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Controlling the Autonomous

A Case Study about Control in Knowledge-Intensive Firms

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"How I complete my tasks is none of their damn business"

- Engineer

Abstract

During the late 20th century, large parts of the contributions to management theory consisted of concepts on management control systems. The purposes of these were often focused on manual labor and they directed the effort to control employees in order to get competitive advantage, typically through increased productivity (Simons, 1990). Today, however, the focus has shifted from control in labor-intensive firms to control in the knowledge-intensive firm (Drucker 2007). The purpose of this thesis is therefore to get a richer understanding of management control systems in a knowledge-intensive firm, as well as contributing with illustrative empirical data on the subject. Through a qualitative case study of a highly technological firm we seek to understand how control mechanisms affect the knowledge-worker and his or hers productivity. During our study we found two positive areas of effect the control mechanisms can have on the knowledge-worker. They can (1) structure the work of the knowledge-worker, as well as (2) be used to increase the productivity. The study is based on the management control system package by Malmi and Brown (2008), together with various theories on knowledge and knowledge-intensive firms. We argue for customization of control mechanisms in order to get desired effect, which should be done in adherence to Drucker's (1999) six factors of productivity.

Key words: Management Control Systems, Management Control Systems Package, Knowledge-intensive firm, Case Study, Productivity, Structure

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1. Introduction

This chapter will address the background that is the foundation to the purpose of this study. We also define what we want to accomplish with the study and outline the disposition of the paper.

1.1 Background

One of the largest shifts in human welfare through modern history is arguably seen as the industrialization of nations in late 19th and throughout the 20th century (Midgley, 1986). During the 20th century most of the contributions to management theory focused on increasing the productivity of manual workers. Today however, according to Drucker (2007), the focus has to some extent shifted. Today, the most important contribution to management theory is centered on knowledge workers and the knowledge-intensive firm (from here on called KIF). Through new technology and innovations, welfare can once again get a boost like it did during the industrialization of nations.

A recent publication by OECD stresses the importance of technology in today's industry, and the need for continuous growth within it. The publication centers the focus on KIFs and the significance of them in the global economy. Through expanding smart infrastructure, such as mobile-communication stations and Internet, OECD argues that the world will benefit substantially (OECD, 2013).

Many contributions to management theory in 20th century consisted of various concepts on management control systems (from here on called MCS). The concepts during this era focused on labor-intensive work and how to control the employees in order to get competitive advantage, through for example increased productivity within the firm (Simons, 1990). Today, on the other hand, we argue that new contributions to theories on MCS are few. The once commonly used concepts on MCSs are today somewhat ineffective for KIFs due to the focus on labor-intensive work. We argue that there is a need for contributions to the area in order to deepen the knowledge for how KIFs and their employees are controlled. The focus that MCSs have on productivity of the manual worker needs to be shifted to productivity of the knowledge worker. In the book 'Management Challenges for the 21st Century' Peter Drucker (2007) states the following:

"The most important, and indeed the truly unique, contribution of management in the 20th century was the fifty-fold increase in the productivity of the MANUAL WORKER in manufacturing. The most important contribution management needs to make in the 21st century is similarly to increase the productivity of KNOWLEDGE WORK and the KNOWLEDGE WORKER. The most valuable assets of a 20th-century company were its production equipment. The most valuable asset of a 21st-century institution, whether business or nonbusiness, will be its knowledge workers and their productivity." (Drucker, 2007, p. 118)

We will in this thesis therefore contribute to existing theory on the concept of MCSs by modifying it to fit theories on KIFs and their employees. We argue that this is an important area to study due to the effects it can have on the productivity of KIFs.

1.2 Purpose

The purpose in this study is to examine which mechanisms of control are active in a KIF and how a MCS should be applied in order to effectively control knowledge-workers.

There are several publications today issued on the concept of controlling a KIF, but they lack depth on how MCSs should be configured for best efficiency in the firm. One of the central publications on the area of controlling KIFs is Cages in Tandem, by Kärreman and Alvesson (2004). They discuss two different types of control in a KIF, the technocratic and the socio-ideological. The technocratic control can be described as formal control, where budgets, procedures and governance structure are central, while the socio-ideological centers on more cultural controls such as values, symbols and identity. They further argue that these two control types can be tight or loose depending on how the firm operates. In a KIF, they argue there should be loose technocratic control, while the socio-ideological should be tight.

We argue that this description is interesting, yet vague, and does not proclaim which types of technocratic or socio-ideological control that a KIF should focus on. We therefore strive to nuance this theory through going deeper and understanding which components of control make up the socio-ideological and technocratic controls, and more importantly, which of them that are active. By active we mean which controls are used and have a controlling effect on knowledge-workers. We will sequentially try to determine which control mechanisms are the most effective in a KIF.

To conclude, the purpose of this thesis is to:

- Provide empirical illustrations of control in a KIF.
- Contribute to a richer understanding of which controls are well suited for KIFs, when controlling knowledge-workers.

1.2.1 Research Question

Following the purpose of this thesis, we will try to answer the following research questions:

1. Which control mechanisms are active in a KIF?
2. Which control mechanisms are effective and important in a KIF when controlling the knowledge-worker?

1.3 Disposition

Chapter 2

This chapter presents an overview of our study design. We will explain and motivate our choice of methodology, research approach, as well as choice research design.

Chapter 3

Chapter three addresses relevant literature and theories that will be used during the analysis of empirical findings.

Chapter 4

Chapter four includes our empirical findings, mainly from our case company, structured according to our theoretical framework presented in chapter 3.

Chapter 5

Chapter five contains our analysis of the empirical data. We will give our perception of important and applicable mechanisms of control in a KIF.

Chapter 6

Chapter six will summarize our analysis and present our main conclusions. It will also contain discussion about implications for the future.

