most of these characteristics and qualities presented are agreed upon by almost all respondents, both leaders and lower level employees, they are apparently not directly criteria's for hiring leaders in the organization. The ability to facilitate knowledge utilization has not been part of the selection criteria in employing higher level management position. For project managers for example, it's more oriented towards business acumen and typical managerial abilities like control, structure and systematic qualities today. Even so, project management are arguably, according to the leaders interviewed, gradually becoming more and more treated as a profession as its own. The organization has already starting to acknowledge that it isn't necessary that a specialist is a good manager, or leader for that matter. But, this tradition still lingers in how the positions are employed. Not much attention is paid to leadership abilities in project management positions either. The leaders interviewed

see this weakness and are not personally found of the way it's done today themselves. They hope not having to take specialists out of their specialist positions where they are maybe the biggest resource they could be, putting them in managerial positions they not automatically belong in just because they are experts and have been around for some time. They miss more selection criterias, more applicants and maybe both internal and external announcements. But this is easier said than done they respond.

Leader's traits or characteristics are not well enough catered for in employing leaders, the vice president argues, in line with the response from lower level employees. Project management is one thing, but line managers and top level managers are not always hired because of their extensive leadership traits or knowledge management abilities either. "Earlier it hasn't been so much selection criteria as it has been employees ending up in managerial positions because of the way they have acted and managed their work over time, shown that they manage correlations, understand the processes and see connections... If you are a skilled disciplinary specialist and find yourself at the highest level of expertise, you feel that it would be natural with a promotion to leadership status. Simultaneously you feel that it is a big personal defeat if you fail, then looking for other things to do to get away from it. Hence it becomes difficult to overlook them and they may become leaders because we are afraid to lose them. This has obviously happened before, and still does." The problem seems to be amplified by the lack of suitable applicants to these leadership positions. According to the respondents, engineers in this type of organizations don't stand in the forefront, bragging about their knowledge and abilities as leaders. "It's obviously many employees here are suitable for becoming leaders, but they are not visible because of their present position and they are too shy on their own behalf. We as engineers are like that most of us, we don't stand first in the line of fire, hitting our chest" – the vice president elaborate, perfectly in line with the response from one of the project participants presented earlier.

Organizational incentives for sharing and utilizing knowledge

Rewards from a cultural perspective

"A line on my paycheck dedicated to knowledge utilization? No, that one I haven't seen yet". This was probably meant as a joke from a project participant. But, as of today, no direct incentives, structures or rewards exist for sharing or utilizing knowledge in the case organization. The view along the organization in this respect doesn't vary that much. Independent of level and experience in the organization, most respondents see this as a cultural and commune phenomenon where it basically is required of you as a technical consultant to share and utilize knowledge, as it is the most natural thing in the world. For both junior- and senior associates, they all see positive feedback and the good feeling sharing of their wisdom provide them personally as incentive enough. "If I, as a junior feel that I contribute with my knowledge, it might be the greatest award being just a junior.... It's expected of me, and I want to contribute. It's reward enough when people seek knowledge from me, especially since I'm just a junior and it doesn't happen that much". The same goes for senior associates. The feeling of contribution is apparently their motivation. "The fact that I raise the junior's competency is a reward in itself, it makes me feel good".

An interesting finding, heavily in line with our perspectives from both project – and master thesis (literature review), is the hoarding vs. sharing knowledge dilemma in relation to personal power. As two experienced associates states; Knowledge is power and there is those who hoards their knowledge today and in our organization. It's mostly the exception, but it happens a senior associate argue, providing a story we want to quote. "It was more common before, but yeah, it happens. Take the department on the second floor for example: Two

people do a lot of the same things. One of them shares and utilizes knowledge and has the ability to communicate this to others. The other guy has no interest whatsoever in sharing his knowledge with others. After 15 years of working together, I can ask him a specific question and he provides me with just the specific data and information relating to that specific problem I have asked for, and nothing more. He never shares knowledge beyond this, communicating potential pitfalls or valuable knowledge of the big picture for that matter. And, this is just for hoarding his competency, keeping it to himself. When he is retiring, we lose this competence. It's not the organization that the customers ask for; it's the person they ask for and his specific expertise in this field. So when he disappears, it's lost. But, it's not necessarily only for his own good that he hoards his knowledge, he just isn't the type of person that shares. He doesn't have the characteristics of a good teacher as we talked about earlier."

Rewards from a leadership perspective

Top level management acknowledges, in line with lower level respondents, their lack of incentives and rewards for sharing and utilizing knowledge. As of today rewards are almost non-existing and were probably better fifteen years ago, according to management. Top level management has not really discussed how they should acknowledge knowledge utilization and has been more occupied with improving governance and systems initiatives like the portal solution and similar. So, they don't have monetary bonus systems, and don't want them either. Even so, they do have indirect incentives. "Employees are valued partly through salary. There is differentiation on pay level from those who are in the fore front, discuss, contribute and share knowledge, compared to those who doesn't involve themselves in cultural development and so on. There are criterias, of which they are evaluated, and some of them indirectly apply to knowledge utilization"

Rewards as it should be

"If you chase a couple thousands extra for sharing knowledge, then your motivation is wrong and you don't do it with the right intension". Apparently, the employees do not miss monetary or non-financial rewards for that matter. The majority of the interviewees don't see compensation as something that would enhance knowledge utilization. It would become too difficult, and easily unfair. Wrong people could get credit for it, and therefore rewarded wrong. "It's a part of my job, and this is the way it should be". Even so, two of the lower level respondents see a benefit in providing some sort of acknowledgement for sharing and utilizing knowledge. One supports the financial reward, and do think he would perform better if he was monetary rewarded. The other is more prone to the cultural acknowledgement as blog posts or attention given in plenum. But the general conception is surprisingly enough that there shouldn't be incentives for this behavior, the cultural "requirement" should be so strong that you share just because it's natural in a knowledge intensive organization like this.

3.2.2 The relationship between junior- and senior associates

Whether or not a somewhat traditional mentor relationship has the potential to enhance knowledge utilization was somewhat diffuse in theory. We started investigate whit the impression that some kind of relation and cooperation between senior and junior, where senior share of their wisdom, is necessary in a knowledge intensive organization.

The mentorship framework

The case company does have a scheme for newly employed where they put a junior with a "buddy" or sponsor, but the effectiveness of this arrangement and how the impression among

interviewees vary greatly. In general this formal arrangement lasts for 6 months, and according to both seniors and the majority of project participants this is way too short and do not fully cover the extent of a mentor relationship as they see it. A mentor relationship stretches over a longer period and involves not just professional content, but also more cultural issues and practice in daily organizational life. The type of mentoring relationship both the interviewers and the interviewees devote attention to in this section is not something routine initiated from management. We from here on out distinguish between mentor (a longer and more extensive relationship) and “sponsor” or “buddy” (a short lived relationship to make the welcome of a junior easier). A mentor relation in the case organization is not as formal as a traditional mentorship. As one senior puts it “it’s not a distinct master/apprenticeship at this place as it was for me as a former electrician/installer. If a conduit where clogged, it were the apprentice that was responsible for fixing it. If an apprentice was available, then no way if the mentor did something about this minor, repetitive and lame tasks. It’s not at all like this in a technical consulting firm”. Mentoring relationships still exist in the organization, and further we elaborate how the respondents describe these junior/senior relations as they are, and how they preferably should be in a knowledge intensive organization.

The extent of junior/senior relations varied greatly among the interviewees. Two juniors did have very fruitful experiences where they through the sponsor arrangement got a senior to relate to over a longer period of time. The other two got sponsors that they did not have nearly the same relation to. In the successful cases the junior and sponsor worked on the same project, and for the less successful cases the sponsor where either on a different projects, a line manager or not available at the office for some time. As one junior stated “It becomes a completely different dynamic when it becomes a master / apprentice relation, and the success criteria from my experience was that we got together on the same project, that’s important”.

There is two ways of treating knowledge utilization for a fresh junior. One is to have one dedicated mentor, the other is to use all available seniors as a “pool of knowledge” and ask one that is most fit for answering your question or similar. Of all juniors interviewed, only one where most found of the latter, while the rest was in no doubt when answering that one dedicated mentor of which they work on the same project with would provide the best frames for sharing and utilizing knowledge, and from there get the steepest learning curve. Those who didn’t have a dedicated and formal mentor relationship did want it for themselves. From the other side of the table, the senior that never had any formal “sponsor” responsibility for a junior supports the “pool of knowledge” principle, while the mentor with experience from several mentor relationships, both formal and more informal, where passionate about the benefits the organization could reap from more formal master/apprentice relationships. He emphasized the importance of his own work situation and project portfolio. He had to be available at the office and stressed, in line with most juniors, that a mentorship is most valuable if they are working on the same project. This is, in his opinion, the single most important factor for success in such a relationship. “And it’s best if the junior is working on a project I am responsible for over some time, acting as my extended hand in the beginning, evolving into more and more responsibility in the project.... This junior I had some years back fitted like a glove. He came directly from school into my project, we worked closely together and he where on for a couple of year, becoming more and more independent. This is a recipe for success and the definite best journey for a junior. Just look at the boy! They have to learn how to walk before they can run, but involving them quick in a project where they are gradually gaining more responsibility is the way to go”.

What practitioners want from mentorships

We asked the respondents if they could describe how they want their organization to handle mentorships, or other initiatives to strengthen knowledge utilization between employees. Both juniors and seniors in the organization call out for more governance and formal processes from the organization. “If I had a dedicated mentor, initiated formally from management, then it would become much easier because then my mentor would acknowledge that he had the responsibility, hence the threshold would be lower for asking him and make him share his knowledge”. Management should be more involved and establish a framework for handling these relationships as they are very important for how rapid junior’s technical development becomes in construction. Seniors in particular express that management should capture and learn from mentor relationship success stories and dedicate more resources to make more of these relationships happen.

The respondents emphasize the factors that need to be in place in order for this type of mentor relationships to work, and they all agree what must be put first in line. The single most important criteria according to those we interviewed are the project itself. The scope of the project and the phase is essential. The status needs to be so that a senior can provide a platform for learning and this is extremely difficult in a preface status of a project where it’s only customer and contract handling and tasks where it is difficult to involve a junior effectively. Most important is anyway to link juniors to the same project as their mentors and something emphasized from every respondent asked. The mentor further needs to be available at the same office, and it should preferably be organized by disciplines so that they do sit in close proximity to each other. “It’s no doubt that mostly we ask the ones sitting right next to you, people are lazy you know. If your mentor sits two stories below or over you it becomes a barrier in itself”.

A fruitful explanation, new and interesting to us as authors was something proposed from a reflected mentor. He/she think it’s wrong to look at mentorships or other knowledge management initiatives to be only long term and not showing directly at the bottom line economically. In some occasions the project’s success depends on the junior’s productiveness where they contribute greatly, even from the start. But there should be more formal agreed upon settings for including juniors and fostering a fair and effective mentorship inside projects.

“If I didn’t have my junior there to learn and produce, the project might not be finished in time... so, how you charge the project is also very important... If you as a senior associate have alongside you a junior, there to learn in an early phase of his career, he should not load the project for 100% of his hours. Then you kill the project economy, which in turn comes back to the project leader or a senior responsible for his discipline in the project. This is wrong, not favorable and there are different opinions in this regard. Its’ no guidelines or governance from top level management in this area, they seek short term profits were junior employees charge the project full time from start. Debit in focus. If there were guidelines and routines for this, involving internal time then it would be justifiable and an incentive for senior management to involve more juniors, whereas it would be more profitable in the long term”.

Matching processes in mentorships

The process of selecting suitable mentors and choosing projects to involve the junior is, according to the respondents, pretty much random. It depends mostly upon available resources in the form of seniors and projects that are undertaken by the department. Even

though most of them refer to it being difficult as senior employees are scarce resources, and the most important being matching projects, the optimal solution would be to match profiles as well. The framework put forward by Human Resources to handle these processes are not followed and gives no directions for senior behavior or matching processes. The respondents call for more attention to this process. Not necessarily matching the personalities and dedicate resources to extensive profile matching, but at least train seniors and map out which ones that have the capacity and which one are suitable to be a mentor in the first place.

Peers and young seniors as mentors

Juniors exclusively learn most of the professional content from senior associates. There is a solid consensus among the respondents that the seniors have the expertise they can't get from their peers. Even though, they all agree that the threshold for asking senior associates is much higher, and the most natural is to ask juniors working for a couple years (From here on out younger seniors) for help as they have experienced a lot of the same issues that the juniors themselves encounter in their everyday work. One junior respondent refers to the holism that a senior can provide, the key to the project output and how it's all knitted together. Younger seniors are suited to answer more isolated subjects as how to manage a certain regulation or handle a specific component. Therefore the expert and highest level of knowledge is reserved for seniors, while daily operations and minor issues are asked of younger seniors or in some cases peers. As one junior says "I had great respect for my mentor. I could prepare my question for half an hour before I built the courage to ask for help. On the other hand, I didn't even think before asking a younger senior sitting next to me".

Reverse mentoring

Answering to the question if the roles sometimes switch and seniors seek knowledge from juniors, all respondents answered yes. Both seniors acknowledge their own lack of knowledge in computer and other IKT practices, which was confirmed by all juniors. They help seniors most in relation to data related issues. "I haven't been that interested in data and software, but I am raised with it and therefore still miles ahead of most seniors. Things that are intuitive to us are worse to handle for a senior" a junior answered, and was supported by a senior stating that he is hopeless with computers "The PlayStation generation is far better than us seniors on IKT related issues, yes". This is, according to a respondent something that he thinks applies to the whole industry. Even though ICT and software is something all juniors to some extent assist each other and seniors with, there are some juniors that feel they are utilized for more professionally related knowledge as well. This could be new equipment on the market, components he is familiar with from school or other practice. This applied to the minority of the respondents even so. The majority of junior respondents replied that senior associates have a habit of sticking to their own ways accumulated through years of experience and not that willingly accept knowledge from a fresh junior, all though the juniors themselves feel they could contribute with new perspectives and "out of the box thinking". This are the extremes though, for the most part the industry as a whole is supposedly pretty good at keeping up to date with new solutions and so on, it's much worse for the firms actually creating the solutions. At entrepreneurs for example there is much more rigid, where the senior is always right and has supposedly done it like that his entire life. This insight is supported by one junior's response, "Technical consultancies are in general good at updating themselves to what's on the market. They continuously invite suppliers of new equipment to come demonstrate and so on. I think this problem is much worse for entrepreneurs."

Challenging junior personnel

From theory, during observations and from interviews it becomes visual that all juniors do not have the same career development and learning curve in knowledge intensive organizations. This is of course up to themselves in the form of prerequisites, personal interests, drive, and motivation and so on. But some of the responsibility lies upon the organization and how they frame and facilitate junior associates' path. This is also the fact when interviewing juniors and seniors. Their "journey" differentiates greatly and not all of them got the same conditions to grow professionally. One common denominator in this regard is to which extent the juniors get challenged in their discipline, if they are included in tasks suited for their development or not. As pointed out, the conditions varied, but a majority of the respondents missed a more challenging environment where they are being included in processes that would raise their own competence. They call for tasks on an everyday basis that makes them capable of making use of the knowledge they possess now, and eventually should possess to leap towards being a fully independent contributing associate themselves. A recurring element in our case study was that junior associates are often put in big and long-term projects where they are put to perform software related tasks like technical drawings or similar, without ever making sense of the bigger picture and what constitutes his discipline in the project. Some juniors share the impression that seniors often put the easy, boring and repetitive tasks to juniors while they keep the thinking, decisions and planning themselves. They don't think further about the consequences beyond right there and then and the present impact on their project, the juniors argue. Even so, they seem reflected upon the matter and relate this experience to the size of the project, where big projects means repetitive tasks while smaller projects might challenge you more because you can follow the bigger picture closer. "I do a lot of repetitive tasks, and if I'm to draw lights in four almost identical floors in a building, then it's really nothing more to it then 5000 clicks on the mouse... If you have done it enough times you know how to put in a light bulb... it's something like that". So, it seems hard to get out of this spiral, whereas if you got put to do these kinds of tasks in a big project over a period of time you might be stuck and "risk that you stand on the same level after five years in the job because you have done the same tasks all the time, production, production, production....I've tried to get out of this drawing reality for quite some time"- one younger senior puts it. The juniors experiences vary though, and one or two did feel they get challenged now and then, having to scratch their head and ponder on some problems leaving work in the evening. But it doesn't happen every day and is more seldom than being put to less developing tasks. As an ending to this section we present and answer, illuminating to which extent this is representative for the industry as a whole. "I don't think a single company in this industry can say that newly employed juniors go immediately into a project and start producing something useful from day one."

Mentor- and mentee characteristics

During interviews and observations we got a relatively nuanced picture of which traits and characteristics both senior and junior should possess in order for a mentor relationship to foster knowledge utilization in the best possible manner. During interviews we asked the juniors to map out characteristics they calls for in a mentor, and opposite, we asked seniors which characteristics a junior should possess from a mentors perspective. We present those characteristics that were repeatedly mentioned and discussed in the interviews.

The answers were not that surprising. From a juniors perspective they would very much like their mentor to devote time, be accommodating, welcoming, caring, including and show interest in sharing knowledge when they approach them directly for support, or other instances they interact and utilize knowledge. A mentor arguably must understand that the

time devoted to develop juniors has a value in the long run, not just the junior but the organization as a whole. As one junior responds “for me, it helps that the senior at least turns his head around, and not just stare at his screen and answers quick and snappy between his mouse-clicks. He has to be present”. The juniors want their mentors to have the ability to fold their head open and show the juniors their reasoning, test them by discussing the problem at hand and not just tell the junior what to do. “It’s best if he doesn’t provide me the answer at all, but guides me in the right direction” a junior argue. A senior also relate to this abilities and argues for “supportive behavior before directing behavior”. The mentor should be patient, outgoing and pedagogical in nature. According to a junior some senior’s signals anger when he as a newly employed doesn’t “get it” so to speak. The juniors acknowledge that this depends greatly on personality and that not everyone fits to be mentors. All respondents agree that social intelligence is crucial to function as a mentor in an organization operating in these environments.