2. Methodology

We will in the following section present an overview of our study design. We will explain and motivate our choice of methodology, research approach, as well as choice research design. This section will also give an explanation of chosen data collection method and analysis approach. Lastly, a discussion of the quality of the study will take place.

2.1 Qualitative Methodology

We choose to use a qualitative methodology in this study. The qualitative methodology emphasizes words as a form of data, which has an unstructured character (Bryman and Bell, 2013). Part of the research will therefore be focused on interpreting and analyzing the data, in order to formulate thoughts and ideas around the subject at hand.

One of the advantages with conducting a qualitative study is the opportunity to use subjective information. The methodology grants the chance to understand at a deeper level why a phenomenon is the way it is. Rather than asking when, how and what, the qualitative methodology leaves room for asking why (Bryman and Bell, 2013), which is one of the core reasons to its appropriateness in this study.

One of the disadvantages however is the fact that assumptions are hard to generalize and make outside the scope of the sample. The possibility to gather vast amount of information from a large quantity of sources is practically impossible, since the methodology is often time consuming (Bryman and Bell, 2013). However, we find that in this study, the importance of subjectivity and in-depth analysis on the subject is far more important than creating a generalizable theory with many different sources. The alternative to the qualitative study would be the quantitative one, which would not fit the purpose of this study, since the focus is on understanding which control mechanisms work in a knowledge-intensive firm and *why*. The answers to our research questions are also characterized by subjectivity, since it is based on the thoughts and perceptions of employees.

Because of the exploratory purpose and in-depth analysis needed to grasp this topic, we find the qualitative methodology to fit this study well. The methodology is commonly used to identify concepts and contribute to existing theory surrounding a specific phenomenon, which is the purpose of this study (Bryman and Bell, 2013).

2.2 Abductive Approach

The two approaches most commonly used are labeled as deductive and inductive. The two approaches differ drastically. The deductive approach can roughly be described as an approach that focuses on deducing a hypothesis, which is created from theory through empirical data to test if the theory is valid. On the contrary, research through an inductive approach seeks to study empirical data, which then is interpreted and analyzed with the aim to create theory (Bryman and Bell, 2013).

In this study we will use an abductive approach. The abductive approach is argued to be the most common in case study research (Alvesson and Sköldberg, 1994). Abduction is characterized as continuous leaps between theoretical assumptions and empirical observations. This means that the approach is a sort of mix between inductive and deductive. The purpose of this approach is to understand as much as possible about the problem that is being analyzed (Alvesson and Sköldberg, 1994).

The advantage with abduction is its ability to use the best parts of both the inductive approach and the deductive approach, while at the same time avoiding their weaknesses. However the abductive approach has its disadvantages. Alvesson and Sköldberg (1994) argue that abduction increases the need for good reliability, since the results cannot be checked in a logical manner as with deduction and induction.

Since we strive towards understanding how control mechanisms work in a knowledge intensive firm, we will make continuous leaps between theory and empirical findings in order to get the deepest knowledge towards understanding the situation at our case company. Abduction is well fitted for this study since existing theory is being tested continuously while conducting empirical gathering. We find that this approach is good when the aim is to contribute extensions to existing theory.

2.3 Research Design

The aim with this study is to contribute to already existing theory, and considering the nature of the problem studied, we find a case study appropriate. Several researches have argued that the case study is a good research design when building or contributing to existing theories (Eisenhardt, 1989).

A case study is most commonly defined as a study of a specific place, organization or even a single person. The idea with using a case study is to get a deep and detailed knowledge about a specific area, which fits with a qualitative methodology well. Through combining observations, semi-structured interviews as well as documentations from the firm, we will decrease the risk of obtaining poor data from one single source. Instrumental case studies, as the one conducted in this study, focuses on retrieving an understanding of general questions or problems. The aim is to see how employees in KIFs are controlled, and we can therefore label this study as a critical case study, which is used in order to get a deeper understanding about a special situation, in which the case fits the qualifications of the problem (Bryman and Bell, 2013).

The case study approach does however have some disadvantages. The fact that cases are hard to generalize from is rather evident. With a single case as basis for empirical data, the results may be case-specific, and not applicable to other situations. This can however, also be seen as strengthening since the purpose of a case study is often the specific data it produces. The lack of generalizability is merely a result of the in-depth data gathered. Another problem concerning the case study design is the risk of biased results. This is however decreased through using multiple data gatherers during the interviews and observations in our study (Bryman and Bell, 2013; Eisenhardt, 1989).

2.3.1 The Case Company BMOD

Our case-company is the business unit Modems within Ericsson. Business unit Modems, or BMOD as we will call it from this point, is one of the three leading producers of multimode modems for mobile phones, tablets and other connected devices. The multimode modems support all major access technologies, e.g. LTE, HSPA and EDGE (Ericsson, 2014a).

In august 2013, development of modems was taken back to Ericsson after having been a part of a 50/50 joint venture-company between Ericsson and STMicroelectronics for nearly five years (Ericsson, 2013). When the companies created the venture in 2008, STMicroelectronics brought 2G/EDGE-technology to the table along with multimedia and connectivity solutions. Ericsson contributed with 3G and LTE platform technology and both companies included well-established customer relations with major actors to the newly started company (Ericsson, 2008).

The company did not become the success story the founders had hoped for and in March 2013 the company announced that product portfolio was divided between the respective parent company and the joint venture sized to exist. When the portfolio was divided, Ericsson took over the development of thin LTE modems while STMicroelectronics kept the remainder of the products except for GNSS (Global Navigation Satellite System) that was sold to a third party (Ericsson, 2013).

Since the break-up with STMicroelectronics, BMOD have focused on developing the thin multimode modems and establish the company as one of the prime suppliers on the market. Today the company has approximately 1800 employees around the world. The majority of those work in R&D at one of the four main R&D sites located in Lund (which also include the head office); Nurnberg, Germany; Bangalore, India and Beijing, China. The remaining employees are spread around the world from Redmond in the northwestern part of the US to Yokohama, Japan working with R&D, sales and operations.

BMOD is the least integrated business unit within Ericsson as seen in the figure below, partly because it is the newest addition to the company and partly because the BMOD is different from other units in Ericsson regarding customers and business model.

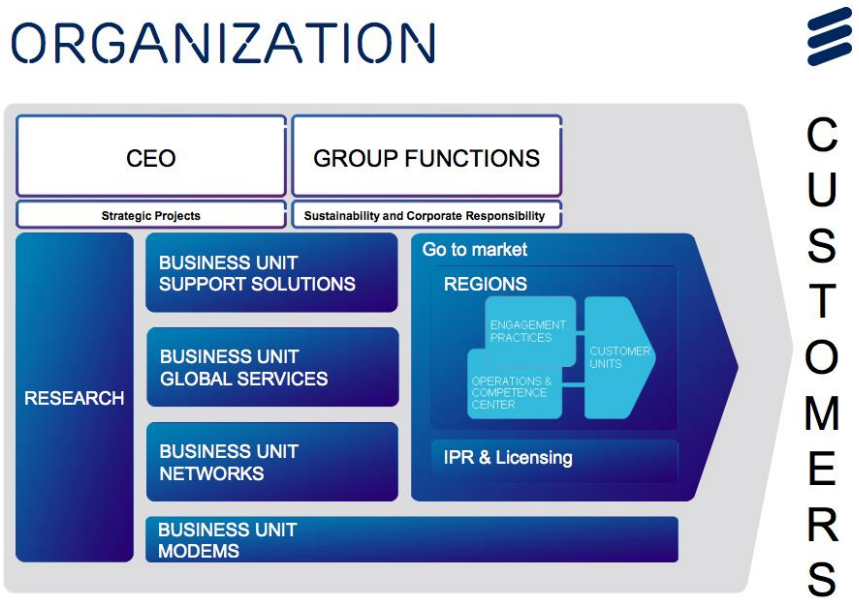

Figure 2.1 (Ericsson, 2014b)

2.4 Pilot Study

We started our study by conducting a meeting with our case company, which was pre-selected, during which we discussed various problem areas to study. The scope of the problems however was too large, and narrowing down the area of research was needed. In order to get a deeper understanding of the problems at hand, we conducted a pilot study during which we interviewed five employees from various sections of the firm. The broadness of the interviewees gave us the opportunity to cherry pick interesting problems.

According to Bryman and Bell (2013), a pilot study is a good way to start a study. The idea is to secure the problematization of the study as well as prepare the researchers of which type of questions to ask during the main empirical data collection process. Due to the nature of interviews, problems can easily arise. The order of questions can be problematic, giving the interview a lower quality. Another problem considering interviews is the fact that questions can be formed badly and uninteresting for the purpose of the study. However, by conducting a pilot study this problem can be dodged. The pilot study also often gives the researchers new ideas and clues on how to conduct the main study. It also gives the researchers security and habit for conducting interviews in the case-firm setting (Bryman and Bell, 2013). Therefore we argue that the pilot study was important for the quality of the study.

2.5 Method for Data Collection

In this study we primarily use semi-structured interviews with employees at the case company as our source for data. The major part of the primary data consists of interviews together with observations. Secondary data is also used in form of previously written empirical studies on the subject and documents from the case company. This data collection method is consistent with the ones discussed by Eisenhardt (1989) in her paper on building theories from case studies, which we argue can also be used as a framework when contributing to existing theory as well.

2.5.1 Interviews

Interviews as a method for data collection is the most common in qualitative studies. The reason for this is the flexibility that the interview poses. The interviews also give the researcher a deeper understanding for subjective and social questions regarding interviewees (Bryman and Bell, 2013).

In this study we use semi-structured interviews, which are flexible, yet consistent. The semi-structured interview method uses specific themes which are discussed, but leaves large freedom to the interviewee in his or hers answering, which fits our purpose well in this study. The interview method also has motivational advantages, making the interviewee answer questions more seriously and with more thought, than if filling a survey for example (Bryman and Bell, 2013). The focus in the data collection for this study lies on gathering information on how the interviewees perceive control, what motivates them and seeing a pattern in this.

Interviews do however have its disadvantages. The potential bias that could occur, which could have distorting effects on the interviewees answer is one of them. This is decreased, as mentioned earlier, through using multiple researchers and questioners, as well as carefully selecting participants. The time-dimension of interviews could also be seen as a disadvantage, since the transcription process is time consuming. It is therefore important to select appropriate interviewees in order to decrease time-consuming activities (Bryman and Bell, 2013).

All but two interviews were made in Swedish and the answers have been translated to English by the authors.

2.5.1.1 Interview Structure

In order to keep the interviews consistent, we use one single interview guide for all interviews. Since the interviewees however spoke both English and Swedish a translation of the guide was needed. The guide is influenced from theory and ideas on management control systems, as well as knowledge-intensive work in order to give interesting and useful data. The interview guide contains open questions and is divided into themes in order to keep a good and easy-to-follow structure (Bryman and Bell, 2013).

Each interview starts off with an introduction from us, the researchers, followed by a basic introductory question about the interviewees. The interviewees are also given a short introduction about the research and us via mail. This gives the interview a smooth start, and sets the level of the interview, enabling the interviewee to be more relaxed and open. The interviews are all located in meeting rooms at the office of the interview, which also creates a more relaxed environment. The openness does however have its disadvantages, mainly regarding loyalty to the firm, which could distort answers (Bryman and Bell, 2013).