From senior perspective some of the characteristics intervene, but the shoe pinches elsewhere. The seniors would like their mentees to, above all, be dedicated towards their discipline and show interest for enhancing their knowledge. Simply be willing to learn. “You notice after a dialogue if a junior is genuinely interested. And he is not suitable if he forgets what you thought him and ask again three minutes later”. A junior has to be able to show this interest, while at the same time be humble, not having the urge to show off or excel an “I’m-the-world-champion-of-my-discipline“-mindset. As for seniors, the juniors should have social intelligence and be a skilled relationship builder. A senior state: “it’s advantageous that people like to be around each other, having an open dialogue without being constantly wary of one another”.

The significance of friendship in mentorships

Both seniors and junior respondents seems to have the same perception of to which extent friendship (or friendly relations) is important for a good mentor relationship. There seems to be a consensus among all interviewees that you don’t need to be friends per se, but as a senior says “it’s an advantage if they like to be around each other”. You should have some sort of relation beyond the professional, and be able to talk about other non-job-related subjects with him or her. If you manage this, and the other person is someone you like then the threshold is supposedly lower to communicate with each other and then easier to share or seek knowledge. It doesn’t have to be a close friendship on a personal level, as one junior involved in a successful mentorship cleverly puts it: “Well..... I wouldn’t go out for a beer with my mentor, or call him up a Friday night asking him what’s up... So a friendship is maybe not necessary, but you have to be able to communicate and relate to each other more than just professional”.

3.2.3 The human aspect of portal solutions

The portal solution of the case company is in short a webpage with news, tools, project sites, and also a basic database with a lot of “old” documents and so-called best practice. The portal is according to the majority of the respondents just a tool that gets used on a general basis for project work, time registration and such and not to share or obtain knowledge per se. All project participants and project leader states that they rarely use the portal in the way the knowledge utilization there is intended to be. A common understanding among the project participants is that it is too much information there, which makes it difficult to navigate through. Finding projects and documents needs to be made easily available were the common factor among respondents. Questions that arise from the Line Manager were: “How

intuitive shall it be? And how intuitive is it possible to make it?” The project leader uses it for checklists and such, but it could be discussed whether or not this is knowledge utilization. The management confirms that they are aware of the lack of knowledge utilization using the portal solution. Employees do not utilize knowledge from the portal as much as they wish. Vice President stated that it does occur, but it does probably not occur that much consciously. This was also our thought beforehand and could also promote the difficulties to enhance knowledge in large KIPOO.

“I don’t use the portal for knowledge for much as it is today, but I have faith that the new version would be an improvement” – Project participant, junior.

Alternative ways to share knowledge

There are some alternative ways to indirectly share knowledge in the portal solutions. According to the Line Manager there are systems to create a CV for the organization in a system, where you indirectly share what knowledge you have, which can be found by fellow employees. This is also mentioned by one of the project participants as well and promotes a human-oriented way of utilizing the portal solution. Utilizing and distributing disciplinary knowledge is something the organization haven’t succeeded at accomplishing yet, at least not in their division. There has also been stated by some of the respondents that a so called disciplinary oriented-portal should be developed. There is an agreement among several respondents that such a solution could improve knowledge utilization and applicability of the portal solution as a whole. Two of the respondents stated that it has been spoken of for at least two years, but still nothing has happened. There seems to be a general consensus that such initiatives more often than not, just “empty words”.

“When you enter the portal you should meet a portal that suits your needs, in the discipline you are working within” – Line manager.

Improving portal solutions

In what ways the portal could enhance and improve the portal in general, especially with knowledge, were also brought up in the interviews. When searching for information on the portal today, the result is way too many irrelevant hits, with the potential of being outdated or locked for instance. According to several of the respondents the search results should be a lot more precise and “spot on”. The Line Manager also suggests that they should have a common portal in the organization, and add an extra effort, by adding “tags” to the search engine. A more advanced search engine could be feasible, by for example adding some keywords or tags, date and such to the projects in advance. In the new portal the searching function were improved, but only one out of eight stated that this alone would solve the problem. In addition to the disciplinary portal-orientation mentioned above, there is something called a disciplinary network within the organization which is under development. The intention behind this network is that the employee should read and identify knowledge himself, and thereafter contact the responsible author on the subject in the network if you become stuck. It is sometimes too difficult for a new employee to interpret information from a portal, especially when coming directly from school. In addition to this, it should be best practice for drawings as well, one of the project participants stated.

“An experienced employee needs to guide a new employee. He or she cannot devour “raw” information as codified in a document, it needs to be chewed and applied in accordance to what it is” – Project participant.

Two of the respondents stated that information on a portal have the tendency to be interpreted wrong and more or less copy/pasted. This could have severe consequences as this might not apply for the new context and hence become very wrong. It is difficult to provide good general solution or “to-do list”, since there are so many unique and different projects. In addition to this some of the respondents stated that it is difficult to reflect upon -“if is this information beneficial for someone else?”. The Line manager states that when you apply knowledge constructed by others, it is your responsibility to utilize it right. It’s not the creator of the knowledge that is accountable for your utilization of that knowledge in another context. It is also very difficult to know what constitutes best practice. The Vice president states that engineers are in general reluctant for stating what best practice is to them. “There is a very high threshold for stating that this is best practice, this is well done. The whole organization shall follow this practice that I have created...the engineers are rarely the ones to hit themselves on their chest and stand in the front defending their solutions and front their opinions” – Vice president.

One interesting thought from one of the respondents, as mentioned above, was that you could have a customized portal site, to avoid too much unnecessary elements in your own portal. As mentioned, there was a common understanding among several that there were difficult to navigate through the portal. A customized portal could have the potential to avoid difficult navigation, and also remove the elements that you do not want to have there. A better way of organizing the portal is by having the ability to sort out projects on year, type, where in the country it were done, and find the contact persons in the projects. In this way you could find out who you can talk to in this regard instead of navigating through tons of documents one interviewee respondent.

“99,8 % on the portal homepage is “nonsense”. If you’re interested in reading news, then click on news. It doesn’t need to cover 50 % of your homepage!” – Project participant, junior.

Roles and responsibilities in portal organization

The responsibilities in relation to having a well-functioning portal were also brought up by three of the respondents. There was an agreement that the disciplinary leaders should have the responsibility for updating knowledge regarding their disciplines, and project managers should have the responsibility for project management-practice. One of the respondents also states that seniors in general should have the responsibility as well. A common denominator is that there has to be collaboration between the actors involved in clarifying who possess the expert knowledge, hence be the one to update knowledge on the portal relating to that discipline. A reason is that it is not urgent, and is based on quite long-term perspectives a respondent reply.

“Seniors needs to keep up with updated practice on the portal. It is unreasonable that a junior should be able to keep up with what others have been taught through thirty years in the profession” – Project participant, senior.

Disciplinary networks should be developed in collaboration of several levels in the organization according to the three respondents. First, management should pick a disciplinary leader, and underneath him a network communicator for the specific branches within the disciplines. The network communicator is the one who should share and add content on the portal directly.

3.2.4 Knowledge utilization in virtual settings

The use of virtual communication mediums is by no surprise very common throughout the organization, especially mail. According to the majority of respondents, this is impossible to avoid in the construction sector, especially within consultancies. Every respondents in general respond that they manage virtual communication, but especially the unexperienced employees emphasize on the importance of face-to-face communication during startup. There is a broad agreement that virtual communication cannot replace human interaction, but it could work as a substitute in cases of geographically dispersed work environments. Several of the respondents stated that such communication is a good substitute to for instance traveling, both to save resources, time and money.

”Mail has initially replaced fax and letters, but has for better or worse replaced talking with people face-to-face at the workplace” – Line manager.

Videoconferences and other technical aids

In addition to mail, there are several other technical aids which are broadly used in the case company. Videoconferences and instant messages for instance, which is possible through Microsoft Lync. Microsoft Lync is a commonly used application throughout the industry, and also in the case company. As a general impression, the respondents seem to agree that these are ways of communication that they manage. As pursued above these aids are according to the majority of respondents a good way of avoiding too much travel, and has the potential to make them work more efficient. For instance, instead of mailing back and forth in two-three days, you could maybe compromise this down to a videoconference instead, and could to some extent substitute emailing. It is easier to gain a common understanding through videoconferences. Even so, among the respondents there is no doubt that it is easier to share information when both are in-house. In other words, the virtual cannot replace the physical “feeling” and tacit knowledge sharing you achieve through contact and meetings. As pointed out by one project participant, where you have a videoconference with five people and two of them are just participating through the screen so to speak. In this situation it could end up with the three discussing a specific problem on a drawing or such, where only the three physical presented can see and talk specific, and the two others can end up being “flies on the wall”. One senior respondent states that it is a reason why contractors often demand that every project manager and discipline managers should be gathered at a project office when conducting a project at site for instance. It does provide a faster and more efficient communication.

«The virtual world cannot not be compared to the feeling you get when sitting with people that are physically present. But it is a good substitute for traveling!» Project participant, senior.

Virtual communication is according to our respondents easier for the younger staff, due to daily use of such communication mediums for a long time. This is also confirmed by the juniors with one to four years’ experience, stating that it comes more naturally to them. The seniors state that it does not come quite as natural to them, and that they aren’t the first in line to use the more sophisticated aids for virtual communication. However, a senior stated that videoconferences actually works pretty well, and could therefore disprove to some extent that seniors are skeptical and useless when it comes to technical communication aids. He also stated that there are two criteria’s for a videoconference to be successful, and that is:

- “You need to know the people well.”

- “Preferably not too many participants.”

Relations

Virtual communication works well when you know the people well, it is fair to assume that relations does provide virtual advantages, and this has been pointed out by several of the respondents, and indirectly by the others. For instance, one junior project participant stated that it is much easier to send simple questions to people you know. If there is someone you do not know, the mail for example needs to be very rich in content, and consist of many more data points that you could possibly skip if you knew the person. The threshold to send questions virtually is in other words much lower if you know the person. This is also confirmed by both senior project participants and is therefore a common denominator among the respondents. You need to know the person to communicate well per mail. When you have a common understanding and knowledge of the other person’s competencies, it is possible to narrow it down. Another junior project participant says that there are possible “shortcuts” when you are on the same “wavelength”, even virtually. An interesting example to enlighten this was provided by one of the seniors. He had collaboration with a person miles away, for whom he didn’t know. They needed to solve a specific problem together. He had discussed this in-house with another senior over mail and face-to-face. When he had to pass this information further to this other person, he had to write a lot and attach multiple attachments. It was around four mails and a personal drawing, which he believes could have been done in one section if it were someone he knew at the office, working with for 10 years. Virtuality does put a cap on communication if it is people you do not know from before.

“When you explain something virtually to someone you know, you don’t need to make it a thesis” – Project participant, senior.

Misunderstandings and knowledge loss

Misunderstandings and wrong formulations has the potential to be enhanced through virtual communication. But also, as pointed out by two of the respondents, mails have the tendency to become overlooked and forgotten. In some cases it gets just skimmed through, not helping to avoid misunderstandings. One junior project participant actually tries to avoid this by sending a picture or the like of a specific problem, and then confronting the receiver in person afterwards and explain what he meant. If you ask by mail, you are most likely to get the answer, but if you ask in person, you are more likely to return with a better explanation of the answer and potentially participated in knowledge utilization. Sometimes it is easier to find old mails if you have good saving-routines, but if it has been forwarded or has a bad “heading” it could easily be left out and forgotten. One respondent said that it is not unusual for him to skim through a mail and do as he understood it, and then find out two weeks later that some details were misinterpreted by him and he has to redo something.

According to the Line Manager, knowledge it not just what you send, it’s about a common understanding of each other’s knowledge bases. Miscommunications need to be discussed and avoided right away. Body language, sarcasm and irony are of course lost when communicating virtually, and some things can be lost between the lines. You need to formulate yourself clearer virtually, he argues. In the start of a relationship it needs to be done face-to-face, one of the respondents answered. Both senior project participants stated that miscommunications are related to communication in general as well and people could just as well misunderstand each other face-to-face. For instance, you could communicate something and take something else for granted. If the knowledge is something the receiver doesn’t know

of the outcome is that the knowledge per se could disappear. According to the majority of the interviewees it is important to formulate ourselves in a way that small, potentially “lost” aspects get included. Maybe throw in some “control-questions” in there as well, to know that what you communicated is understood. One of the junior project participants stated that the barriers of virtual communication depend on what you discuss and in the way you work. Tacit aspects could communicate virtually, but it is way slower and more difficult.

“Engineers are unfortunately too trustworthy on their own writings. If they have written something down, their initial thought is that it is understood and exact enough” – Line manager

Formalities

The formalities around how the employees in the case company want to communicate virtually are not carved in stones. One junior project participant said that some focus could be put against the senior’s way of communicating, and possibly removes their skepticism for the “strange and unknown”. One of the seniors also said that it could be a possibility to make Microsoft Lync a more natural part of their everyday work-life. The Line Manager stated, as mentioned earlier, that the use of such virtual communication mediums can save time and money. Some formalities do exist, but are more or less norms than rules per se. For instance, as the Line Manager put it, every mail that is communicated within a project should be added to the portal in some kind of mail database accessible for all project participants. But of course, there could be some slips now and then and it is not followed slavishly. The thought behind this is that it’s easy to trace back to old conversation and is a way to formalize and having control of the mails that have been communicated within the project.

In general, there seems to be a common consensus that virtual communication does not need that many formalities and guidelines to function in construction. It is alright, and it is just something that the individual need to get used to and use as it pleases him, depending on context. How they communicate to each other’s depends on the individual preferences.

3.2.5 Governance vs. Emergent

We find it interesting to find out how practitioners in construction themselves categorize knowledge utilization. Do they perceive it as something they control (or other control)? Is it a governance process where they are perfectly aware that they share, a planned and steered activity, or is it something more emergent in nature, like an organic process that flows culturally and unconsciously?

The answers from the interviews were consistent. The vast majority deem knowledge utilization mainly an emergent activity with deliberate elements. In some activities and situations it becomes more deliberate and something they are aware of doing, but most of the time and in essence all the respondents do see knowledge utilization mainly as an informal, unconscious, cultural and emergent procedure. “It’s unconscious I guess. When provided with a string of information or data and you can relate this to something, and then it happens automatically. You can link it to something (red: the cognitive map accumulated over a lifetime). The same goes for communication with colleagues, you pick up something here and there. This stick to you, not because you deliberately learn what he or she says, but in your sub-consciousness.” – Project participant. When an employee is new to the organization there are some formal structures that make employees aware of the governance behind it. There are systems for enhancing the junior’s knowledge quick, easing his startup by familiarizing

him/her with the ways of the organization. In these processes especially junior respondents refer to governance in a way that they notice that they are supposed to learn, which make it a deliberate and conscious process. “But after a while, when you have been around the block for some time and just discuss something with a colleague it becomes something you are less aware of, and possibly don’t even think about if you learn something or not” . “It’s natural and a culture for It” – Project participants. Management also in this respect presents their weakness as an organization to share and utilize knowledge deliberately and state that they still have a road to walk before they can say they willingly extract knowledge from projects that could be reused in others. So our impression as researchers is objectively that the respondents see it as a mainly emergent process, but wish there were more governance in play.

This was the main perspective presented during the interviews. However, there were exceptions and contexts mentioned of which we relate to emergence and/or governance. First of all the level of consciousness of sharing knowledge depends greatly on context it appears. As one senior state it depends on whether or not you know the person you interact with. If you know him or her it becomes less conscious and controlled on your part and therefore more natural and organic. The same goes for junior/senior- relations. If a senior and junior interact either in the sense of a mentor relationship or otherwise, it anyhow becomes more deliberate and governance in nature. This is supposedly due to the reasonable gap in knowledge, making both parties more aware of the knowledge utilization taking place. In this case it’s visual and more applicable to control and steer the utilization process knowingly. A reflected manager had this to say, showing the difficulty in placing knowledge utilization as something either or – “I see knowledge utilization as something of three levels. 1. You have your personal knowledge 2. The one-to-one or one-to-many knowledge sharing in everyday work-life. 3. Lastly, the more difficult level of when you share with people who’s not right there and then, someone you don’t necessarily know who is, and were both you and the potential recipient does not know whether or not it’s needed. The two first ones is quite easy and emergent, happens naturally. The last one is more difficult regarding how to systemize and structure this knowledge so that many can reach it. This is more depending on governance and hard to make use of. Best practice is difficult”. Management also put forward that in some cases in project work, for example a specific discipline. Then it’s not uncommon to knowingly share something in a systemized manner of say a project meeting, evaluation process or progress reviews.

4 Discussion

In the discussion section we discuss the results from our empirical investigation in light of relevant theory analyzed in our literature review. Our interpretation is central, and a recommendation based on this discussion and analysis will be presented in Chapter 5. Empirical results, discussion and recommendation thus intertwine and overlap. Some repetition will occur whereas some discussion will be present in the recommendation and some statements made here might be interpreted as recommendations.

In order to make the reading easier for you we have structured this chapter the same way as for the literature review and empirical research section. We assess the leadership behavior first, in chapter 4.1.1, the mentorships in chapter 4.1.2, the portal solutions in 4.1.3 and the virtual communication issues in chapter 4.1.4. Chapter 4 is concluded in 4.2 with a discussion related to our continuum, governance vs. emergent. This discussion does present a model with elaboration for an approach towards knowledge utilization in a construction context. Each subchapter has more headlines (not visual in the table of content) related back to empirical results, literature review and ultimately our research questions

4.1 The four pillars

4.1.1 Leadership behavior

Culture, loyalty and power-balance

An interesting finding showing theory's applicability in practice is related to the culture for utilizing knowledge in a KIPOO. As you can see from the literature review, there is a consensus among researchers that a culture prone to knowledge utilization holds some characteristics. Collective identity, trust in each other, fair processes and commitment to management are mentioned among scholars. Our empirical evidence was reasonably clear and supports most of these characteristics, some indirectly, but the outmost prominent characteristic was as respondents repeatedly voiced: Knowledge sharing and utilization in our environment is regarded as a norm, something perfectly normal and expected of employees both professionally and personally. Said in layman term: "There is a culture for sharing in our company". Even though there were no responses pointed directly in direction of a collective identity as emphasized in the literature, there were traces of collective identity among employees on discipline, project and organizational level. A sense of pride of what they do in combination with the cultural expectations for sharing knowledge makes employees take ownership in their projects and organization as a whole. As the vast majority of knowledge management literature likes to point out, knowledge is power! This is just as much the case in practice and visual in our case study results. As emphatically underlined in theory, real life also shows examples of employees hoarding their knowledge to gain the upper hand and becoming an irreplaceable resource. Competition among disciplines and departments also put a cap on knowledge sharing apparently. Our investigation shows no traces of this behavior, and the "scapegoat culture" referred to in theory are more usual among competitors and not internally in the organization. In addition, our interview also show examples of employees, when being deployed at a customer or sourced project, becoming more loyal towards the project than the organization he or she work for. This is only an excerpt of examples of how critical power and cultural identity is in this business, and the leader's responsibility for influencing this culture is extremely important and decisive. All the way from recruiting

employees that fit the knowledge sharing culture to continuous support and influence is something a leader in KIPOOs should be prioritizing.