The introduction of the interview is then followed by questions that are rigid and easy to understand, leading to deeper and more analytical questions further on. This decreases the chance of an interviewee not understanding the questions and receiving of low quality data (Bryman and Bell, 2013).

The interviews are discussed between both students the same day as the interviews are conducted in order to maintain impressions regarding values, stories, relations, feeling, but also clothing and personality. This is an important part of the study since these could be underlying symbols and used as observational data (Bryman and Bell, 2013).

The interviews were held in both Swedish and English, depending on the language our interviewees spoke. The two versions of the interview frameworks can be found in appendix 1 and 2. During the interview we use two recording devices as well as minor hand written notes. This gives us the opportunity to be fully attuned with the interview, without missing out on any important data (Bryman and Bell, 2013).

2.5.1.2 Participants

In this study we choose to gather participants for the interviews from different work levels, line-managers and engineers. This is of importance since the engineers are subject to control, and line-managers are primarily controlling. This will give us two perspectives of our research area. We use an iterative selection of participants, since amount of data needed is not evident until several interviews have been conducted. This is a commonly used method when selecting number of participants, and works very well in case studies due to the close relation to the case company (Bryman and Bell, 2013; Eisenhardt, 1989).

Furthermore the participants are selected from two different parts of the firm in order to get a better picture of their differences. We also selected to use participations from teams of different sizes. The idea with the selection process is to gather as much usable information as possible, while keeping the quality and relevance of the interviews at a high level. The participants are expected to either extend the data selection area or replicate previous cases. If this does not occur no more interviews are needed (Eisenhardt, 1989). Pettigrew (1988) argues that given the limited number of samples studies, the participants should be extreme or of polar characteristic. Through using polar selection, the data becomes more transparently observable (Eisenhardt, 1989). We reach this polar selection through using participants from

two completely different parts of BMOD, hardware and software development, as well as different parts of the respective departments.

Due to a recent restructuring of the software department at BMOD, we will not use the data regarding organizational structure and governance structure from this department. We believe that the data concerning these areas will not be conclusive since the restructuring is not fully implemented, and therefore not a valid source of data.

Furthermore, we will in the empirical findings chapter make a distinction between line-managers and engineers. However, for two reasons we will not refer to specific engineers or line-managers. Firstly, out of respect for the interviewees since some of them asked for anonymity. Secondly, because we argue that a distinction between engineers' occupation will not contribute to the study. This is due to the fact that the engineers' working conditions is next to identical, and does not affect the answers. The only distinctions we will make between engineers and line-managers is if they work in hardware or software development, where the distinction is useful and contributing to the study. The decision regarding anonymity was made after talking to the interviewees and reviewing their answers to see if a distinction would be contributing.

Table 2.1 below demonstrates the participants in our interviews.

Section	Interviewee	Date	Length of Interview
Hardware	Line-Manager	2014-04-07	80 min
	Integration - Engineer	2014-04-08	70 min
	Line-Manager	2014-04-08	60 min
	ASIC Design - Engineer	2014-04-08	60 min
	Architectural Design - Engineer	2014-04-09	70 min
	Object Leader - Engineer	2014-04-09	70 min
Software	Line-Manager	2014-04-14	60 min
	Physical Layer – Engineer	2014-04-29	60 min

Table 2.1

2.5.2 Observations

Eisenhardt (1989) argues that in order to have high quality on a case study, multiple data gathering methods are needed. There are many examples of other researchers who use interviews combined with observations in order to get a better grasp and objectivity on the study (Eisenhardt, 1989). We use observations in this study partially to confirm data from interviews, but also to examine symbols and culture at BMOD.

In this study unstructured observations are conducted. This type of observation has its purpose to observe the environment and behavior at a detailed level. The observers are not participating or obstructing the environment in anyway, less than actually being present. This gives the observations higher objectivity, since the behavior of the observed are not compromised to a high degree (Bryman and Bell, 2013).

During the observations, field notes are written in order to keep the data manageable. Due to security reasons, we had our contact-person at the case company join us during the observations. We argue that this could disturb the observations to a certain level. A disadvantage with observations is that people may act differently when being observed. There may also be temporal behavior, which needs to be considered (Bryman and Bell, 2013).

Observations took place at the office of the case company during one extended visit as well as the five days we conducted interviews. We observed during office-time and during the lunch break at the company restaurant.

2.5.3 Documents

There are many different types of documents one could use as data. In this study the documents are collected from our case company. These are not written to us, but rather as descriptions and guidelines for employees. Documents as a source of data are commonly used in qualitative studies, and gives the researcher an opportunity to analyze this secondary data written from the perspective of an employee (Bryman and Bell, 2013).

Many times the documents from organizations are biased, and we therefore focus on the factual documents, as well as analyzing the content of documents (Bryman and Bell, 2013).

2.5.4 Previous Empirical Findings

In order to create better quality of the research we use previous empirical findings in the area of study. Eisenhardt (1989) argues that this is important in order to get a higher degree of generalization of the study. We use several different sources in order to see if there are some that differ from our results as it is important to see what contradicts from our findings and why (Eisenhardt 1989).

Through comparing to previous empirical findings, we as researchers need to increase our creativity if the data is differing too much between cases. This leads to a need to prove why the results differ, and gives the research more depth than it would if not compared (Eisenhardt, 1989).

Overall, the previous empirical findings give the research better internal validity, generalizability and level of theory (Eisenhardt, 1989). We therefore argue that this is crucial to the study.

2.6 Quality Aspects

2.6.1 Reliability

Reliability is a quality aspect that has been criticized by many researchers within in the qualitative research domain. They argue that the measure is not applicable on qualitative research as it is with quantitative studies (Bryman and Bell, 2013).

The specifications of the measure have therefore been reinterpreted, and in this analysis of reliability we use the definitions by LeCompte and Goetz (1982). According to LeCompte and Goetz, the study should be repeatable and give same results. They argue that this level of reliability can be reached when applying alike social roles as the researchers (Bryman and Bell, 2013). Therefore we have tried to explain and show our social role in the earlier parts of the methodology during the research. Through the theoretical framework readers can also see how we interpret and analyze applied theories, and how they are linked together. We also demonstrate how data is collected, as well as analyzed, which should give the study a better chance to be replicated successfully (Bryman and Bell, 2013).

2.6.2 Validity

2.6.2.1 Internal Validity

According to LeCompte and Goetz (1982), internal validity measures to which extent the findings of a study is applicable and sense-making when used in the development of theory, or in our case contribution to theory. In order to make sure that we are in fact observing what we are studying, we make continuous jumps between observations and compare after the data gathering. Through pattern matching, we argue that the internal validity is increased. However, it can be argued that interviewees are being affected during interviews due to their role in the firm and their loyalty to it (Bryman and Bell, 2013). We therefore interview engineers and line-managers at the same level in the firm. In order to make sure that our interviewees understand the questions asked we demonstrate easy theory about the subject in the beginning of each interview. When the interviewee does not understand the question we try to rephrase it in a more understandable way, without leading the question. In order to increase validity we compare the data gathered during interviews with observations made at the office of our case company.

Furthermore, we recorded all our interviews with two devices, and we both transcribed them the same day. Through having two transcriptions of the interview the accuracy of the data is increased and less data is also unnoticed. Due to the pilot study done previous to the main study, we argue that our knowledge about the company helped, both from our perspective, but also from the perspective of the interviewee. Our previous presence at the case company was presented in the beginning of the interview, which we argue makes the interviewee more relaxed.

Since this study is based on our interpretations of the answers received from the interviewees, we need to constantly evaluate our personal understandings of the answers. Through comparing the interpretation of answers between each other, we argue that the decrease in validity is partially avoided. However, it is practically impossible to remove all of the problems and complications with interpretational error.

2.6.2.2 External Validity

External validity expresses to which degree the results can be generalized and applied to different social environments and situations (LeCompte and Goetz, 1982). Due to the nature of this study, the external validity is lacking. Since the research is case specific and focuses on

firms of knowledge-intensive character, and is only conducted on one single case the validity is missing the ability to be generalized. We do however argue that the contributions to theory, which we strive towards, will be applicable to other firms of the same character. Since the research is based on an abductive approach with continuous comparison between empirical data and theory, the results are in some way connected to theory already generalized. LeCompte and Goetz (1982) argue that one of the usual mistakes case studies have in common is choosing too specific interviewees from one single group, which decreases the external validity. Since our selection of interviewees are carefully selected and structured from two completely different parts of the organization, we argue that the validity is increased.

3. Theoretical Frame of Reference

In the following section we will firstly discuss theories on knowledge, knowledge-intensive workers, and the knowledge-intensive firm. Secondly, we will describe theories and concepts on management control systems, as well as a deeper discussion on the Malmi and Brown typology.

3.1 Knowledge and Knowledge-intensive firms

Since we want to find out what control mechanisms in a company are "active" when controlling engineers, more specifically engineers with complex and innovative tasks, we need to understand what characterizes the engineers themselves better. In order to do that we will account for theory on the areas of KIFs, knowledge-workers and knowledge-work executed by the workers to cover all aspects of the field of study. We believe, just like Alvesson (2004), that it is important to study KIF's, knowledge-workers as well as knowledge itself as they all complement and overlap. Understanding one of the subjects is crucial to fully understand the other.

We will start by discussing knowledge itself. The concept of knowledge in the context of organizations is not as clear as one might think. The question of what constitutes knowledge has been debated for decades. We will show the different views that exist and then move the discussion toward knowledge-work and finally, the firms that to an extent are characterized by that kind of work – knowledge-intensive firms.

3.1.1 The Concept of Knowledge in Organizations

The field surrounding the concept of knowledge in organizations started gaining more and more attention in the late 1980's and took off during the early 1990's with research by Alvesson, Starbuck, Blackler and Sveiby among others. The concept of knowledge and the labeling of companies as "knowledge-intensive" is increasingly getting more researched. The interest may very well derive from the fact that education levels rise in the western world and, partly as a consequence of that, more people are conducting knowledge-work today (Starbuck, 1992; Alvesson, 2004; Rennstam, 2007).

The ambiguity around the term knowledge is discussed among several authors (Alvesson, 2001; Starbuck, 1992; Blackler *et al.*, 1993; Blackler, 1995; Ibert, 2007) and the related

concepts such as KIFs and knowledge-work becomes problematic (Alvesson, 2001). There are no clear distinctions, criteria or standards (at least none that are established) that will allow an exact definition what constitutes knowledge-work or KIFs (Alvesson, 2000; 2001; Starbuck 1992) or even the knowledge itself (Alvesson, 2000; 2001; Alvesson and Kärreman, 2004).

The ambiguity around the concept of knowledge stems from different sources. Researchers have traditionally viewed companies as an object, since it is the best way of understanding it they claim (Alvesson and Kärreman, 2004). Knowledge has been viewed in the same way by many authors of literature on the subject. Knowledge as an object is a rationalistic assumption that knowledge is an external reality that exists on its own and is true at all times and all places (Ibert, 2007). The knowledge itself is separated from individuals and social contexts. New knowledge is gathered by taking in new "realities" that already exists. This view of knowledge fits well in to metaphors such as; knowledge "circulates" between people and that it can be "exchanged", "stolen" or "sold" (Ibert, 2007).