The leaders influence on knowledge utilization

Leadership and influence are tightly knitted. Both leaders themselves and employees on lower levels do believe leaders have the position to influence and affect knowledge utilization. Top priority among knowledge leaders, according to theory represented in our literature review, should be to involve key personnel and get them onboard for knowledge management initiatives and practice. This is also something mentioned and called for by lower level employees in the case study, (juniors and elder junior associates) as well as leaders who are referring to the difficulty they have in engaging seniors to sharing knowledge and undertake mentorships. Knowledge leaders and senior personnel should communicate more, of which seniors as a scarce resource in this industry pretty much do as they please. So, as it is both wanted by the organizational culture, leaders themselves and underlined as a key priority in knowledge management literature, this should be something knowledge leaders in construction put on their agenda.

Leaders are meant to influence, and for the researchers as well as the practice we have observed this is something heavily agreed upon. Leaders take the role as a visionary, communicating visions, values and purpose of initiatives and so on. This is something that has an exceptional foothold in everyday organizational life as well. Our empirical research shows that lower level employees miss involvement, dedication, formal systems and initiatives from top level management. They would very much appreciate a leader communicating benefits and the importance, inspiring them to perform In relation to knowledge utilization. That being said, it is a tremendously difficult endeavor to fill this responsibility as a leader. As known from countless physiological studies, most people don't like change. So, how could you inspire them to initiate a new system for utilizing knowledge? It's kind of ambivalent that employees scream out for more involvement, formal initiatives, trustful leaders, dedication and visions while the literature at the same time show examples of the difficulty involving employees in changing and accepting new responsibilities, especially contributing to the collective good and not only themselves. Leaders no doubt have a difficult role to fill. But, a leader at least has to be able to understand these issues, know their culture and act accordingly.

Rewarding knowledge utilizing behavior

Regarding rewards and incentives, the literature as well as our empirical evidence shows great disparities. The literature review isolated provided more questions than answers. How could you as a leader possibly reach out to each and every employee at the same time finding an economical balance of which benefits the organization? As our empirical evidence show, some would like rewards while some shun it like the plague. The literature is sadly not any clearer in this respect, even though most of the literature analyzed is skewed towards a non-financial incentive system and refer to monetary rewards as something more destructive than productive. Everyone likes attention, but in which form they most appreciate it varies greatly. In our result section we tried to front that many respondents apparently likes the good feeling

it provides them when others seek their knowledge. Others would like a more public attention of some kind, while a few would even share knowledge more rapidly if they got a monetary incentive to do it. We find this theme hard to discuss and would like knowledge leaders in construction to reflect upon this issue correlated with the culture in their own organization. We think that our empirical investigation at least show that some sort of acknowledgement is positive, and that leaders should see to that extensive knowledge utilization is something acknowledged in the organization. Not necessarily directly by the leader or the organization in the form of material or public rewards. The leader could communicate the responsibility that mid-level management and senior associates have in showing satisfaction on an everyday basis. Once again the leader has to know and understand his department or organization and either let this emerge and grow itself culturally or customize a governance initiative or system fitting his or hers organization.

Leadership roles, styles, traits and characteristics

The main bulk of our research consists of insights from research and empiric evidence regarding leadership roles, styles, traits and characteristics. Do knowledge leaders in construction really possess certain traits or qualities that make them thrive in the various roles they have to fulfill as a leader in this knowledge intensive context? And how does that really differ from being an effective leader in general? Through both theoretical investigation as well as interviewing leaders and subordinates in a construction firm we feel we could discuss the first- and illuminate the second question as well.

According to Singh (2008) and Lee and Van Den Steen (2010) among other researchers, the knowledge leader is to provide visions, motivation, communicate effectively and model good practices. He is to fulfill a “knowledge building” role, as it is referred to in knowledge management literature. This role again involves several minor roles and is strongly represented as desirable roles to fill in construction as well, according to our results.

Styles and roles do go hand in hand, and basically leadership theory differentiates between two styles of leading knowledge. One is structurally oriented, while the other being oriented among employees and relations. The structurally oriented style of leadership, with its foundation in Taylorism is becoming less popular for fast changing environments like the one construction has its place. The west shy away from excelling a too strong leash on employees and the human oriented style are credited more space in modern literature. Even so, knowledge management literature cannot decide upon one best style for a complex context like KIPOOs. Research varies and point in every direction dependent on multiple different factors and variables. This is mainly our findings from our empirical investigation as well. Employees want to have-, and the leaders want to provide- freedom and flexibility as is consistent with a human-oriented style. But, as we see from our interviews, both new and experienced employees call out for more governance in the form of formal systems, structures and guidelines. The leaders themselves also point at their weakness in maybe leaving too much of the responsibility for knowledge utilization in the hands of the culture itself. So, where does this leave us? As usual it leaves us with the impression that a leader either have to excel both styles, possessing characteristics that covers two extremes (usually

one character type fits one type of style best) and tries to apply them customized for his or hers organization.

The traits are receiving most focus because this is where we have the best empirical evidence to say something with a solid foundation in data from interviews and observation. We want to revisit the literature review and refer to the six traits Kirkpatrick and Locke identified that differentiate effective leaders from other people. Drive, motivation, honesty, integrity, self-confidence, cognitive ability and knowledge of business are characteristics the characteristics associated with effective leaders. In the organization analyzed in our case study, both leaders themselves and subordinates do weight the characteristics otherwise and may refer to the same type of quality in other words. For an elaboration of the traits revealed during the interviews, we refer to the result section. Most of them are “classics” and gain wide recognition in the knowledge leadership research community. When conducting our interviews it quickly became evident that employees, even in a knowledge intensive industry like construction, do not differentiate much between characteristics needed from a leader of knowledge and an effective leader in general. Most of these six traits were directly rendered through interview responses, and it is pretty visual that employees in construction call for the same qualities and characteristics that the literature and research community deem appropriate for a knowledge leader in general. One quality mapped out through the interview was the ability to “sell”. This salesman quality refers to the ability to communicate benefits, selling both himself and the initiatives (honestly) to foster initiative and benevolence among subordinates. We see a correspondence to what the literature front as the “broker” role, investing resources in persuading key senior personnel and knowing the internal marked for knowledge. The ability to understand who knows what, and how to facilitate knowledge utilization.

One interesting element regarding traits is to what extent the knowledge leader need business intelligence or disciplinary expertise. From a theoretical perspective the six traits of Kirkpatrick and Locke specify knowledge of business (or business intelligence). Leaders support this perspective and see the leader as someone who understands the big picture, knows the business he operates and understand processes and structures. It is pretty much someone who can control and detect loose treads. Lower level employees on the other side would very much prefer that their knowledge leader knows the business, not from a process perspective, but how things are done at “ground zero”. He or she should have his origin in a technical discipline and have expert knowledge in a discipline in order to really be trustworthy in a knowledge intensive organization filled with engineers. Apparently, which discipline he or she comes from is not as important, the success factor is that he has to know the everyday work-life of a disciplinary knowledge worker.

So, there are some nuances regarding leadership traits. And as literature as well as personal observation reveals, the usual career path in construction is via disciplinary expert to a managerial position. This is where the real ambivalence asserted itself. As is emphasized greatly by leadership theory, the respondents in fact all agree that being a technically specialist does not by far mean that you are an appropriate leader. The characteristics

constituting an exceptional specialist are more often than not the opposite of what constitutes an influential and effective leader. Those positions often include traits and qualities not compatible in principle. So what to conclude other than employees of a knowledge intensive organization in fact wants to have their cake and eat it to?

We think we have pretty much established a symbol of a leader being able to do everything. Having unique characteristics, some even exclusive to others, while still being able to excel different styles of leadership simultaneously. Shortly said, he or she pretty much need to be something very few can pride themselves with. An interesting discussion in this respect is how a leader can learn or acquire this traits and qualities. Is this really something you have to be born with? This may very be one of the oldest problem statements in leadership theory, at least that's our impression as students of project management. Of course, no theorists have been able to confirm either yes or no, so who are we to say anything about it? Well, our literature review is providing only vague guidelines and statements. Our empirical investigation on the other hand shows great support among respondents towards the impression that their preferred leader needs to be born to it. But then again, what does that tell us? This might be the impression brought to us from a handful engineers, but it doesn't prove much. The discussion is interesting though, we just throw the ball back and hope this interesting issue continues to be discussed and researched in many years to come.

Knowledge management as an academic fashion

Several researchers and practitioners of knowledge management points at knowledge management as a management fashion and something that is popular now, but cannot contain the same applicability and popularity in years to come. As the answers of a leader with years of experiences revealed, the organization was more into project management and initiatives 10-15 years ago. At that time the concept of knowledge management was fashionable and something they discussed in great detail. This focus has apparently declined and today they don't even use knowledge management as a term in every day speech. So, from our point of view the knowledge management practice is not perceived as something less important, but fewer resources are spent on it today and it is not such a hyped managerial branch as it was for 10-20 years ago. But, this might be because the knowledge utilization is more and more becoming a cultural and emergent principle, organically growing in everyday interactions between individuals of the organization.

4.1.2 The relationship between junior- and senior associates

Insights from theoretical research had a surprisingly solid foothold in junior/senior - practice in the knowledge intensive construction firm investigated. Whether or not this insights are exercised in the organization as of today is one thing, but junior- and senior associates seems to be reflected and informed when it comes to how they personally want this extremely important relationship to act out for themselves, as well as the consequences for the organization as a whole. The mentoring relationships in practice and theory involve both striking similarities and great differences in preferences. Some surprises, others anticipated.

The framework for mentoring relationships

First of all, the traditional mentoring relationship presented in some of the research is extremely rigid compared to the practice in the organization investigated. The reality in technical consultancies is not comparable to the traditional “master-apprentice” relationship that has been the nature of many professions throughout history, and does not involve nearly as much as you are led to believe through literature and history as such. The senior does not have the same degree accountability for the junior associate and do only fill some of the roles mentioned in research (see section 2.3.2 for an elaboration on these roles). The continuum of expertise is something vaguely recognizable through both observations and interviews. The professional journey from Novice, through Experienced, and all the way to discipline Specialist has its roots in practice, but maybe not as framed and with less visual links or stages. This path is additionally more up to the associate himself to achieve and is less deliberately controlled by a senior or management as such. Even so, the mentorship phases emphasized in research did not seem to occupy the attention of real life organizations. The difference between initiation, cultivation, separation and redefinition as separate phases mentioned in literature did not seem to be given any attention, both formally and informally, in organizational life. Just a few interviewees were asked directly but did neither discuss it then or in relation to other similar concerns themselves. Our general conception is that it hasn’t the importance to neither juniors nor seniors in this knowledge intensive setting. It is far more depending on the work situation, randomness, project portfolio, capabilities and qualities of those involved, especially seniors. The fast pace of the knowledge intensive organization, jumping from project to project, deem it impossible to all fill the roles and phases that are represented in literature.

The processes of mentorship presented in our literature review, van Winkelen and McDermott’s model are relevant and recognized as part of the practice in junior senior relations. But, their applicableness and usage vary from what research proposes. **Modelling** (Observation and Demonstration) do happen in real life but to a much lesser extent. The traditional approach of observing the master working and have him demonstrate exactly what to do is actually something undesired among both juniors and seniors investigated. When an organization’s existence depends on the tacit knowledge of their employees, this method of mentoring seems to have its weaknesses in KIPOO practice. **Scaffolding** is a broad method of which you can interpret the way you like. But anyhow, it’s widely represented in the organization. The preferred method for learning and utilizing knowledge is by supporting the junior, giving hints, providing guidance and similar. Both juniors and seniors call for the mentor to be able to “open his brain up”, and facilitate a reflecting behavior for the junior alongside himself as a mentor. Discuss rather than tell. **Fading** is also highly illuminated in our interviews, of which a well-known technique described by seniors is to remove support gradually and give the junior a chance do take more responsibility for the project and himself. It is pretty much perfectly aligned with the thoughts from research. Both **sponsorship** and **Coaching** was indirectly touched upon, but as for the roles of the mentor it doesn’t involve as much as theory will have it. The senior coaches the junior through monitoring, giving feedback and providing assistance. But, our impression is that it doesn’t involve as much psychosocial assistance as of research, and neither does senior deliberately choose and

structure tasks with professional development in mind as much as it is organically and emergently happens alongside the development of the project. So, it's more oriented towards projects, and not general knowledge enhancement. In practice as of theory, time is money, and time is a scarce resource in this type of organization.

A secure anchor in one-to-one mentorships

Whether or not juniors in construction do have one or many seniors they relate to vary greatly. As Collins et al. (1991) states, no individual embodies all knowledge or expertise. Hence, juniors in a knowledge intensive setting like this cannot relate to only one senior for all possible endeavors. This is valid in practice. But, the mentor relations in the organization differentiates a lot to which extent they have one anchored point containing most of their knowledge utilization. Referring to the results, some juniors have one mentor they ask most questions to, while some does ask and utilize knowledge coming from a "pool of seniors". The surprising result is that even though they all utilize some knowledge from multiple sources and just a few have experienced a successful mentoring relationship, all of the juniors actually want this type of relationship for themselves. Some of them are genuinely jealous and would very much like a mentorship for themselves. They all learn from different sources sometimes, but in general the threshold is lower for utilizing knowledge if they had a robust anchor in a senior they have familiarized themselves with through a one-to-one mentoring relationship. From a managerial perspective we deem this an important priority. Managers should devote resources to monitor these signals, learn from success stories along the organization and take an effort in facilitating this sort of relationship to more juniors, focusing on laying the groundwork for effective mentoring relationships in future endeavors. Project status as the most repeated success factor from empirical evidence, should be in the fore front, triggering management to think in terms of how they could incorporate a junior in order to reap benefits. This deems it even more important to acknowledge these signals when times are bad and projects do stall. How could we facilitate keeping a steady learning curve among junior employees when no projects provide the best platform for include a junior under the wings of an experienced senior.

Putting this aside, one thing agreed upon by both researchers and real life knowledge workers is that a matching process is a good intention on paper, but would most likely generate disappointments and be difficult to manage.

Peer mentoring and younger seniors as mentors

The literature analyzed mainly address traditional mentoring relationships where the junior seek wisdom among the older and more experienced seniors. Researchers also presents a concept called "peer mentoring" where employees on the same level share and utilize knowledge by working side by side. The reality in a KIPOO is, as anticipated beforehand, another matter entirely. Juniors obviously find it more immediate to ask a "younger senior" or "elder junior", one who has worked as a project participant for 2-4 years already, instead of summoning the guts to ask a senior employee for knowledge. According to project participants interviewed they all find the threshold lower for seeking assistance from these younger seniors, which is not covered or something proposed according to research we

conducted beforehand. They could have encountered a lot of the same problems just a year or two back, and is more prone to help and understand what they are going through as juniors. Isolated, less abstract, practical and “smaller” knowledge are therefore natural to utilize from older juniors, while preserving the top level, holistic and project-level knowledge and issues to senior experts. Obvious from interviews, the juniors front this type of behavior towards the younger seniors fairly close to their own work-desk. Don’t get us wrong, answer from all respondents and all other empirical evidence shows that seniors are the ones most responsible for enhancing the competence among junior associates. But, the threshold for juniors to utilize it are higher, hence do they seek support on a daily basis from younger seniors in close proximity from themselves. This in particular could be because of the friendship or at least friendly tone that you usually (and hopefully) get with the ones you work side by side with. Friendship is in fact both an enhancer to knowledge transfer and utilization in both theory and practice. Even though it might be stronger emphasized in theory, there where little evidence supporting anything else from the interviews. The difference lays in that, according to respondents, they don’t need to be friends per se, they just need to be able to talk with each other in a friendly matter and relate to one another on some level beyond strictly professionally.

Formal vs. Informal mentorships

An interesting finding we would like to discuss further is also in relation to having one or several knowledge providers. It becomes a question to which extent this relationship that the juniors want (a mentor relationship) should be formal and governed by management or more informal and emergent in nature. Of course, being an abstract and less tangible issue the research in this area vary greatly. Even though some literature analyzed try to empirically test the applicability of rigid formal traditional “master/apprentice”- like mentorships in real life, the general idea put forward by most of the literature we deemed reasonable had another perspective. Our literature review sort of concluded with, aligned with the findings of Karkoulian et al. (2008) among others, that informal mentoring is positively and significantly associated with knowledge sharing and knowledge utilization in a knowledge intensive context, more so than formal mentoring initiatives. In our literature review, the perception was that informal relations facilitated knowledge utilization while formal mentoring relationships often ended in something “forced upon” the involved and not suitable or wanted by employees. Even so, this does not reflect reality as of our empirical investigation. Seniors as well as juniors call for more governance, clear guidelines and responsibility in how to organize mentor relations. As the brother part of the respondents wants management to take a more active role, steering and formalizing this relationships it becomes evident that theory and practice does not agree to which extent mentor relationships should be formally governed.