This conceptualization has been criticized by several authors and is contested on one front by another view of knowledge based on the arguments of Polyani from 1958 (Blackler, 1995; Sveiby 1997; Ibert, 2007). The argument of Polyani is that knowledge is something that originates in a person based on the social context and is not separable from the "knower" and that context (Sveiby, 1997; Nonaka, 1991; Nonaka and Toyama, 2005). Knowledge, according to Nonaka (1991), can be understood as "justified true belief" or as "a capacity to act in a context" as Sveiby (2007) put it. To view knowledge as something that originates in a social context and that give someone he ability to act within that context is by some authors referred to as "knowing" (Blackler, 1995; Ibert, 2007). It "indicates what is known rather than a thing or a static property" (Ibert, 2007 p. 105) and knowing can be described as the knowledgeable actions taken in a certain social context. One important management implication of this view is that it should not be attempted to manage the knowledge itself, but rather the context (Sveiby, 2007). Ibert (2007) refers to this as a "performative" approach to knowledge by and figure 3.1 shows the key differences between the two approaches to the concept of knowledge.

	'Knowledge'	'Knowing'
Ontological status	Object	Performative
Form of existence	Absolute reality	Situated in practice
Temporary boundaries	Fixed factual	In flux, provisional
Content boundaries	Segmented, commensurable	Holistic, incommensurable

Figure 3.1 (Ibert, 2007)

Blackler (1995) summarized a lot of the existing literature from the late 60's to the time he wrote his paper in 1995. He categorized different authors views on knowledge based on distinguishing features of the location of knowledge. By located he argues that knowledge can be present in bodies, routines, brains, dialogue or symbols (Blackler, 1995). The different ways knowledge can be "located" at are embodied, embedded, embrained, encultured and encoded respectively as they are written above. Blackler argues that tendencies in literature on the subject are moving away from embodied and embedded knowledge as important categories, and puts more emphasis on embrained, encultured and encoded knowledge. In other words than Blackler's, knowledge located in routines and bodies are becoming less important compared to knowledge that exist in peoples brains, language and symbols at the companies.

Drawn from four of the five types of knowledge he identified in previous literature, he constructed a two-by-two matrix where he distinguishes organizations that he argues depend on different forms of knowledge for a clear overview of the literature (Blackler, 1995). He categorizes the organizations by, firstly, if their work is characterized by a focus on problems of a routine kind or if they deal with more unfamiliar problems and secondly, if the organizations depend on contributions from key individuals or if emphasis is on the collective effort. The four types of organizations are: (i) expert-dependent, (ii) knowledge-routinized, (iii) symbolic-analyst-dependent and (iv) communication-intensive. Their emphasis on knowledge is seen in the figure below. The arrows in the figure are showing where Blackler argues that trends within the field of knowledge and knowledge-intensive firms are leaning towards.

	(ii) Knowledge-Routinized Organizations: *Emphasis on knowledge embedded in technologies, rules and procedures.* Typically capital, technology, or labor intensive. Hierarchical division of labor and control. Low skill requirements *Example:* 'Machine Bureaucracy' such as a traditional factory	**(iv) Communication-Intensive Organizations:** *Emphasis on encultured knowledge and collective understanding.* Communication and collaboration the key processes. Empowerment through integration. Expertise is pervasive. *Example:* 'Ad hocracy', 'innovation mediated production'.
EMPHASIS ON COLLECTIVE ENDEAVOUR		
EMPHASIS ON CONTRIBUTIONS OF KEY INDIVIDUALS	**(i) Expert-Dependent Organizations:** *Emphasis on the embodied competencies of key members.* Performance of specialist experts is crucial. Status and power from professional reputation. Heavy emphasis on training and qualifications. *Example:* 'Professional Bureaucracy' such as a hospital.	**(iii) Symbolic-Analyst-Dependent Organizations:** *Emphasis on the embrained skills of key members.* Entrepreneurial problem solving. Status and power from creative achievements. Symbolic manipulation is a key skill. *Example:* 'Knowledge-intensive-firm' (KIF) such as a software consultancy.
	FOCUS ON FAMILIAR PROBLEMS	**FOCUS ON NOVEL PROBLEMS**

Figure 3.2 (Adapted from Blackler, 1995)

It is also common to distinguish different types of knowledge, such as tacit and explicit (Nonaka, 1991), individual and social, ideational and materialized which further makes the concept of knowledge "slippery and elusive" as Scarborough and Burell wrote in 1996 (cited in Alvesson, 2001). Alvesson (2001) also argues that, in contrast to the objectivistic views of knowledge, it is difficult to pinpoint how important knowledge is as an isolated factor and that knowledge-work is more dependent upon loose beliefs of the workers that they can contribute and offer something specific to their customers.

Despite all the ambiguity and troubles of definitions that surround the concept of knowledge, previous others, as well as we, believe that there are sufficient reasons to try to create a category of organizations that are knowledge-intensive. Alvesson have used the sentence "a vague but meaningful category" to say the same thing (Alvesson, 2000; 2001). He argues that even though it can be hard to differentiate between a knowledge-intensive company and a professional company, the category of KIFs still have sufficient "heuristic value" (Alvesson, 2001) and "loosely" points at an category of organizations that interesting things can be said about (Alvesson, 2000).

We will not try to choose between the objectivistic or the performative view from this point forward. Instead we will use Blackler's (1995) categorizations that include both notions of knowledge. Whether knowledge is seen as an object or something that is created in a context does not have the same value to us as categorizing the knowledge by "location" and character.

3.1.2 Knowledge-workers and Their Work

According to Thompson, Warhurst and Callaghan (2001), about 10-15 % of the workforce in the western part of Europe and North America work within fields that can be labeled as knowledge-intensive. That number will increase within the next decade to about 15-20 % making it a very interesting concept to look closer at.