Mentor traits and characteristics

From an academic perspective, one frequently exposed issue is the importance for management to seek support in key personnel, often being senior employees in the types of organization we investigate. Researchers stress the importance of involving seniors that are personally interested and believe in knowledge management initiatives like mentorships

themselves. As research shows, not all seniors are suitable for being mentors, and they certainly does have some characteristics that makes them decent mentors. In the literature review it became evident that mentors need to have certain qualities, and researchers were especially concerned with mentors being a pedagogical person who takes pride in knowledge sharing and personally believe in knowledge management initiatives. It would be wrong if he/she as a mentor were to front his negativity towards management and knowledge management practices weren't it? In addition he needs to have the ability to reflect openly and surface his thought processes to the unexperienced individual. Not nearly as visual in the literature review were the importance of more basic characteristics and traits, making a mentor a good mentor and a mentee a suitable mentee. This was addressed mainly through empirical investigation of which we came up with characteristics presented in the result section. This shows that it's not only personal involvement and supporting managerial initiatives that becomes the only important issue in order for a mentorship to function as intended. It may be as important to possess the qualities that constitute a good "teacher" as well as not overlooking the importance of a junior possessing some qualities himself in this regard. An elaboration on this critical success criteria of a successful mentor relationship are found in the recommendation setting, whereas managerial measures and both mentor characteristics, roles and functions, as well as mentee characteristics are illuminated.

Reverse mentoring

The exclusively most aligned subject between practice and theory is that of reverse mentoring. As anticipated and underlined in research, juniors contribute by far most in the IKT-related issues. Software and everyday practice to what involve the personal computer is an area where the "PlayStation generation" is miles ahead of their predecessors, and can thus assist the most. As teased in the literature review, some academics refer to the contribution that newly educated employees can bring to the table in terms of knowledge. In research this are often presented as fresh technical insights from school, magazines or other modern platforms for this type of knowledge. Giving valuable insights to seniors, which according to theory, often isn't too updated and more concerned with their usual and well proven ways of doing things. Our empirical evidence shows traces of this kind of support in construction as well, especially in terms of components and isolated subjects. Say, a junior has been working as an installer for an entrepreneur. Then it is, according to our results, not unusual if seniors seek their advice on isolated subjects relating their project. Even so, this is not very common, and what's separates theory and practice in this perspective is probably that this industry is very prone and skilled in obtaining this knowledge elsewhere, inviting suppliers and so on to enhance their knowledge, updating organizational knowledge continuously. So, as far as our research goes the concept of reverse mentoring does apply more to other businesses. You can ask yourself this, does a senior even need to learn about this software and similar? Putting a well-paid senior to draw something doesn't really seem appropriate in the first place. And do they need to ask juniors about this stuff? Isn't this issues why most organizations today have IT-departments and help-desks? We see that reverse mentoring do happen, but as of today the mentor relationships is much more appropriate in the traditional "top-down" structure of which it is today.

4.1.3 The human aspect of portal solutions

Theory's report of supposedly extensive use of portals in KIPOO was confirmed in the case study as well. We have from observation and theory witnessed issues as to much information inaccessible through little user friendly portal solutions, of which several of the respondents actually brought themselves without being directly confronted with it. This confirms that portal solutions in the industry may not be used as intended in practice. Managers need to avoid filling up a knowledge portal with non-essential data and information. It needs to be done thoroughly and in line with what information that could actually be utilized for future purposes in similar endeavors. And also, as intranet portals as a solution dates way back, it was also evident in our case study that this solution were more fashionable and in focus for ten to fifteen years ago. This corresponds to theory of knowledge management in general, which is by some considered a managerial fashion soon to die out. It is important to remember that such portals only work as a supplement and cannot replace exchanging of information between humans. This is illuminated and substantiated in both theory and something all respondents in the interview process acknowledged.

Design

There is no doubt in literature analyzed that effective design is essential when constructing portals, and some authors (Benbya et al., 2004, Neto et al., 2010) state that modern portal solutions include some information regarding people, projects and such. These solutions are to some extent implemented in the case company, but it is as today not by far good enough. There are several functions that respondents misses, and even more that they would like to remove from their intranet portal page. Basically it is a good tool (especially for newly hired) in finding out who knows what by utilizing the CV-solution mentioned in section 3.2.4. It functions at least to some extent as "yellow pages", popular in theory as well. But this is actually how far the case company portal reaches in terms of knowledge utilization.

The difficulty of designing a portal solution to fit every employee in a big organization is a problem evident in both literature and practice. This is fairly technical from a theoretical perspective and something we didn't focus on in our literature review. Even so, in practical terms it seemed like a passionate cause for several respondents in our case study. As employees in construction obviously call for more customized and user friendly portal pages this should be a managerial priority. Respondents want a portal not comprising too much, just enough functions so that they can maneuver and utilize the portal for more knowledge related purposes and not irrelevant software and other links never put in use. So, in this respect we can discuss a portal homepage different for each and every employee. The way this could be optimized is by having a customized portal homepage dedicated to each discipline, and even each level within that discipline. In practice this could imply that when an electrical project engineer logs onto the intranet portal page, he gets a completely different page than a project engineer in HVAC, or even a project manager within his electrical discipline.

Issues with portal solutions

From literature we are led to believe that tacit knowledge cannot be included in knowledge portals. This gets support from the empirical results as well. Respondents respond that it is difficult to "get the whole picture" by just looking at documents, earlier codified experiences and such. Since the organization show signs of an emergent behavior, taking things as it comes, portals may not be that suited to support this practice. This insight gets at least wide support from in theory. One evident issue with portals in practice is that it's very different opinions spanning from junior to senior. This, we argue is because of the technical nature of

portal solutions, in which juniors and younger employees has a better foundation to understand and utilize than older senior personnel. The use and impression of portals is different according to literature analyzed as well. They distinct between the ICT- competence of junior and seniors and hence there are varieties in applying the portal solution relating to technical knowledge maybe as banal as basic computer knowledge.

It is visual in both theory and through the empirical investigation that there should be an exchange of information more skewed towards direct interactions between individuals and not between a man and machine. But again, we propose that knowledge portals could enhance this, especially when applied as “yellow pages”. They could impose benefits to locate the knowledge in a large organization and where to ask for it. This is not an entirely academic phenomenon, not at all actually. Several respondents mentioned that portals should be organized in a way that projects could be sorted out by tags, location, discipline and so on in order to locate a contact person to discuss the issues you look for.

As brought up by some of the respondents information extracted from a portal, especially by a new employee, have the tendency to be put to use exactly as it is. A good old mindless copy/paste or “koking” as it is referred to in Norwegian is not in construction. These thoughts were also brought up in our literature review, mainly from theory on virtual communication but equally valid here. As codified knowledge may fail to provide the big picture the important aspects and knowledge worthy of obtaining gets lost when just reading a document or old practice and reapply it directly.

Responsibility for organizing and updating portal database

As the role composition and responsibility for the portal solution weren't explicitly brought up in theory, we found it necessary to ask during the interviews. Responsibility of updating and maintain the portal should be a responsibility of a team consisting of discipline “experts” and someone who see the organization as a whole, preferably a line manager. Optimally, the content should be added by everyone within the organization if they have some valuable contributions. The problem is that some expert should be there to verify the applicableness in order to avoid the enormous jungle of irrelevant information. And, according to practice, no one really has the time to do this.

4.1.4 Knowledge utilization in virtual settings

Earlier virtual theory states that the project-based construction industry has difficulties of extracting, distributing and applying knowledge across both cultural and structural boundaries, and this could even evolve further when working virtually. However, we find this a bit “hyped up” put in light of the results in our case study. This could be due to the fact that some of these theoretical statements are based on companies who work a lot more virtually than construction do. Our main perception is that they do communicate virtually in-house, and sometimes also between geographically dispersed offices. But the difficulties and extensive use of virtual teams are not really that present in construction. There seems to be lesser obstacles for communicating virtually in practice, at least if we were to generalize our own findings. However, virtual communication arguably puts a cap on the level of tacit knowledge able to be utilized since it's not necessary given that the sender and receiver knows about each other's knowledge bases, and its simply harder to communicate tacit content without being able to express it in person. In general, the interviewees were satisfied with the way of communication through E-mail and Microsoft Lync communication

software. The respondents does not "paint it all black", and does not familiarize themselves with the extensive focus on barriers explicitly emphasized in the literature reviewed.

Trust

Trust was also brought up in theory both in relation to portal and virtual subjects, stating that leaders could enhance member's trust in each other and commitment to the team, which again increase team performance. For instance, there was initiated necessity to create norms for what should be shared outside the team, to avoid breaches in confidentiality. From our point of view, this doesn't have that much validity, since we mostly focus on work within the four walls and then the teams are in itself probably teams with a common identity. More importantly were the relation and trust to each other on a more personal and professional level. Especially relations were brought up by the majority of the respondents, and were a central point when discussing how to virtually communicate. This was actually a point which I did not find especially highlighted in theory regarding the construction industry, but are probably out there. An interesting point taken from this is how easy you could gain a common understanding when knowing the person, in contrast to cases where you do not know the person at all. Mutual knowledge understandings were also specifically mentioned as a central issue when working virtually in theory. There is no doubt that this has solid foothold in theory. When two individuals are having mutual knowledge some of the barriers to communicate could be decreased. However, it could be needed to have some reminders, even though you know the person, just to make sure that he understood correctly and such. This is perhaps more important for people you do not know that well, but should work as a general principle, because it could become a major problem if small details are left behind, and it were actually a case from the case company that ended in this way, even though it was communicated face-to-face.

Managerial difficulties

Theory regarding management and virtual teams are pretty substantial in fronting difficulties for utilizing knowledge through virtual work. These difficulties are not that visual in practice according to our results. The employees communicate as they want to, but there are some directions to make mails available in the project portal, and could in this way help management to trace back and probably locate valuable information which can be used further. This is a potential solution to lower the bar regarding virtual communication, and could provide valuable details and information for future usage. However, this could also suffer from the same "too much information"-aspect as substantiated and it could be difficult to gain insights if mails have the wrong heading, tag or something making it hard to locate through search engines. One important aspect surfacing from the interview process is the situations when mails are communicating between two employees with a mutual understanding of each other's knowledge bases. Some things would naturally be left out and could be utilized wrong if an "outsider" tries to interpret this mail for knowledge purposes. The internal communication between people who knows each other is Important to comprehend and be aware of.

There is no doubt that virtual communication mediums are used by the individual as it pleases him or her, based on preferences. Thus, promoting an emergent perspective towards orienting virtual communication.

4.2 Emergent vs. Governance

The Emergence vs. Deliberate discussion is a far reaching one. It certainly encompasses a lot of issues we have discussed directly or indirectly in several chapters. In essence a knowledge sharing strategy could have formal mechanisms, or they could rely on the culture to collaborate, share and teach one another natural in informal situations. The literature we have reviewed are certainly skewed towards a more emergent and informal way of organizing knowledge utilization. The literature is highly concerned with specific stages for mentorships for example, which could be associated with formalism and highly deliberate structures. Research in general points in the direction of more effective knowledge utilization if employees are oriented towards an emergent environment. For further substantiation we refer to the literature review as well as earlier discussions. Even so, some researchers have conflicting opinions. They support that lack of managerial direction and leadership can limit knowledge utilization. Knowledge utilization arguably is effectively voluntary and conscious sharing is a new behavior to learn for some people that might require training and ongoing support. Clear guidelines therefore seem to be an obvious prerequisite for effective knowledge utilization on all organizational levels. This view is widely supported in our empirical investigation. We undoubtedly interpret our empirical evidence as a consensus among the interview respondents (in addition to personal observation), which speak for more managerial measures supporting governance and visions to clarify roles and procedures in how to utilize knowledge optimally.

As already insinuated, the emergence- and governance perspective do address various aspects undertaken in our master thesis. We look for coalitions and relationships, and the connection between governance as something formal is strong to monetary rewards, vertical channels of communication, structured mentorships and the leadership style known as Taylorism / task-oriented. Emergence on the other hand is strongly correlated to non-financial acknowledgements, horizontal communication, informal and self-organized mentorships and the leadership style more oriented towards human relation. All of the above are discussed and elaborated in detail earlier, but we wish to discuss the essentials theme by theme before we conclude this chapter by an invitation to management in construction to follow either one particular or both train of thought.

So, from our point of view the formal mentoring approach fits the governance perspective, while a more informal mentoring approach illuminate a more emergent perspective. Theory addressing mentorships are, at least to our knowledge, diffuse and varied in their opinions on what is best for a knowledge intensive project oriented organization. Our result shows otherwise. The vast majority of respondents call for structured and deliberate governance practices towards the organizing of mentorship at least in their own organization. See earlier discussion for further elaboration. The reason we repeat it here is to show the relationship between mentorship and the emergence vs. governance issue.

Rewards and formal incentives is something we have discussed in both relation to mentorships and knowledge management initiatives in general. Rewards are emphasized as something highly valuable for fostering knowledge utilization in most of the literature analyzed. Even so, there is no consensus to which extent this should be formally initiated in financial rewards, other acknowledgement initiated deliberately by management or organically handled through organizational culture. Same goes for our empiric evidence, there are various opinions to which extent this should be initiated by governance systems or not. Anyhow, tangible rewards gain less and less validity among respondents. As we analyze our results, employees in the construction industry deem this a cultural issue, something that

should be the norm and rewarded basically through the feeling the one sharing knowledge gets just by knowing he/she helped the other individual and contributed to boost organizational knowledge. Formal rewards and incentives, especially financial get much less recognition in practice compared to theory.

The leadership style associated with bureaucracy, Taylorism and task orientation are closely related to governance. This leadership style is degraded in modern literature, at least the one investigating knowledge intensive context. Our impression, even though employees asked for more governance from leaders in earlier discussions that employees in construction would very much like a supportive facilitator and not a directing and manipulating leader (strong correlation to behavior related to emergence). When analyzing the response holistically, there is no doubt that a too involved leader controlling and steering subordinate behavior would not function optimally in construction. The personnel's own knowledge and freedom to act is too strong and important in construction to exercise a controlling and structural leadership style.

The call for routines, plans and organizational guidelines in relation to Portal solutions and Virtual communication is also evident in our discussion. How to utilize virtual communication mediums and portal's for knowledge sharing purposes is something that needs to be communicated widely and put in system. Deliberateness, structure and possible alternatives do apply for these subjects. Especially in term of virtual communication management should communicate organizational practice in general, leaving it up to the employees themselves to utilize the medium they deem appropriate in a given context based on these guidelines.

Before we enter the end-game so to speak we want to discuss an interesting perspective fronted in the literature review. Who's to say that the tradition to carve out a vision before processes are shaped towards achievement of this vision is the right one? This is obviously related to governance, but how about taking a position as the vision emerges, at least in part, out of the dynamics of the unfolding processes? As already revealed, the theory in general does take the managerial tradition for granted, hence supporting governance oriented approach. The opposite and heavily emergent strategy is not widely covered in literature and we expected that it has a lesser foothold in reality. As revealed through interview procedures, this hypothesis was confirmed. As we have discussed in the leadership section, undoubtedly the employees asked does call for clear and well defined visions towards knowledge management and expects this to be carefully considered with well communicated benefits by their leaders. Anyhow, we do not deem the controversial insight from theory inapplicable in construction. We simply think that this is not something practitioners, or theorists for that matter, have reflected upon. It's untraditional in construction as of today and maybe more common in extremely fast changing environments like computer or software technology, well known for their organic ways of organizing. This would be interesting to embark upon with more dedication.

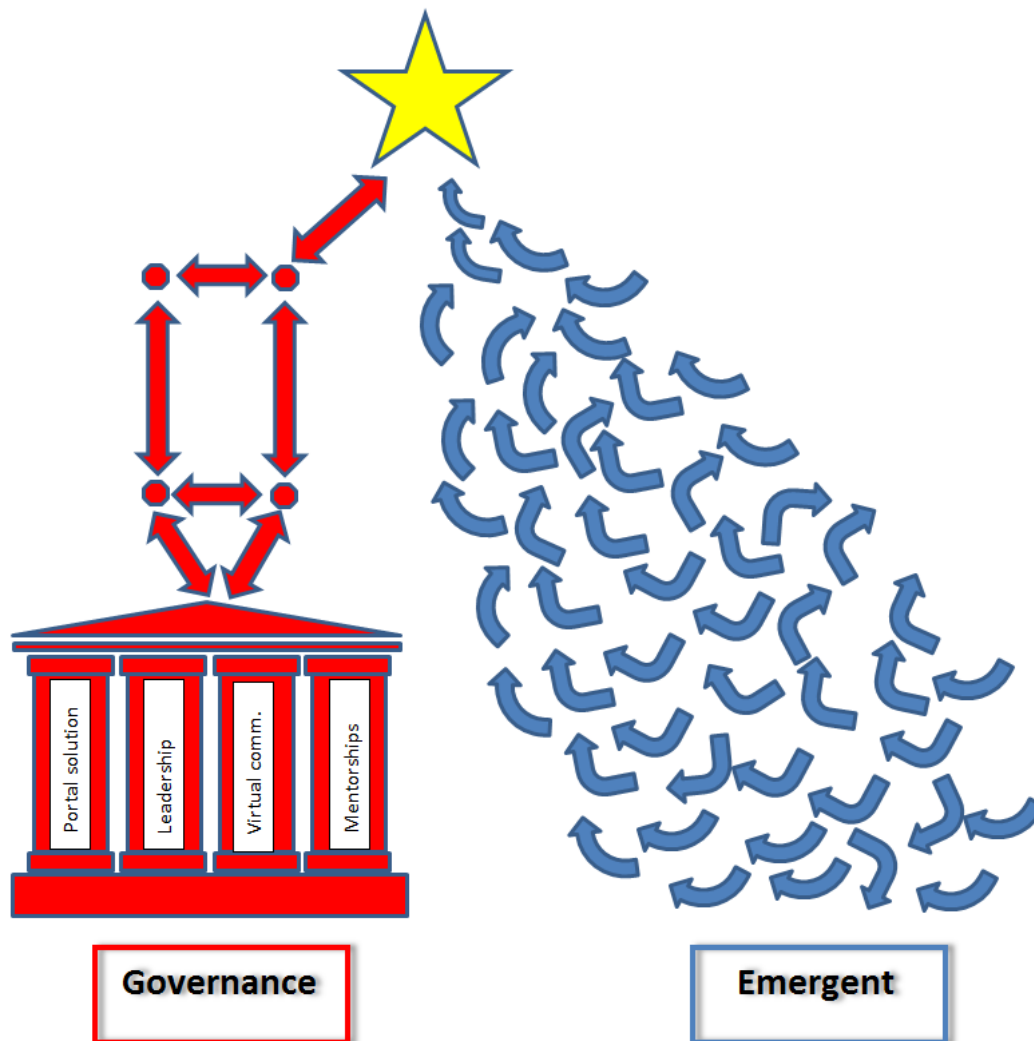


Figure 12: Final model

The model

So, as evident especially in our empirical research, management in the construction industry should involve more governance in handling knowledge utilization in their organization. Systems, guidelines, formal initiatives and structures should as already emphasized, arguably become a priority. Even so, nobody can be compelled to use their competencies or develop relationships can they? More governance from management can stimulate, inspire, influence and control more, but the ultimate decision and effort needs to be recognized and done by the employees themselves. This is what we try to communicate through our model above. Empirical evidence supports a more deliberate and governance approach towards the four “pillars” investigated. Anyhow, the approach should be played out without too much intervention in everyday work-life, putting a cap on the emergent knowledge sharing behavior strongly present in knowledge intensive settings. Knowledge sharing and utilization is in essence something that takes place at all times and possibly something the actors themselves are not even aware or conscious of doing. Trying to steer this behaviors is thus not what we mean by implementing more governance in this respect. The framework should be deliberate and well communicated top down, but leave the control and freedom within this deliberate framework up to culture.

As we see it, knowledge utilization is by all means very emergent in nature, but employees in a construction organization obviously need governance and managerial initiatives to frame this abstract concept. Basically, the most applicable for management in a knowledge intensive setting would be to create overarching systems or structures that recognize the added value knowledge utilization could present. Building a platform for the necessary preconditions that will stimulate employees to mobilize and share their knowledge, without enforcing it nor dictate it. This is obviously easier said than done, but in our opinion management of construction should arrange a deliberate “frame” for knowledge utilization (guidelines, initiatives, systems, structures and so on) without too much interference in everyday work-life and emergent knowledge sharing behavior. Construction should focus on initiatives and practice but make it perfectly clear that employees themselves have to take responsibilities for it themselves. They have to understand that they have to exert themselves to develop knowledge. Building competence and expert level knowledge is up to the individual, even though we mean that knowledge management in general should be more initiated and steered from management. Though, it’s important that knowledge processes mainly stay emergent as “only so much” can be facilitated by management through governance. Some self-organization as bottom-up is necessary!

And keep in mind: “The most important issue is not if you are aware and concerned about knowledge management as a concept, it is whether or not you are able to get it right in your organization”. – Organizational leader

5 Recommendations

In this chapter the recommendations for management in construction, and similar KIPOOs is presented. These recommendations are guidelines and principles that could be successfully applied by actors in the construction industry in general, not exclusively targeted at the case company. To ease the reading and to be able to easily point out what you (as a manager) want to address we present our recommendation in cluster through the use of tables. The structure is otherwise the same as for the preceding chapters, following the same order. Leadership behavior, mentorships, portal solutions and lastly the virtual communication section.

5.1 Leadership behavior

Effective leaders motivate workers through providing them with intellectual stimulation, through tasks or otherwise, and inspire them to work towards organizational values and purpose. The following table shows an excerpt of alternative actions from leaders (top-level management) in using their potential influence on both governance and culture.

Cluster	Managerial implications	Examples of potential managerial measures and action
Personal involvement	Involvement from leaders are important for fostering a culture for Knowledge Management	<ul style="list-style-type: none"> - Be personally involved in arranging workbenches, internal magazines, blog posts and seminars. Not just arranging them, but constantly communicates your faith in it. Take an active role, communicating their intentions and importance for the organization. This is just as, maybe even more important in poorer times of less project activity. - Show employee recognition and deploy feedback as often as possible. Ask questions and follow up employees on their knowledge and career path in accordance with alternative career related conversations. - Build confidence among employees and establish an effective relationship with your senior personnel. - Know your audience. Don't take it for granted that you do. Customize initiatives to fit the culture, not the other way around. Ask yourself what the culture wants in a portal solution for example before you benchmark against competitors, industry or whatever.
Communication	A leader is supposed to influence and become a visionary guide to knowledge management	<ul style="list-style-type: none"> - Stimulate knowledge utilization by communicating its importance on meetings, flyers or other channels of which you reach all employees. - Facilitate an emergent, organic and horizontal communication in the organization. Tear down the bureaucracy and vertical communication channels. Insights and knowledge developing behavior should be communicated widely and not shut down by bureaucracy. - The knowledge leader must establish a sense of urgency in the matter and develop the dependence his knowledge vision has on future existence.
Profits and benefits	Knowledge management does not flash itself in short	<ul style="list-style-type: none"> - Be able to look beyond short term profits. - Make it visual for key actors, mid-level management, head of section or other managers responsible for personnel that a particular initiative or knowledge

	term project winnings. The long term implication could be far more valuable	<p>management practice will influence his or hers departmental economy positively, especially long term.</p> <ul style="list-style-type: none"> - Make success stories or achievements worth itself ten times by bragging and front the positive outcomes of your knowledge management initiatives <ul style="list-style-type: none"> o Use lunches, meetings or whatever to communicate these efforts as often as possible. Use the channels you are provided at any time. o Create heroes, stories, myths and use humor to front your message - Empower employees by generating short-term wins stemming from knowledge management initiatives, anchoring how critical they are for long-term fulfilling of organizational objectives - Introduce “knowledge sharer of the year” or similar incentives
Making use of your traits and qualities as a leader	Some qualities and traits are more useful and called for among employees in construction. Facilitate a cultural identity and Make them count!	<ul style="list-style-type: none"> - Make use of your communication skills and make yourself visual and likable - Show genuine interest in people and strive to provide a pride for what you do as an organization - Stand by your actions and implement those initiatives you can stand for and see all the way through. - Do not initiate actions because your competitors do or scholars argue that you to do. Initiate actions you believe will fit your organization both culturally and in terms of governance. - Explain the foundation, benefits, reason and need behind the knowledge management actions or initiatives you propose to implement. Honestly and believable. - Enhance your “salesman” and storytelling capabilities. Don’t underestimate the power of a good organizational story. - Show your understanding of what the guys on the ground floor do for a living. Don’t get too caught up in the overarching processes and structures. Show appreciation and understanding of the daily activities that your work stock performs. You should strive for at least having a basic working knowledge of all the disciplines involved in your business.

Table 7: Leadership behavior recommendations

Leadership barriers

Barriers to knowledge sharing and knowledge management initiatives are important aspects of knowledge management strategy, which top-level management must acknowledge and respect. These barriers come in addition and outside the positive actions or measures presented in the table. Knowledge management initiatives often seem to fail because the organizations implementing them attempts to adjust their organizational culture to fit their initiatives, instead of the other way around, implementing them so that they fit the organizational culture. So, more broadly speaking, the main barrier to successful knowledge management initiatives is the lack of connection between the goals & objectives of the knowledge management initiative and the overall company strategy, purpose and objectives. “Regardless of how a knowledge sharing program begins or what structure it takes, the most successful programs are those that are inextricably tied to the business and its strategic

objectives” (Riege, 2005). A strategic alignment is the key to a successful implementation, and obviously easier said than done. From a leadership point of view, it is them who are accountable and responsible to communicate the goals and strategies to all employees, firm and transparent, so the risk of misinterpretation is low. According to Riege (2005), this communication is either too vague or detailed with neither provides a clear picture or guidelines to employees.

So, In addition to the measures already mentioned, we want to present a list of potential barriers to knowledge management practices as something leaders in all positions should know is ever present. The list are inspired by the work of multiple sources, among them Riege (2005). Findings from our own empirical investigation, both observation and interviews are also baked in this potential barriers. Note that these barriers are often intertwined and cannot be interpreted as isolated subjects. Most likely different combinations of barriers would be found in knowledge intensive project oriented organizations.

List of potential barriers for effective knowledge management:

1. Lack of infrastructure to utilize knowledge and identify which colleagues that either seek or could provide knowledge.
2. Inflexible organizational structure towards knowledge sharing and utilizing.
3. Lack of formal “spaces” or arenas to utilize knowledge (this could be communities of practice, forums and even the coffee maker at your office)
4. Time constraints or too high pressure on seniors and management responsible for human capital
5. No cultural identity were the norm is to share and utilize
6. No systems for extracting knowledge from personnel quitting/leaving the organization
7. An incoherent vision towards knowledge management
8. Lack of appreciation among employees of knowledge as the most important resource
9. Inappropriate methods for handling tools or ICT related enhancers.
10. Inadequate standardized processes and incentives, formal or informal to utilize knowledge.
11. The impression among employees that sharing may reduce power, hoarding knowledge as a result.
12. Internal competitiveness within business units, disciplines or whatever. This is providing a foundation for the “not invented here syndrome”, heavily decreasing knowledge utilization
13. Employees not knowing the benefits of sharing knowledge or participate in activities
14. Underestimating the potential of tacit knowledge
15. Relying on positional based power and hierarchy (vertical communication)
16. Not tolerating mistakes or differences in experience level
17. Lack of human interaction in everyday work-life
18. Poor communication skills among employees
19. Poor communication among managers and between key personnel and top-level management
20. Not gaining wide support among senior employees for knowledge related activities and practice
21. Lack of trust in both leaders and among associates themselves
22. Lack of guidelines of what really constitutes knowledge management, not creating a collective platform for understanding the concept.

5.2 The relationship between junior- and senior associates

We offer a recommendation regarding factors, measures and actions regarding junior / senior relationships and mentoring initiatives. The difference between this particular section and the other recommendation sections is that we here present, not only managerial implications, but also illuminate certain characteristics, measures and actions for both seniors and juniors as well. We mean that, in order for mentorships to work as intended, a devotion from the whole triangle is a necessity.

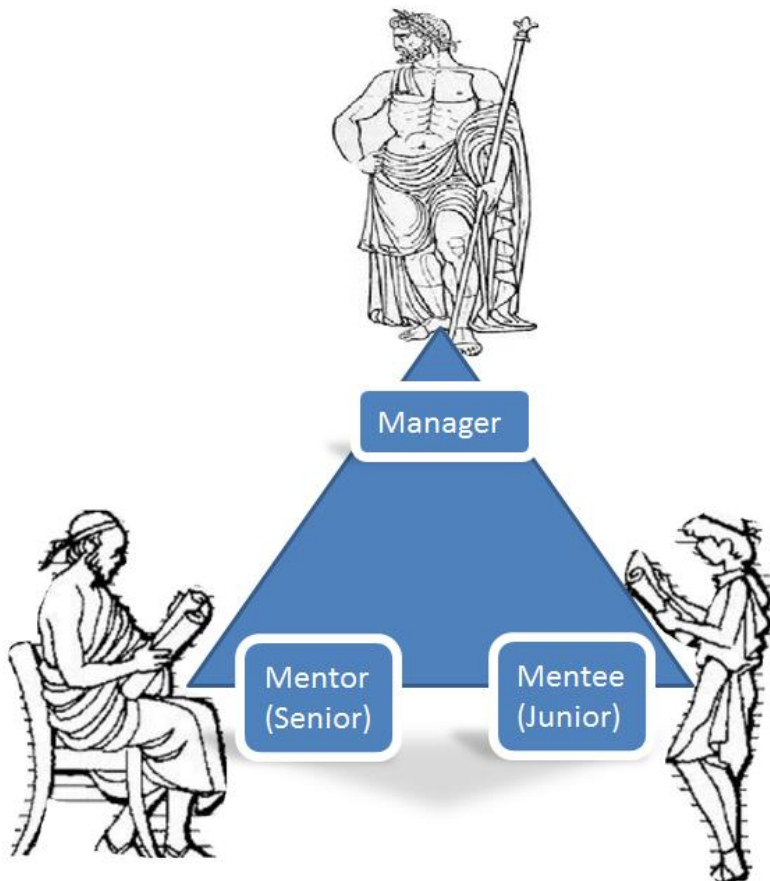


Figure 13: Illustrative example of the relations between manager, senior and junior

The factors and traits that are known to support the flow and utilization of tacit knowledge in a mentoring relationship were to some extent evident in both literature and empirical study we conducted. This section is the tip of the iceberg and the recommendations we present are backed up by the literal and empirical discussion conducted earlier. The recommendations will therefore not be substantiated further in this section. The recommendation is supposed to function as a model or guidelines for managers fostering knowledge utilization in construction, not as a “recipe”. The recommendations are not all-encompassing as they only cover the themes and sub-statements stated in the outline. As thoroughly emphasized already, the success of knowledge management initiatives and practices are dependent on as many variables as the weather. One thing that works perfectly in one organization might work poorly at another, or even in the same organization the next day. Anyhow, these sections present some pointers and ideas every manager in construction or knowledge intensive context should be inspired by and relate to their own organization. We start with the measures and approach from a senior’s point of view, continue into junior characteristics and then manager’s actions and approach.

Measures for senior employees as mentors

Mentoring principles	Illustrative measures
Take your time	<ul style="list-style-type: none"> - Expose junior to as much of the unknown as possible. - Make room for extensive reflection exercises as you go. - Take your time to discuss as you go along. - Take time to one-to-one conversations about how to approach an issue rather than reactive conversations about what needs to be done.
Encourage and ask, don't tell the junior associate what to do	<ul style="list-style-type: none"> - Make the junior partake in the reflection process by asking leading questions and trigger thought processes by part-formulating the problem. - Teach how to diagnose, not just how to solve it. - Guide them on the way to reach a solution rather than instructing them. - Challenge the junior's assumptions along the way. - An example could be to ask the learner about how they would go about attacking a problem, then hand back to the task and let the junior follow through. The junior need to work together with a senior on real and challenging tasks in order to develop the ballast to become a specialist. - Again, don't just tell the junior what to do when he ask, try to get them to answer the questions themselves by helping them to structure the issue.
Explore alternatives	<ul style="list-style-type: none"> - Help identify the basic principles and consider the big picture, and then widen the perspectives alongside the junior. - Invite them to try different solutions to a problem and invite them to fail. - Do not put a new employee to exercise repetitive exercises with little reason to develop. The junior need to be exposed to daunting tasks and explore the issues a senior employee is to face. - Do as the engineering schooling is well known for "Teach the ability to learn"
Awareness	<ul style="list-style-type: none"> - Be aware of the potential phases of mentorship relationships. - Be aware of methods often used in mentoring.

Table 8: Measures for senior employees as mentors

Mentor characteristics

From our point of view, and pretty evident from both literature review and empirical investigation, not everyone is fit for the role of a mentor. An effective and good mentor fit for advancing a junior associate need to recognize himself in several of the characteristics and traits presented here. As you will see, many of the characteristics of a good mentor resembles to the traits of a good knowledge leader.

Clusters	Qualities or characteristics
"Hard skills"	<ul style="list-style-type: none"> - Sufficient knowledge of the organization and its flow of information, channels of communication and decision making processes. - Expert knowledge, at least in the area of expertise is a precondition to develop the knowledge in others. - Years of experience or at least been exposed to a lot, both deviations and regular best-practice. - Being occupationally superior to the mentee.

“Soft skills”	<ul style="list-style-type: none"> - Understand others and have social antennas - Be aware of team dynamics and how interactions among humans usually function. A decent relationship builder so to speak. - Communication skills - Storytelling capabilities - Ability to manage human relations - Flexibility - Adaptability - Supportive and motivating in nature - Patience and pedagogical skills - Work lust and high work performance - Trustworthy and a social personality - Tolerant towards ambiguity and mistakes - Lastly, but maybe one key criteria for functioning as a mentor is having a positive attitude towards knowledge management initiatives and practice, mentorships in particular. - Taking pride in his or hers profession/discipline
Other qualities	<ul style="list-style-type: none"> - Clear aim definition and goal orientation - Personal values fitting the organization - Powerful in the sense of organizational reputation

Table 9: Mentor characteristics

Mentor roles or functions

Highly related to characteristics, a mentor find themselves encompassing various roles or functions, some is he or she aware of and some of them not. The mentors are perceived by juniors having a role or function to them specifically that mentors in construction firms may not realize. We want to make mentors and managers aware of which roles and functions the mentor usually will find themselves either directly or indirectly.

Clusters	Role or function
Formal	<ul style="list-style-type: none"> - Teacher - Coach - Professional guide - Giving feedback on performance. Negative, positive and constructive as such. - Professional advisor - (Accountable for the juniors development)
Informal and Psychosocial functions	<ul style="list-style-type: none"> - Social pathfinder - Supporter - Friend or buddy - Being visible and approachable for junior associates - Acceptance and confirmation
Roles or functions usually overlooked in practice	<ul style="list-style-type: none"> - Role model - Motivator - Challenger (through daunting assignments) - Symbol - Social advisor
Other Career functions	<ul style="list-style-type: none"> - Sponsorship - Exposure - Protection

Table 10: Mentor role or functions

Measures for Junior-associates as mentees:

Mentee principles	Illustrative measures
Persistence	<ul style="list-style-type: none"> - Make yourself visible - Actively ask for more responsibilities and challenges - Pay attention to seniors reasoning processes, don't simply do as your told and "don't see the spade as a spade" and be done with it. If not provided, ask for a discussion or explanation of how the senior reflects
Visualize your competence	<ul style="list-style-type: none"> - Present your areas of expertise and areas where you can assist with skills and knowledge the senior does not possess. - Front your insights being exposed for new research through scholar - Share your IKT abilities and other abilities you have that might benefit the senior, this way the relationship becomes slightly more balanced and your relationship develops.
Awareness	<ul style="list-style-type: none"> - Be aware of the phases of mentorship relationships - Be aware of methods often used in mentorships

Table 11: Measures for Junior associates as a mentees

Mentee characteristics

From both literature review and empirical investigation it seems likely that a mentor's perception of the cost/benefit analysis, and consequently the decision to engage (or at least put down effort) in the mentoring relationship are influenced by the mentees characteristics. The characteristics are similar to the mentors, but these characteristics are more skewed towards qualities appreciated by the mentor, triggering them to dedicate time and resources to the relationship. Hence, the more soft skills he or she possesses and how "enjoyable to be with" the mentee is, the more likely the Junior/senior relation becomes successful.