As mentioned above, it is sometimes difficult to distinguish between knowledge-intensive and professional companies. The categories the overlap, partly because of the broad definitions of knowledge-work and partly because knowledge-work includes a notion of professional-work, but there are characteristics of professions that are not emphasized in knowledge-work (Alvesson, 2000). Professional work is associated with features such as code of ethics, standardized education and criteria for certification and a strong professional association to name a few (Alvesson, 2000; 2001; Starbuck, 1992; Rennstam, 2007). A high level of education is also an important feature in knowledge-work, but KIFs constitute a company where knowledge is the key input in the production of the company's services or goods (Alvesson, 2000; Starbuck, 1992) in contrast to capital or labor-intensive work. Knowledge-work is also, although often mentioned in the same sentence as professional-work, defined more often as work where esoteric knowledge rather than widely shared knowledge is the key characteristic and the knowledge is not used to solve standardized tasks but engaged in complex problem solving (Alvesson, 2004; Rennstam, 2007; Starbuck, 1992).

Rennstam (2007) who, just like we, built his empirical data on a case study on a high-tech engineering company decided to refer to the engineers as complex workers. This was not just because of practical reasons, since engineers are positioned in the grey area between professional-work and knowledge-work, but also because the term "complex" suggests that the tasks undertaken by engineers are of a non-repetitive nature. He also argues that complex work tasks require esoteric expertise and a high degree of formal and contextual knowledge. This view of the complex work conducted by engineers together with the fact that engineers with a such esoteric expertise relies on the collective effort to produce a complete product is consistent with Blackler's (1995) view of the "communication-intensive" organization and is an interesting distinction to our study.

The definition of the term knowledge-worker is relatively young (Frick, 2011) and existing literature on the concept is scarce in regard to the characteristics of the workers, even though the concept of knowledge-work and knowledge-intensive firms has been around for longer. Peter Drucker is arguably one of the prominent researchers of knowledge-workers and he spent a considerable part of his career researching what he called knowledge-worker productivity (Drucker, 2001). Drucker (1999, p. 83-84) established six factors about what determine knowledge-worker productivity based key characteristics of them:

- "Knowledge-worker productivity demands that we ask the question: 'What is the task?'
- It demands that we impose the responsibility for their productivity on the individual knowledge workers themselves. Knowledge Workers have to manage themselves. They have to have autonomy.
- Continuing innovation has to be part of the work, the task and the responsibility of knowledge workers.
- Knowledge work requires continuous learning on the part of the knowledge worker, but equally continuous teaching on the part of the knowledge worker.
- Productivity of the knowledge worker is not - at least not primarily - a matter of the quantity of output. Quality is at least as important.
- Finally, knowledge-worker productivity requires that the knowledge worker is both seen and treated as an "asset" rather than a 'cost.' It requires that knowledge workers want to work for the organization in preference to all other opportunities."

In 2001, Drucker further defined the knowledge-worker and their tasks and wrote that "knowledge workers are not subordinates; they are 'associates.' For, once beyond the apprentice stage, knowledge workers must know more about their job than their boss does - or else they are no good at all. In fact, that they know more about their job than anybody else in the organization is part of the definition of knowledge-workers" (cited in Frick, 2011). Most authors do not put much effort in trying to describe the knowledge-workers themselves. Knights, Murray and Willmott (cited in Blackler *et al.*, 1993) argued that "knowledge-work is less viable as an occupational classification than as a catch-phrase for signaling current changes in the organization of work in the direction of knowledge intensification" (Blackler *et al.*, 1993, p. 858).

Frick (2011), who largely builds his research on Drucker, did an interesting study comprised of 64 "high-performing" federal workers in the United States. He wanted to see what workers he thought fitted the description of Drucker's knowledge-workers were motivated by. He found that the top positive factors of motivation were "intangible, emotion-based and intrinsic". The number one positive factor was a meaningful work, followed by belief in mission and opportunity to advance (if we discard the third most positive factor, "public service", which is not relevant to this study). On the other side of the spectra, the most negative factors of motivation were insufficient resources, bad managers and lack of management support. An interesting result, which Frick argues is consistent with previous research, is that the motivational impact of total compensation is not significant to the performance of knowledge-workers.

3.1.3 Knowledge-intensive Firms

The kinds of companies that are usually referred to when talking about KIF's are law and accounting firms, consultancy firms within the fields of management, engineering and computer and high-tech companies as well as R&D-units (see for example Alvesson, 2001; Starbuck, 1992; Blackler, 1995). The overlap discussed earlier between professional and knowledge-intensive firms, are clearly visible here as law and accounting firms for example are typical examples of professions with code of ethics, standardized education and criteria for certification.

William H. Starbuck (1992, p. 715) makes a clear definition of what constitutes a knowledge-intensive firm and classifies them based on the inputs used by the company:

> "The term knowledge-intensive imitates economists' labeling of firms as capital-intensive or labor-intensive. These labels describe the relative importance of capital and labor as production inputs. In a capital-intensive firm, capital has more importance than labor; in a labor-intensive firm, labor has the greater importance. By analogy, labeling a firm as knowledge-intensive implies that knowledge has more importance than other inputs."

Alvesson defines knowledge-intensive work somewhat differently and focuses mostly on the work itself rather than on the inputs of the company. He defined KIFs in 2001 as "…firms where most work is said to be of an intellectual nature and where well-educated, qualified employees form the major part of the work force. The company claims to produce qualified products and/or services." (Alvesson, 2001 p. 864) He also says that the category is not subject to more specific delimitations and that the distinction between a KIF and another organization is not self-evident and that "the claim of knowledge-intensiveness" is possibly on of the most distinctive characteristics (Alvesson, 2001). Starbuck (1992) on the other hand benchmarks what he argues a KIF needs to fulfill in order to be categorized as one. The number of people conducting knowledge-intensive work in an organization needs to constitute at least a third of the personnel and he calls these knowledge-workers "experts" that have a formal education and experience equivalent to a doctors degree.