Clusters	Qualities or Characteristics
«Hard skills»	<ul style="list-style-type: none"> - Should have the necessary education. - Showing good performance and lust to learn professionally. - Potential for performance and ability to develop. - Mental/analytical capability. - Well function in a team and project setting.
«Soft skills»	<ul style="list-style-type: none"> - Respectable in the sense of respecting others (both authority and general respect for other human beings) - Healthy attitude towards verbal expressions. Being calm and professional in his or hers appearance. - Often beneficial for a mentor relationship if there is a social "similarity" or shared interest between junior and senior. - Willingness to utilize knowledge provided. - Be aware of team dynamics and how interactions among humans usually function and develops. - Trustworthy and social intelligence - Outgoing - Adaptable - Enjoyable - Know when to and when not to express your thoughts. - Similar humor among actors.

	- Loyalty towards mentor, project, department and organization
Other qualities	- Clear aim definition and goal orientation - Personal values fitting the organization

Table 12: Mentee characteristics

Managerial measures and actions

Cluster	Managerial implications	Example of potential managerial measures and action
Framework	How you structure and organize a mentoring initiative is critical for its success.	<ul style="list-style-type: none"> - The mentor relationships should be formal in nature with clear responsibilities, at the same time providing the necessary freedom to foster an emergent knowledge utilizing behavior in everyday work-life. - The culture of the organization should be oriented towards asking the appropriate individual (a “pool of senior knowledge”) in addition to having one formally dedicated mentor handling the junior’s development. - Differentiate between experienced seniors (> 6 years) and younger seniors (2-6 years) and establish a semi-formal practice for whom to ask for what. The manager should facilitate that: <ul style="list-style-type: none"> o Knowledge about systems, IKT, social and everyday organizational issues should be oriented towards younger seniors. Data, general information and isolated professional issues could just as well be fronted to a younger senior. o More complex, abstract and holistic project knowledge, or knowledge needed to develop a comprehensive understanding should be oriented towards experienced senior personnel. - If suitable for the organization, create a formal program of which the junior employee gets two anchored points for knowledge utilization. One younger senior in the role as the “buddy”, spanning from 0-1 year, and one experienced senior as the “mentor”, spanning from 0 years to as long as it take for the junior to reach a position of independence. - Lower the bar for junior and senior interaction by freeing time and resources from senior employees to tutor junior personnel. - Create milestones and evaluate the mentor relationship. Focus on storytelling - For a mentorship to function properly, open landscape should be considered.
Engagement	Provide opportunities for active learning and knowledge utilization between junior and senior	<ul style="list-style-type: none"> - Give juniors early responsibility in projects. Something to trigger junior’s feeling of ownership in the project - Design workbenches with the intention of surfacing tacit knowledge - Design learning exercises or simulations to exercise in periods of fewer projects. - Do not forget the social endeavors. Such initiatives lower the bar and demystify the role of the senior, visualizing for the junior the human behind the experienced professional.

		<ul style="list-style-type: none"> - Allow juniors to shadow their mentors without charging the project economy in times scarce of projects for the junior to more actively participate in. - Facilitate that junior associates get exposed to as much as possible, as soon as possible, when it is economically viable. <ul style="list-style-type: none"> o Be aware of the opposite possibility of which juniors are put to repeating tasks, stays in that condition and thus creating a considerably slower and saggy learning curve. Detect this alternative signals and reconsider his most convenient route to benefit both junior and organization long-term. - Provide the junior with space and time to reflect on his own, and do not uncritically put him on tasks in order to produce from startup as this could inhibit his development towards specialist status, of which the benefits really manifests themselves.
“Knowledge mapping”	Being aware of his/hers organization and the knowledge base. An internal “yellow pages” of where the knowledge reside in the organization	<ul style="list-style-type: none"> - Map out who knows what and engage in knowledge networks - Establish communities of practice to cluster disciplinary knowledge - Dedicate time and resources to get to know your human capital - Locate potential mentors. Evaluate and monitor behavior to determine his or hers applicability as a mentor. Not all senior personnel are good mentors. <ul style="list-style-type: none"> o A precondition is whether or not the senior employee wants to be mentoring juniors and personally believe in these sorts of organizational endeavors. Picking seniors that supports knowledge management practice and initiatives is crucial. - Facilitate the power of a diverse workforce and strive to extract possible synergies. A balance in project teams and mentor relationship as such should therefore be prioritized.
Prepare senior associates	Once they are mapped out, how do you ensure they perform as intended	<ul style="list-style-type: none"> - Tutor experts and senior personnel in how to behave as a mentor. - Course and training to help them becoming more effective teachers - Communicate their contribution to the collective good and knowledge development of the organization. - Help senior become good mentors by communicating traits and styles suitable for learning. Assist them in becoming pedagogical, engaged and involved individuals where their reflection and thought process becomes visual for junior. - Front supportive, not directing behavior!
Communicating a vision	Make your endeavors memorable and stick among subordinates	<ul style="list-style-type: none"> - Gain commitment from management and senior employees is vital - Explain the importance of on-the-job training in terms of project participation - Encourage employees within a discipline to communicate informally - Communicate what really constitutes knowledge management and a mentoring relationship.
Personal involvement	As both evident in literature and	<ul style="list-style-type: none"> - Participate in coaching to challenge understanding and encouraging reflective thinking. - Be involved in the mentorships of your department or function,

	in practice. Management's involvement is crucial.	get to know the persons involved and focus on monitoring patterns of success.
Matching processes	Both junior and senior being available for each other doesn't deem them an appropriate match.	<ul style="list-style-type: none"> - Attention needs to be paid to the pairing process and to provide necessary interpersonal skills training, mainly towards the mentor. - Crucial to devote resources to match a junior and senior in terms of working on the same project and with the same discipline. This alone is success criteria - If manageable and seem fit, try to reflect upon if this particular personalities will be prone to success if matched. - Involve senior employees in these matching processes, make their input count! - A precondition is a dedicated senior. But just as important is a dedicated junior, employed because you believe he/she are able to utilize knowledge.
Collection	Make use of your experiences to further grow and develop.	<ul style="list-style-type: none"> - Monitor mentoring relationship, constantly updating success factors for effective junior senior relations in the organization. - Ensure that mentorship termination do not end badly for neither organization, junior or senior. The termination of this relationship should be a collective decision to avoid anger or discontent from any side damaging the general impression of mentorships.

Table 13: Measures and approaches as a manager.

Some measures needs a closer investigation, we provide the reader with an elaboration of the elements hard to comprehend from a simple table.

Traditional mentorship has been very oriented towards learning by doing and observation. We want to recommend that management in a knowledge intensive setting such as the construction industry should at least be as concerned with “learning by thinking” and how to make both the seniors and juniors cognitive activity and reflection surface. It is closely related to the term “metacognition” and is basically about self-monitoring (self-aware thinking of one’s own mental processes). Management should contribute actively by picking up signals from the mentorship initiatives and recognize what additional information juniors need for more complete understandings (in general, not isolated one by one). This is then to be communicated out wide, especially to those directly involved in mentorship programs or activities.

Managers need to carefully consider how and if they are going to structure incentive systems so that mentoring is rewarded and recognized as a valuable contribution to the organization. As we have discussed earlier there are various ways to reward someone, both in monetary value and non-monetary acknowledgements. In our thesis we discuss different approaches and measures on how to reward and motivate seniors to share their knowledge in such a setting, but we will not go as far as to recommend personal incentives over joint rewards for a whole department for example. Our contribution does not lay in the details, but communicating the alternatives for management to either pursue or at least be aware of.

Managers interested in how knowledge accrues in the organization cannot ignore the important transmitters that is stories, gossip and myths (Swap et al., 2001). As this transmitters can be negative in nature and destroy a newly employed junior's picture and

perception of both management and the whole organization, management need to be aware of these issues and take actions to suppress or amplify these based on what benefits it potentially provide the organization. In essence, managers should mind organizational lore for stories that support the goals and mission of the organization. For stories/gossip as for mentoring and knowledge utilization, they are to be influenced rather than manipulated or forced upon employees. One tempting and maybe effective managerial action in this respect will be to construct stories to make strategic points about their knowledge initiatives from top level. Though these may have a considerable downside if it fails or become utterly transparent and superficial.

We feel that elaborations on the roles are necessary outside the guidelines provided in the table. It's undoubtedly the senior employees that "collect" projects and work in the front for attracting customers. Often in construction as well as other KIPOOs the customers don't seek consultation from the organization per se, they seek the specific knowledge that one (or two) key experienced associate inside the organization possess. This "customer harvest" is a critical task, making the organization able to survive and collect projects of which the junior could further learn and develop working in.

Reflection question:

So, is it sustainable to require that a senior fills the role of a contact point during startup? Using his valuable time to learn a senior use the computer, e-mail system, time registration, portal solution. write travel tickets or whatever?

No! As we see it, this tasks should be handled by a "buddy", a less experienced senior who have encountered the same startup problems a year or two ago. Not only might they be more suited for the supporting task of a buddy as they probably are part of the PlayStation generation and understands ICT, they certainly do have a lower wage than experienced seniors. The time that seniors devote to knowledge utilization and mentoring relationships should be towards the more complex, abstract and holistic knowledge that juniors need to develop, in addition to partake in disciplinary networks and communities of practice to share their knowledge to a broader audience. Giving the "younger senior" the possibility to teach a junior will give him the necessary platform to develop the soft skills that he need in order to become an experienced senior that knows how to handle customer relations and so on, harvesting new projects for the organization.

5.3 The human aspect of portal solutions

Portal principles	Illustrative measures
Quality over quantity	<ul style="list-style-type: none"> - Avoid the tendency that information just “exist”, and doesn’t get used - Encourage a “quality over quantity”-mindset for knowledge and functions put on the portal page
“Control” and evaluate the knowledge in the portal	<ul style="list-style-type: none"> - Analyze the information beforehand - Avoid potential misunderstanding as much as possible - Avoid sharing knowledge blindly
Portal team	<ul style="list-style-type: none"> - Create a portal team - Locate the expertise <ul style="list-style-type: none"> o Ensure a collaboration between the two mentioned above - Surface an overview of where you are today, and outline further plans (Collins, 2003) - Make sure the information and best-practice is updated and remove outdated and irrelevant information to compromise the database
Promote portal utilization throughout the organization	<ul style="list-style-type: none"> - Do thorough research on how the portal is used as of today, locate the problem and communicate its unused potential to increase utilization among employees. - Look for alternative ways to organize the portal by benchmarking and quantitative - Communicate the importance through department meetings and such - Raise awareness and front an urgency towards more extensive use of the portal solution as a mean to utilize knowledge more widely
Alternate portal with “yellow pages”	<ul style="list-style-type: none"> - Construct paths to whom you can contact in different departments, instead of interpreting information which could have tacit knowledge to it. - More people orientation towards the portal solution
Better and more appropriate functions	<ul style="list-style-type: none"> - More precise search engine including tags, location, dates and other “nobs” to ease the search. Top priority should be to exclude irrelevant hits by better organizing the search engine. - More user friendly functions and less functions in total - Customized solutions not necessarily comprising the same page for the whole organization. An alternative would be customized portal pages based on affiliation in the organization (discipline, position and so on)

Table 14: Portal recommendations

5.4 Knowledge utilization in virtual settings

Virtual principles	Illustrative measures
Reflect on experiences	<ul style="list-style-type: none"> - Monitor how virtual communications is conducted throughout your organization and locate success factors and potential pitfalls. - Reflect on the pros and cons of working virtually. Ask questions like: Does our way of working or context put a cap on the effectiveness of communicating virtually? Could more focus on virtual sources of communication help us decrease travel time and time not properly put to use? - Analyze the past, and elaborate further on new guidelines and such.
Build relations	<ul style="list-style-type: none"> - Use time on building relations. Even though they might be geographically dispersed. Trust does help communication. - Map out how different individual groupings like to communicate - If manageable, facilitate constructing a mutual understanding of the actor's knowledge base face-to-face first to ease virtual communication envisioned in the future.
Maintain "loyalty" when working virtually outside the main office	<ul style="list-style-type: none"> - Maintain a good and mutual line of communication. If a project participant is rented out to a customer, maintain his or hers loyalty by acknowledging his/hers existence and communicate their importance in knowledge creation processes and otherwise. This will remind them of where they pledge their legions. - Only do rentals our outplacements for a limited time period - Make sure the knowledge acknowledged gets shared and gathered, at least in an evaluation upon homecoming if not continuously.
Communicate virtually in a mindful matter	<ul style="list-style-type: none"> - Be aware that some information can be "lost between the lines" when communicating virtually, some information that are taken for granted may not be perceived in the same matter by others. As we all know, body language is of major significance in communication - Communicate wide the importance of having a mail-saving-routine to avoid E-mails being forgotten or overlooked.
Use the technical aids for what it's worth	<ul style="list-style-type: none"> - Use mail to discuss relevant problems when suitable - Suggest video conversation if you foresee a "long conversation" and when assuming utilization of tacit knowledge being present - Use videoconferences more promptly if you are few participants, and you know the persons well from before. - For the most part rely on face-to-face interaction when sharing and utilizing knowledge, then you strip the possibilities of misunderstandings to the bone.

Table 15: Virtual recommendations

6 Conclusion

This chapter constitutes the narrowed and compromised final conclusion of our master thesis. It is based on all the reviewed literature, results and discussion from empirical research. In 6.1 we present the further research we provoke others to pursue.

Our project thesis was conducted answering how management in knowledge intensive project-oriented organization could contribute to knowledge being utilized in the best possible manner. The study was rather conceptual and did not propose any direct actions or measures for management to pursue. Our objective and scope is still the management's role in enhancing knowledge utilization, but this time around we tried to address the more practical and "activity-level" measures for management in knowledge intensive contexts to apply. The literature review may still be perceived as rather conceptual. But, our empirical investigation, analysis and particularly the recommendation section propose rather tangible measures based on the conceptual and abstract findings from literature review and preceding research.

The research related to knowledge management is endless and diverse. A lot of the theory could contribute to increased understanding of how this could be managed, but most theoretical findings are diverse and differ greatly, especially relating to our subjects of analysis. We don't even come near to explore a fraction of the knowledge management literature out there, but as of our literature review the researchers support to both emergent and deliberate behavior, slightly favoring cultural and emergent facilitation of knowledge. This is clearly depending on context. Our research, especially our empirical investigation, shows evidence of a call for more governance related to knowledge management initiatives and practices. But, the underlying precondition as thoroughly emphasized in the literature study and project thesis, supports that you cannot simply implement knowledge management initiatives and be done with it. Knowledge management requires continuous reality-checks or quality assurances in addition to facilitate, update and improve- mechanisms, practice or managerial initiatives. The organization could implement as many routines, guidelines, expensive and advanced IT-systems they want - but it doesn't mean employees will partake and use them as intended. The importance of the social and emergent aspect cannot be neglected.

One of the greatest difficulties in theorizing our practical results is that there exists no optimal formula or best knowledge management strategy. There is no silver lining that will work properly for all companies, and there is no shortcut to introduce a to-do list of knowledge management practices that will guarantee success. Our discussion and recommendation section is simply a collection of alternative measures known to be successful, at least in some organizations and contexts. They are not necessarily the right thing for your organization, and this is important for us to communicate. As a manager you should initiate your critical eye and take a close and hard look on your organization. Get to know your organizational processes, culture and employees in order to gain a sophisticated view of what your organization lack in terms of a knowledge utilizing environment. From this nuanced picture, use our recommendation and visualization of common knowledge management issues as guidelines and possibilities rather than a list of truth. With this as your foundation you can "cherry pick" the measures you see fit for your department, project or even organization as a whole.

6.1 Further research

The work put forward by this study contributes to the field of knowledge management in knowledge intensive settings. As the empirical research consists of a single case company with eight respondents, further research is necessary to further verify the thoughts and insights put forward in this master thesis. The study has a huge potential for further research in multiple directions, of which some of them will be highlighted here.

First of all, since we set some limitations and assumptions described in the outline, one way to progress forward is by investigating these and if they're really adequate. It would for instance be relevant to include knowledge creation, knowledge as something externally available in addition to knowledge being based on more than just experiences. Does our focus and recommendations towards internal embedded knowledge utilization put a cap on utilizing externally available knowledge? We do not neglect the importance of external knowledge; we simply don't address it in this thesis. Hence, further research should address this connection and assess them equally. It would also be fruitful to view behavior from an alternative perspective, or for that manner don't analyze knowledge management from a behavioral standpoint at all, but something entirely different. Even though our research focus solely on construction organizations as knowledge intensive project-oriented organizations, it could be interesting to investigate the generalizability to other types of organizations and settings as well.

Second, this study comprises only two main perspectives, an Emergent or Governance approach to manage knowledge. This is not at all the only perspective present in knowledge management literature. So, for future purposes it seems reasonable and favorable to include other perspectives as well and test their applicableness to the construction context. Additionally, our research pretty much follow the assumption that a vision must be present before the processes are shaped toward the achievement of this vision. It would be interesting to turn it upside down and investigate if the vision can and should emerge out of the dynamics of unfolding processes.

Third, the four pillars of our model and research as a whole, as we have listed them, suggest a wide range of subjects relevant to research within the knowledge management literature. The way we have argued for their significance has largely been a theoretical exercise supported by a simple case study. The list is not exhaustive and the knowledge management literature comprises tremendous amounts of subjects that could apply for the construction context. Nor is our pillars or subjects necessarily refined enough to expose the underlying mechanisms of their functions. Some of our findings were not in coherence with the literature (see discussion), and it could therefore be useful for further studies to focus on these particular pillars of ours in order to invalidate or verify our findings. So, our research will obviously benefit from more empirical research being conducted. A proposition for further research is thus using our model and insights to empirically test its applicableness in knowledge intensive project-organizations by conducting more comprehensive case studies. The problem for managerial studies is often that the data are either anecdotal or case study evidence related to a single organization, nation or human being. They are usually conducted by isolating single events as this event has a specified start and end. The assumption that an analysis of a collection of these discrete events is equivalent to an analysis of continuous management/leadership is not valid alone. Neither is the assumption that the actions of one person are the equivalent of many individual wills and the cause of outcomes. Hence, we want furfure research to take an alternative approach to investigating organizational practice. Researchers should perform a continuous study in one or more organizations over a significant period of

time, say a year in minimum. This way the real consequences and cause-relationships may be visualized and strengthen the research as management and leadership is not something universal which function the same way the day after tomorrow.

But, there aren't just case studies that apply to the empirical investigation of organizations. We want to propose a field experiment or similar of where a human oriented portal solution becomes tested. This human oriented portal should be customized to the user based on his position and discipline, and the interface should be possible to customize even further by the user himself. Same goes for virtual communication. An experiment addressing knowledge utilization difficulties comparing different virtual communication mediums should be an interesting pursuance.

The knowledge management field of research is enormous and there is so much interesting to investigate further. This is only a fraction of possible approaches to further research; there is so, so much more...

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Appendix A: Interview Guide

Case study protocol, herav kalt «intervjuguiden», avviker fra en spørreundersøkelse og er mer enn en samling av spørsmål. I tillegg til spørsmålene inneholder intervjuguiden retningslinjer og prosedyrer forfatterne benytter for å berike den empiriske delen av masterstudiet, intervjuene så vel som observasjoner på arbeidsplassen. Denne skal sørge for at forfatterne oppnår de mål og problemstillinger som ble satt som utgangspunkt for oppgaven.

Oversikt

Herunder beskrives kort formålet og konteksten rundt den empiriske delen av masterstudiet, herav kalt «case studiet».

Det er enkelte aspekter du simpelthen ikke kan få svar på gjennom litteratur, og vi ønsker gjennom et case studie å redegjøre for hvor vidt vårt litteraturstudie og synspunkter har noe validitet i praksis. Praktikere i rollen som forfattere innenfor kunnskapsledelse har minsket kraftig siden 90-tallet, vi ønsker å se om disiplinen er blitt rent akademisk og hvorvidt den har mistet fotfeste i næringslivet. I tillegg til å ta opp elementer fra teorien er vi også ute etter å undersøke om våre egne observasjoner og antakelser har røtter i virkeligheten. Angrepsvinkel er fortsatt fra et ledelsesperspektiv, hvor spørsmål og formål er å belyse ledelsens ansvar innenfor de undertema vi har valgt å undersøke i masteroppgaven.

Hvorfor case studie

Som en forutsetning i masteroppgaven er vi pålagt fra universitetet å benytte en eller annen form for empiri. Siden vi tar utgangspunkt i funn og problemstillinger fra allerede gjennomført prosjektoppgave, og temaet vårt er så abstrakt som det er, falt det naturlig å foreta et kvalitativt case studie. Dette for å kunne styre og «grave» hvor vi måtte ønske, og styre oppgaven i ønsket retning. Frihet til å justere og etterforske kontinuerlig gjorde valget enkelt. Vi har tilgang på en organisasjon som passer vår beskrivelse av kunnskapsintensiv prosjektorganisasjon, hvorav intervjuer, dokumentasjon og annen observasjon er lett tilgjengelig siden en av forfatterne jobber i organisasjonen.

Vi håper gjennom ustrukturerte intervjuer, observasjoner og tilgang til dokumentasjon, å få noen svar i tillegg til å støtte på ytterligere spørsmål og vanskelige aspekter ved kunnskapsdeling og utnyttelse i en slik kontekst.

Hvorfor intervjuguide

Intervjuguiden er opprettet med den intensjon og forklare leseren hvordan vi gikk fram i vårt empiriske arbeid. Intervjuguiden er også ment som et støtteverktøy for forfatterne i intervjuprosessen gjennom å være huskeliste, spørsmålsark osv. I tillegg til dette gir intervjuguiden muligheten til en mere nøyaktig tilbakemelding fra veileder.

Datainnsamling og prosedyre

intervjuet:

Forfatterne har begge et forhold til casebedriften, hvorav én jobber deltid og den andre har hatt sommerjobb der tidligere. Tilgang til aktuelle intervjuobjekter i ulike ledd i organisasjonen har derfor vært uproblematisk.

Tidsbruk – det settes av 1 time til hvert intervju, uavhengig av stilling. Forespeilet tidsbruk er merket i rødt for vært spørsmål og ca hvor mange minutt det skal ha gått før vi begynner på et nytt tema (kumulativ).

Dato – intervjuene gjennomføres 28 og 29 april.

Oversikt – Det stilles først 3 innledende spørsmål (med forklaringer) og så 2-5 spørsmål innenfor vært av temaene i masteroppgaven: Virtualitet, Lederskap, Portal og Jr./Sr. – relasjoner.

Datainnsamling og rollefordeling – Spørsmål stilles av Andreas, Magnus er referent. Data blir tatt opp på diktafon samt notert av Magnus, noe som det blir opplyst om på forhånd. Dette for å lette analysen av materialet i etterkant.

Forberedelser:

Magnus bistår å holde øye med tiden og opplyser om når det nærmer seg limit mtp. hvert tema. Omtrent tidsbruk per tema er noe forskjellig mellom de forskjellige stillinger og tema. Intervjuguide og spørsmål oversendes veileder for godkjenning 23.04.2014

Huskeliste:

- Telefon med diktafon-applikasjon
- PC
- Notatblokk og penn
- Intervjuguide og spørsmål
- Booking av tidspunkt med intervjuobjekt
- Booking av møterom
- Kaffe og boller (kjøp boller)

Intervjuobjekter (Husk at dette er anonymt og skal ikke oppgis i vedlegget):

- Regionsjef
- Disiplinleder/personalansvar
- Prosjektleder/Senioringeniør (over 20 års erfaring)
- Senioringeniør (over 20 års erfaring)
- Prosjektingeniør - Yngre senior (3-4 års erfaring)
- Prosjektingeniør - Yngre senior (3-4 års erfaring)
- Prosjektingeniør – Junior (under 1 års erfaring)
- Prosjektingeniør- Junior (under 1 års erfaring)

Observasjoner på arbeidsplassen

- I tillegg til intervjuer har data kontinuerlig blitt innsamlet av forfatterne gjennom observasjoner som deltidsansatt gjennom to år og fulltids sommerjobber.
 - Interaksjoner, prosedyrer etc.

Øvrige retningslinjer

Empirisk undersøkelse fører til store mengder data, i form av dokumenter, opptak osv. Den avsluttende del av intervjuguiden viser hva vi som forfatterne har tenkt til å gjøre med innsamlet data i sitt videre arbeid. Avsnittet viser også tiltak ved avvik og sikring av organisasjonen- og intervjuobjektene anonymitet.

Tiltak ved avvik:

- Ved sykdom blant forfatterne forsøkes intervjuene gjennomført av kun den friske, eller utsette intervjuene.
- Ved sykdom blant intervjuobjekter eller andre uforutsette hendelser som gjør det vanskelig å stille til intervju forsøkes det å få til intervju med en annen i organisasjonen med lik bakgrunn og rolle i organisasjonen. Hvis dette viser seg vanskelig prøves det å få til et intervju påfølgende dager.
- Feil med PC eller Diktafon: Vi har med backup PC, og backup mobil med diktafon-applikasjon.
- Hvis det viser seg at spørsmålene er upresise, vanskelig å forstå eller ikke belyser de emner som er forespeilet tas dette på sparket av ordstyrer underveis i intervjuet.

Anonymitet:

- Casebedriften vil ikke under noen omstendighet bli omtalt med navn i rapporten. Casebedriften betegnes som en «technical consultancy» eller relatert til industrien «construction».
- Intervjuobjekter trenger ikke oppgi navn, og informasjon de gir vil ikke bli brukt til annet formål enn å belyse temaene i masteroppgaven.
- Full anonymitet av Bedrift og Intervjuobjekter.

Som en avsluttende del av intervjuguiden, før selve spørsmålene, presenterer vi en anbefaling av Yin (2012) som vi skal prøve å ha i bakhodet ved gjennomførelse av intervjuer og obsjervasjoner på arbeidsplassen. Han foreslår fire ønskede «krav» eller forutsetninger for en god case study:

- *Stille gode spørsmål* – og samtidig ha en spørrende tilnærming til eventuelle svar
- *Være en god «lytter»* - og unngå å låse deg til etablert teori eller ulike «hypoteser» fra forhånd.
- *Være tilpasningsdyktig* – slik at «nye» situasjoner blir sett på som muligheter, og ikke truslers
- *Unngå skjevheter (biases)* ved å være følsomme for motbevis, også vite hvordan man skal forske i tråd med etiske linjer

Spørsmål

Hjertet i intervjuguiden er de *verbale* spørsmålene vi stiller intervjuobjektene og de *mentale* tipsene/hjelpelinjer/underspørsmål vi har notert for oss selv for å sikre det vi ønsker av intervjuet.

Spørsmålene nedenfor, med underspørsmål og «retningslinjer», vil fungere som en guide. Spontane oppfølgingsspørsmål kan likevel tenkes brukt underveis dersom det ansees som fordelaktig. Spørsmålene er med hensikt relativt åpne, og vi som intervjuere prøver å unngå å stille ledende spørsmål. Dette håper vi gir spillerom for ulike tolkninger og egne meninger. Spørsmålene som stilles er uthevet, og eventuelle underspørsmål i normaltekst. Spørsmålene er sortert etter type intervjuobjekt og under kategorier.

Innledningsspørsmål og forklaring som gis til samtlige:

Du må være forberedt på veldig åpne spørsmål, vi har en del oppfølgingsspørsmål og kan utdype nærmere hva vi er ute etter for hvert enkelt spørsmål. Men spørsmålene er med vilje formulert åpne slik at vi skal være minst mulig styrende, og vi håper du kan bable i vei og tolke det dit du vil, så kan vi skyte inn og styre om det avviker veldig fra vår intensjon.

Vi tar jo utgangspunkt i rimelig abstrakt og kanskje lite anvendbar teori, og vi tenker som en start at kan det være greit å kartlegge hva ansatte egentlig tenker å vet om konseptet kunnskap. Dette for å se om vi har en felles forståelse. Kan du prøve å relatere kunnskap til data og informasjon?

- **Vil du si at kunnskapsutnyttelse du støter på til daglig er en emergent eller ubevisst prosess eller noe som er styrt og planlagt prosess der du er klar over at du deler eller utnytter kunnskap?**
- **Anser du bedriften som opptatt av kunnskaps- deling og utnyttelse på tvers av organisasjonen? Og hva ser du som de største framtidlige utfordringer for BEDRIFTEN ift. til kunnskapsdeling?**
 - Er det noe ledelsen initierer og oppfordrer til?
 - Er det noe formelt pålagt av ledelsen eller er det helt uformelt og naturlig for en organisasjon som bedriften i en sånn setting dere arbeider i?
 - Er det kultur blant ansatte for kunnskaps- deling og utnyttelse?
- **Kjenner du til retningslinjer, prosedyrer eller formelle initiativer hva gjelder kunnskapsdeling i organisasjonen? Føler du bedriften er organisert for å utnytte kunnskap optimalt, i såfall hva bør være gjort annerledes?**
 - Et eksempel er kontorlandskap
 - Byråkrati, er det veldig mye vertikale kanaler mtp. kommunikasjon som hindrer fri flyt av kunnskap?
 - Finnes det communities of practise eller forum der kunnskap deles

Prosjektingeniører:

Menneskelige aspektet ved portal:

- **Hvordan, og i hvilken grad benytter du portalen til kunnskaps-delning og utnyttelse?**
 - Bruker du den slik det er meningen du skal bruke den?
 - Har du bidratt til erfaringsdeling og utnyttelse via portalløsningen, forklar i så fall.
 - Hvordan ser du for deg du kunne utnyttet portalløsningen bedre?
 - Vet du hvordan du får tak i best practise i portalløsningen?
 - Er det intuitivt og enkelt? Føler du at du kan ta opp slik dokumentasjon og lære og utnytte noe av dette direkte i den form det har?
 - Brukes den i det hele tatt til slike formål eller ender det med at du henvender deg til andre mennesker og permer med dokumentasjon likevel?

- **Har du noen forslag til hvordan portalen kunne fungert bedre, altså organisert annerledes.**
 - bør den for eksempel være mer «menneskelig-orientert», ved at det f.eks. fungerer som en form for «Gule sider» som angir hvem man bør ta kontakt med for å få den informasjon du trenger?
 - Eller andre måter å organisere best practisen på

Virtualitet:

Innledende spørsmål, stilles alle:

- **Hva legger du i «virtuelt» arbeid?**
 - Forklare hvis dette er uklart.

- **Hvordan synes du måten å kommunisere via mail, lync o.l. virtuelle løsninger fungerer?**
 - Er dette noe du behersker?
 - Kan den erstatte face-to-face interaksjon på noe måte?
 - Hva må i så fall til for at den kan være en velfungerende substitutt?

Øvrige Spørsmål virtualitet:

- **Har du opplevd å jobbe i et virtuelt team, hvor du har delt erfaringer med andre aktivt som sitter utilgjengelig for en face to face samtale?**
 - Hvordan synes du dette fungerte? Var det vanskelig på noen måte?
 - Til hvilken grad føler du at tillit og gode relasjoner har påvirkning på virtuell kommunikasjon og erfaringsdeling?

- **Har du opplevd at kunnskap/erfaringer har «forsvunnet» i form av tapt eller mistolket mail e.l.?**
 - Forklar
 - Er det virtualiteten som gjør det slik? Altså vil dette vært lettere face- to- face tror du?

- **Hvordan tror du virtuelle hjelpemidler kan hjelpe på kunnskapsdeling og utnyttelse, burde det vært brukt annerledes i BEDRIFTEN, å i så tilfelle hvordan?**
 - Er det noe ledelsen kan eller burde gjøre for å facilitere dette i en virtuel setting?

Junior/Senior-relasjoner

- **Hvem føler du at du lærer mest av på arbeidsplassen, er det seniorer, yngre seniorer eller juniorer som deg selv?**
 - Kan du utdype hos hvem du lærer hva?
 - Teknisk? Data og software? Lederskap, og sosiale retningslinjer osv?
 - Har du èn senior du støtter deg til eller har du flere?
 - Hvordan selekterer du eventuelt ut hvem du skal spørre om hva eventuelt?

- **Er det noen seniorer eller andre du lærer fra du føler er flinkere enn andre? Hvilke egenskaper har de du lærer fra og hvilke egenskaper mener du er viktig for å lykkes med kunnskapsdeling i en sånn setting?**
 - Er de rett og slett bare pedagogiske hyggelige mennesker?
 - Er det fordi at de tar seg tid til deg, bruker de historiefortelling eller er andre metoder som gjør dem til dyktige lærere?
 - Spiller vennskap til personen noen rolle for lærdom eller kunnskapsdeling for din del, og hvor viktig er en bra match i et mentorforhold tror du?

- **I hvilken setting deler du selv kunnskap? Og til hvem i så tilfelle? (4)**
 - Hender det seg at du lærer en senior noe? For eksempel data, software osv.
 - Er det andre ting du føler du kan bidra med til seniorer og andre i bedriften, som for eksempel ferske synspunkter fra utdanning eller andre områder hvor du kan bidra?

- **Har du noen synspunkter på hvordan bedriften bør organisere mentorprogrammer eller andre initiativer for å styrke kunnskapsdeling og utnyttelse mellom ansatte?**
 - Bør det være formelle junior/senior relasjoner hvor de plasseres i lag, hvor senioren har et formelt ansvar for utviklinga til junioren?
 - Eller rent uformelt hvor det ikke foreligger noe ansvar utenom å bistå junioren faglig innenfor sin spesialisering?
 - Bør det foretas en matchingsprosess for å se om de kan passe ilag, før sette ilag en junior på et prosjekt med en senior.

- **Føler du at du blir utfordret og får tilstrekkelig faglig input av seniorer og ledelsen din?**
 - føler du at du blir satt til repetitive oppgaver du anser deg overkvalifisert for?
 - Eksempelvis DAK'ing som kanskje en teknisk tegner kunne gjort like bra?
 - Setter bare senior bort zombiearbeidet til dere juniorer føler du?

Leadership behavioural:

- **Kan du fortelle om ditt inntrykk av prosjekt- og linjeleders rolle ift. kunnskapsdeling i organisasjonen?**
 - På hvilken måte merker du fokus fra ledelsen, hvordan viser de engasjement i denne sammenheng? Har det blitt tatt opp ved allmøter eller prosjektoppfølgingsmøter for eksempel?
 - Hvilken rolle synes du det er naturlig at lederen har ift. kunnskapsdeling og utnyttelse?
 - Som en «Megler»?
 - Kontinuerlig innsats og involvering eller bare ved oppstarten av et initiativ, formelle retningslinjer osv?

- **Hvilke egenskaper og personlighetstrekk tror du trengs for å lede kunnskap i bedriften?**
 - Kan nevne noen eksempler: hva med - Karismatisk? Driv? Motivasjon? Ærlighet og lojalitet? integritet? selvsikkerhet? Faglig styrke? Bransjekompetanse?
 - Er det andre egenskaper likevel nødvendig for å bli en god kunnskapsleder tror du?

- Er det noe du tror de er født med eller er det ting man kan utvikle?
- **På hvilken måte føler du at du blir belønnet for å dele kunnskap?**
 - Er det bonuser?
 - Annen ikkemonetær annerkjennelse du kjenner til? Er det for eksempel gitt oppmerksomhet på portalsiden, en flaske vin, noen ord ved fredagskaken, stjerne i boka hos ledelsen, rett og slett bare følelsen av å bli «populær» blant ansatte?
 - Eller er det en belønning i seg selv at du får vist hva du kan, vær ærlig?
 - Hvilken innvirkning tror du dette i såfall vil ha for kunnskapsdeling i organisasjonen?

Prosjektledere:

Menneskelige aspektet ved portalen:

- **Hvordan, og i hvilken grad benytter du portalen til kunnskaps-delning og utnyttelse?**
 - Bruker du den slik det er meningen du skal bruke den?
 - Vet du hvordan du får tak i best practise i portalløsningen? er det intuitivt og enkelt?
 - Brukes den i det hele tatt til slike formål eller ender det med at du henvender deg til andre mennesker og permer med dokumentasjon likevel?