There are not just difficulties surrounding the conceptualization of knowledge as discussed above. Alvesson (2001) discusses two additional areas of ambiguity surrounding knowledge-work in itself more specifically in his attempt to criticize the significance of knowledge in KIF's. According to Alvesson, there is ambiguity concerning (i) the significance of knowledge in knowledge-work and also regarding (ii) how to measure results produced by knowledge-workers. Firstly, Alvesson draws upon to empirical studies that showed how employees often were assigned to tasks where their formal education or esoteric expertise were to no or little relevance. He argues that it is often impossible to determine the significance of knowledge in KIF's because of the difficulties to separate pure knowledge and intellectual skill from flexibility, high level of motivation, ability to follow company methods etc. and that it remains an open question. To elaborate on the second ambiguity mentioned above, Alvesson argues by citing numerous authors who have dealt with the matter of evaluating a professional's work. In order to evaluate it properly requires an expert evaluation, which rarely takes place. Sometimes work is easy to evaluate by seeing if it works

or not (as in the case with much manual labor) but evaluate an audit is not quite as simple. Alvesson then argues that the ambiguities surrounding KIFs and knowledge may be where the distinctiveness of KIFs lies.

3.1.4 The Importance of Cultural Presence in KIF's

In order to get a deeper understanding of the connection between MCSs and KIFs we argue that theory on what actually influences knowledge-intensive workers needs to be tackled. Prominent researchers within the field of KIFs in particular mainly address the importance of various forms of culture (Alvesson, 2000; 2001; Kärreman and Alvesson, 2004; Nonaka, 1991, Nonaka and Toyama, 2005; Blackler *et al.*, 1993).

Knowledge-workers often constitute an ideal subordinate in terms of compliance and motivation according to Alvesson (2000). This is, he argues, because KIFs do not have the same problem of management getting as much work done for minimum wage while employees strive for maximum freedom and pay. A possible answer to this is the self-image that is often developed in KIFs, that being a knowledge-worker is consistent with being a hardworking and committed employee. The most reoccurring form of culture discussed by researchers in the field is also the social identity. Alvesson has in several papers (Alvesson, 2000; 2001; Kärreman and Alvesson, 2004) argued for the importance of strong social identity among employees in KIFs. Social identity can be described as a way of thinking and thereby acting according to what is considered to be natural and appropriate in a specific social context. Since identities are contextual and multiple, they are not monolithic or robust but can be influenced and managed.

Researchers suggest different ways of how to shape the identity of knowledge-workers through for example symbols, metaphors and rhetoric (Alvesson, 2000; Kärreman and Alvesson, 2004; Nonaka, 1991). Nonaka (1991) argues that these types of actions from management are critical steps in the spiral of knowledge and Alvesson (2001) even claims rhetoric is in a way the core of knowledge-intensive. Symbols can be understood as physical expressions that influences social identity and can take the form of a dress code while rhetoric is defined as the art of effective and persuasive communication. Rhetoric in an organization refers to, for example, slogans and articulated values, and how these are communicated.

Starbuck (1992) also discusses company culture when dealing with KIFs. He does not go as far as to say what forms of culture are most important but argues that because of, among other

things, the absence of a hierarchical and the downplay of formal structures, a strong company culture is important. Although he stresses the importance of culture, he makes a clear reservation when he argues that a company culture should not be so strong that it negatively affects the entrepreneurial ability of individuals.

3.1.5 Cages in Tandem

Cages in Tandem is an article by Kärreman and Alvesson (2004) who discuss how management control works and affects knowledge-intensive firms. The article revolves around an idea of two types of control which both are at work when controlling a firm. The socio-ideological control, which consists of softer control mechanisms, works through values, identities, ideas and meanings, while the technocratic control has a more bureaucratic characteristic and steers through formal controls such as performance measures, standards, budgets and hierarchy (Kärreman and Alvesson, 2004).

The authors argue that these two systems work together to create a total control, in which a firm can for example have a tight technocratic control, while leaving the socio-ideological control rather lose. This will give a control style better suited for inflexible and repetitive work, since the need for output and input are usually centric (Kärreman and Alvesson, 2004). On the flipside, if a firm is in need of a more flexible and innovative-friendly environment, a focus on the firm's socio-ideological and looser technocratic control is often better. Even though number and figures do not control employees, they are tightly controlled through the social circumstances (Kärreman and Alvesson, 2004).

3.2 Literature Review on Management Control Systems

It first became popular to study management control systems (MCS) during the 1960's, when Anthony started developing theories on effective management controls. He described it as "the process by which managers assures that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives" (1964, p. 17). The need for controlling employees in order to reach the objectives of the firm has since been a hot topic. There have been many contributions and different theories on what is effective, and these can differ drastically (Strauß and Zecher, 2012).

The theories on MCS are many, and it is therefore hard to evaluate them all. We will however discuss the three most commonly used concepts on MCS. According to Strauß and Zecher

(2012), the three most used MCS concepts are formed by Merchant and Van der Stede (2003), Anthony and Govindarajan (2007) and Simons (1995). We use these in order to get a better perception of how the MCS definitions differ, and after that discuss how they fit the purpose of this study the best. We will lead the discussion towards the concept by Malmi and Brown (2008).

3.2.1 Object-of-control Framework of MCS

The object-of-control framework of MCS descends from the ideas of Merchant and Van der Stede (2003) who describe the control system as a series of tools that control and influence employee behavior. Merchant and Van der Stedes ideas follows a command and control understanding of MCS. The goal congruence between employee and firm is the main purpose of MCS, which makes a clear goal-formulation important. The objects that are targeted to control are employee limitations, motivational problem, as well as lack of direction. In order to control these objects, the authors argue that there are four different