- **Har du noen forslag til hvordan portalen kunne fungert bedre, altså organisert annerledes.**
 - bør den for eksempel være mer «menneskelig-orientert», ved at det f.eks. fungerer som en form for «Gule sider» som angir hvem man bør ta kontakt med for å få den informasjon du trenger?
 - Eller andre måter å organisere best practisen på

- **Hvordan synes du rollefordelingen bør være i arbeidet med portalløsninger?**
 - Hvem har i dag ansvar for hva?
 - Hvem synes du egentlig er skikket til dette, og bør bruke sin verdifulle tid på å få til en velfungerende portal? Er det Toppledelsen, prosjektledere, prosjektdeltakere eller andre som bør sørge for at den fungerer i tråd med sitt formål og at den er oppdatert?

Virtualitet:

Innledende spørsmål, stilles alle:

- **Hva legger du i «virtuelt» arbeid?**
 - Forklare hvis dette er uklart.

- **Hvordan synes du måten å kommunisere via mail, lync o.l. fungerer?**
 - Er dette noe du behersker?
 - Kan den erstatte face-to-face interaksjon på noe måte?
 - Hva må i så fall til for at den kan være en velfungerende substitutt?

Øvrige Spørsmål virtualitet:

- **Har du opplevd å jobbe i et virtuelt team, hvor du har delt erfaringer med andre aktivt som sitter utilgjengelig for en face to face samtale?**
 - Hvordan synes du dette fungerte? Var det vanskelig på noen måte?
 - Til hvilken grad føler du at tillit og gode relasjoner har påvirkning på virtuell kommunikasjon og erfaringsdeling?

- **Har du opplevd at kunnskap/erfaringer har «forsvunnet» i form av tapt eller mistolket mail e.l.?**
 - Forklar
 - Er det virtualiteten som gjør det vanskeligere å tilegne seg kunnskap? Altså vil dette vært lettere face- to- face tror du?

- **Hvordan tror du virtuelle hjelpemidler kan hjelpe på kunnskapsdeling og utnyttelse, burde det vært brukt annerledes i BEDRIFTEN, å i så tilfelle hvordan?**
 - Er det noe ledelsen kan eller burde gjøre for å facilitere dette i en virtuel setting?

Junior-senior relasjoner:

- **Et moderne mentorforhold kan sammenlignes med «master / apprentice forholdet» man så mye av før i tiden, som smedlærling, bakerlærling osv. Føler du at du har et tilnærmet forhold med en junior i organisasjonen?**
 - Har du hatt ansvar for en juniors faglige utvikling, enten noe du har følt på sjøl eller noe som formelt har blitt lagt ned av ledelsen?

Spørsmål hvis ja:

 - Kan du bare fortelle litt om det forholdet, løst og fast?
 - Formelt/uformelt?
 - Selekeringsprosess?
 - Hva er din rolle?
 - Hva gir det deg? Og hva gir det junior tror du?
 - Fungerer du som sosial fadder eller kun faglig mentor?
 - Spiller vennskap til personen noen rolle for lærdom eller kunnskapsdeling for din del og hvor viktig er en bra match i et mentorforhold tror du?

Spørsmål hvis nei:

 - Kan du forklare hvordan det fungerer i BEDRIFTEN?
 - Blir junior satt i et prosjekt under vingene til en senior med tett oppfølging eller er det overhodet ingen retningslinjer rundt dette?
 - På hvilken måte henvender junior seg til deg med profesjonelle oppgaver han trenger bistand seg til?
 - Er det mer som at senioren i organisasjonen brukes på tvers og som en «pool» av kunnskap i stedetfor en dedikert senior til en junior.

- **Er det situasjoner hvor det reverseres og du søker kunnskap hos en junior?**
 - Datakunnskaper, tegneprogram eller annen IKT relaterte problem foreksempel?
 - Ser du noen verdi i nyutdannes perspektiver direkte fra skolebenken, og i hvilken grad benyttes det eventuelt?

- **Har du noen synspunkter på hvordan bedriften bør organisere mentorprogrammer eller andre initiativer for å styrke kunnskapsdeling og utnyttelse?**
 - Bør det være formelle junior/senior relasjoner hvor de plasseres i lag og hvor senioren har et formelt ansvar for utviklinga til junioren?
 - Eller rent uformelt hvor det ikke foreligger noe ansvar utenom å bistå junioren faglig innenfor sin spesialisering?
 - Bør det foretas en matchingsprosess for å se om de kan passe ilag, før en setter en junior på et prosjekt med en senior.

- **Tror du det er visse egenskaper en junior bør ha for å effektivt tilegne seg kunnskap i et mentorforhold eller en annen uformell form for kunnskapsdelingsprosess mellom erfarne og uerfarne?**
 - Det er jo ikke tvil om at noen er flinkere til å være «lærer'n» er andre. Pedagogiske evner er jo alfa omega, men hva med andre veien tror du?
 - Du har sikkert noen formening om hvordan andre parten bør være?
 - Er de rett og slett bare hyggelige mennesker som er gode til å lytte?
 - Hva er dine erfaringer i interaksjon med nyansatte, hvilke karakteristikk stikker seg ut?
 - Spiller vennskap til personen noen rolle for lærdom eller kunnskapsdeling for din del?

Leadership behavioural:

- **Føler du at du som prosjektleder har noen som helst innvirkning og innflytelse på prosjektets kultur for kunnskapsdeling og samarbeid, eller er dette noe som gror organisk utenfor din kontroll?**
 - Er dette noe du fokuserer på eller forsøker å manipulere?
 - Konstruksjonsindustrien har often blitt forbundet med en sydebukk-kultur, hva tror du dette kommer av? Kan det stamme fra konkurranse mellom avdelinger og prosjekter? Hvorfor tror du konkurranse og mentaliteten «mitt prosjekt eller avdelingens» beste oppstår i slike firma?

- **På hvilken måte viser du som prosjektleder engasjement og support ift. kunnskapsdeling i ditt prosjekt og eventuelle bredere initiativer som blir iverksatt fra toppledelsen?**
 - Forklar

- På hvilken måte kommuniseres dette ut til prosjektdeltakere?
 - Har temaet blitt tatt opp, diskutert eller fremhevet ved et oppfølgingsmøte for eksempel?
- **Hvilke egenskaper og personlighetstrekk tror du trengs for å lede kunnskap i bedriften?**
- Denne trenger kanskje litt forklaring. Vi kan neve noen eksempler: Karismatisk? Driv? Motivasjon? Ærlighet og lojalitet?integritet? selvsikkerhet? Faglig styrke? Bransjekompetanse?
 - Er det andre egenskaper likevel nødvendig for å bli en god kunnskapsleder?
 - Er det noe du tror de er født med eller er det ting man kan utvikle?

Linjeleder:

Menneskelige aspektet ved portalen:

- **Hvordan er kulturen for å benytte portalen som et medium for kunnskapsutnyttelse i BEDRIFTEN? Blir det brukt mye i denne sammenheng eller bare «er det der»?**
 - Synes du i dag den fungerer som den skal og er intuitiv og enkel?
 - Blir det oppdatert og hvordan kan man vite at dette er gjeldende best practise?
 - Brukes den i det hele tatt til slike formål eller ender det med at dansatte henvender seg til andre mennesker og permer med dokumentasjon likevel?

- **Har du noen forslag til hvordan portalen kunne fungert bedre, altså organisert annerledes.**
 - bør den for eksempel være mer «menneskelig-orientert», ved at det f.eks. fungerer som en form for «Gule sider» som angir hvem man bør ta kontakt med for å få den informasjon du trenger?
 - Eller andre måter å organisere best practisen på

- **Hvordan synes du rollefordelingen bør være i arbeidet med portalløsninger?**
 - Hvem har i dag ansvar for hva, og hva er din rolle forøvrig?
 - Hvem synes du egentlig er skikket til dette, og bør bruke sin verdifulle tid på å få til en velfungerende portal? Er det Toppledelsen, prosjektledere, prosjektdeltakere eller andre som bør sørge for at den fungerer i tråd med sitt formål og at den er oppdatert?

Virtualitet: Innledende spørsmål, stilles alle:

- **Hva legger du i «virtuelt» arbeid?**
 - Forklare hvis dette er uklart.

- **Hvordan synes du måten å kommunisere via mail, lync o.l. fungerer?**
 - Er dette noe du behersker?
 - Er dette organisasjonen som helhet behersker?
 - Kan den erstatte face-to-face interaksjon på noe måte?
 - Hva må i så fall til for at den kan være en velfungerende substitutt?

Øvrige Spørsmål virtualitet:

- **Finnes det noen retningslinjer ved bruk av virtuelle hjelpemidler mtp. kunnskapsdeling i prosjekter?**
 - Kan ansatte bruke hva de vil av kommunikasjon og de står helt fritt til å bestemme hva de selv bruker?
 - Lync, mail, snagit , skype, tlf osv?
- **Har du opplevd eller lagt merke til at ansatte som har brukt mye tid ute hos kunde har mistet litt «loyalty» til BEDRIFTEN og dermed ikke like medvillig delt av sine erfaringer i organisasjonen?**
 - Leid ut fra bedriften til byggherre for eksempel over x antall år og lojaliteten er vel så stor ovenfor prosjektet og kunden som bedriften

Leadership behavioural:

- **Føler du at du som leder har noen som helst innvirkning og innflytelse på organisasjonens kultur for kunnskaps- deling og utnyttelse eller er dette noe som gror organisk utenfor din kontroll?**
 - Er et kriterie for ansettelse i Bedriften at personen passer kultur og harmonerer med organisasjonens verdier hva gjelder kunnskapsdeling?
 - Konstruksjonsindustrien har often blitt forbundet med en sydebukk-kultur, hva tror du dette kommer av? Kan det stamme fra konkurranse mellom avdelinger og prosjekter? Hvorfor tror du konkurranse og mentaliteten «mitt prosjekt eller avdelingens» beste oppstår i slike firma?
- **På hvilken måte viser du som linjeleder engasjement og support ift. kunnskapsdeling og eventuelle initiativer for å støtte dette?**
 - På hvilken måte kommuniseres dette ut til ansatte?
 - Har temaet blitt tatt opp, diskutert eller fremhevet ved et allmøte foreksempel?

- **På hvilken måte belønnes kunnskapsutnyttelsen i organisasjonen?**
 - Bonuser?
 - Annen ikkemonetær annerkjennelse du kjenner til? Er det for eksempel gitt oppmerksomhet på portalsiden, en flaske vin, noen ord ved fredagskaken, stjerne i boka hos ledelsen, eller rett og slett bare følelsen av å bli «populær» blant ansatte?
 - Hvilken innvirkning tror du dette i såfall vil ha for kunnskapsdeling i organisasjonen?

- **Hvilke egenskaper og personlighetstrekk tror du trengs for å lede kunnskap i en bedrift som bedriften?**
 - Kan nevne noen eksempler: Karismatisk? Driv? Motivasjon? Ærlighet og lojalitet? integritet? selvsikkerhet? Faglig styrke? Bransjekompetanse?
 - I hvilken grad tas det hensyn til lederegenskaper og personlighet i besetning av lederstillinger i organisasjonen?
 - Er det hovedsakelig faglig tyngde som blir prioritert, som en naturlig karrierestige hvor faglige spesialister innenfor fag utvikles til prosjektledere?
 - Ser du noen styrker/svakheter med denne «tradisjonen»?
 - Tror du både leder og arbeidere trenger noen spesielle egenskaper for å oppnå optimal kunnskapsutnyttelse i bedriften?

Vice president

Menneskelige aspektet ved portalen:

- **Hvordan er kulturen for å benytte portalen som et medium for kunnskapsutnyttelse i BEDRIFTEN? Blir det brukt mye i denne sammenheng eller bare «er det der»?**
 - Synes du i dag den fungerer som den skal og er intuitiv og enkel?
 - Blir det oppdatert? og hvordan kan man vite at dette er gjeldende best practise?
 - Brukes den i det hele tatt til slike formål eller ender det med at ansatte henvender seg til andre mennesker og permer med dokumentasjon likevel?

- **Har du noen forslag til hvordan portalen kunne fungert bedre, altså organisert annerledes.**
 - bør den for eksempel være mer «menneskelig-orientert», ved at det f.eks. fungerer som en form for «Gule sider» som angir hvem man bør ta kontakt med for å få den informasjon du trenger?
 - Eller andre måter å organisere best practisen på

- **Hvordan synes du rollefordelingen bør være i arbeidet med portalløsninger?**
 - Hvem har i dag ansvar for hva, og hva er din rolle forøvrig?
 - Hvem synes du egentlig er skikket til dette, og bør bruke sin verdifulle tid på å få til en velfungerende portal? Er det Toppledelsen, prosjektledere, prosjektdeltakere eller andre som bør sørge for at den fungerer i tråd med sitt formål og at den er oppdatert?

Leadership behavioural:

- **Hvilke egenskaper og personlighetstrekk tror du trengs for å lede kunnskap i bedriften?**
 - Kan nevne noen eksempler: Karismatisk? Driv? Motivasjon? Ærlighet og lojalitet? integritet? selvsikkerhet? Faglig styrke? Bransjekompetanse?
 - I hvilken grad tas det hensyn til lederegenskaper og personlighet i besetning av lederstillinger i organisasjonen?
 - Er det hovedsakelig faglig tyngde som blir prioritert, som en naturlig karrierestige hvor faglige spesialister innenfor fag utvikles til prosjektledere?
 - Ser du noen styrker/svakheter med denne «tradisjonen»?
 - Tror du både leder og arbeidere trenger noen spesielle egenskaper for å oppnå optimal kunnskapsutnyttelse i bedriften?

- **Føler du at du som leder har noen som helst innvirkning og innflytelse på organisasjonens kultur for kunnskaps- deling og utnyttelse eller er dette noe som gror organisk utenfor din kontroll?**
 - Er et kriterie for ansettelse i Bedriften at personen passer kultur og harmonerer med organisasjonens verdier hva gjelder kunnskapsdeling?
 - Konstruksjonsindustrien har often blitt forbundet med en sydebukk-kultur, hva tror du dette kommer av? Kan det stamme fra konkurranse mellom avdelinger og prosjekter? Hvorfor tror du konkurranse og mentaliteten «mitt prosjekt eller avdelingens» beste oppstår i slike firma?

- **På hvilken måte viser du som linjeleder engasjement og support ift. kunnskapsdeling og eventuelle initiativer for å støtte dette?**
 - På hvilken måte kommuniseres dette ut til ansatte?
 - Har temaet blitt tatt opp, diskutert eller fremhevet ved et allmøte foreksempel?

- **På hvilken måte belønnes kunnskapsutnyttelsen i organisasjonen?**
 - Bonuser?
 - Annen ikkemonetær annerkjennelse du kjenner til? Er det for eksempel gitt oppmerksomhet på portalsiden, en flaske vin, noen ord ved fredagskaken, stjerne i boka hos ledelsen, eller rett og slett bare følelsen av å bli «populær» blant ansatte?
 - Hvilken innvirkning tror du dette i såfall vil ha for kunnskapsdeling i organisasjonen?

Strategi:

- **I hvilken grad harmonerer strategien for kunnskapsledelse i bedriften med overordnede strategi, formål og forretningsfilosofi? (forbeholdt VP)**
 - Er det tatt hensyn i utarbeidelse?
 - Er det en forskyvning eller misfit?
 - Hvem er egentlig involvert i utarbeidelsen?

- **Tror du at BEDRIFTEN i dag misser forretningsmuligheter ved at tilgjengelig kunnskap i organisasjonen eventuelt ikke blir utnyttet til det fulle? (Forbeholdt VP)**

Appendix B: Reading template

How to Read the article (noter under hvert spørsmål)

Kommentar på hvordan lese den (ha I bakhodet) - "Take notes as you read the literature. You are reading to find out how each piece of writing approaches the subject of your research, what it has to say about it, and (especially for research students) how it relates to your own thesis: Skriv opp alle punktene for hver artikkel og svar på de så godt som overhodet mulig underveis, I tillegg til å notere det som er relevant for vår topic, samt quotes og tolkning osv. Hvis noen punkter blir besvart av andre punkter, blir for vanskelige eller ikke er relevant for artikkelen bare la dem stå blank"

- Is it an empirical report, a theoretical study, a sociological or political account, a historical overview, etc? All or some of these?
Svar:
- Does it follow a particular school of thought?
Svar:
- What is its theoretical basis? (e.g., psychological, scientific, developmental, feminist osv)?
Svar: managerial, economics
- Is it clearly defined? Is its significance (scope, severity, relevance) clearly established? What definitions does it use for key "begreper"?
Svar:
- What is its general methodological approach? What methods are used?
Svar:
- Relateres den til emergent, governance e.l.?
Svar:
- Hvilken managerial perspektiv har han? Hvordan tar han opp ledelse i artikkelen, har han et bestemt syn eller tar han egentlig ikke for seg ledelsen?
Svar:
- På hvilken måte kan dette generaliseres til vår type bedrift. hvilke forutsetninger setter forfatteren?
Svar:

Egne notater fra artikkelen (selve analysen/sammendraget), som hva som er relevant i forhold til emnet vårt. Noe du vil ta med videre eller analysere videre. Som om du skulle skrevet et «sammendrag» eller «analyse» av artikkelen uten alle spørsmålene over

Svar:

Sitater/påstander du vil trekke fram/bruke:

Svar:

Referanser fra artikkelen du vil se på:

Svar:

Annet:

Svar:

How to be critical (samme prosedyre som for innhold):

- **MERK DEG NYE SØKEORD MENS DU LES.**
- In a research study, how good are the basic components of the study design (e.g., population, intervention, outcome)? How accurate and valid are the measurements? Is the analysis of the data accurate and relevant to the research question? Are the conclusions validly based upon the data and analysis?
Svar:
- Er artikkelen mye sitert? Annerkjent? Forfatteren respektert? Tenk kredibilitet, reliability, validity osv..
Svar:
- Analyser Strength and weaknesses?
Svar:
- selecting elements from existing arguments and reformulating them to form a synthesis: a new point of view on some subject matter;
Svar:
- Identifying errors in a criticism made by another to provide correction and balanced criticism thereby advocating the usefulness of the original work and reasons for rejecting the criticism made of it.
Svar:
- **Sitater/påstander du vil trekke fram/bruke:**
Svar:
- **General Criticism**
Svar: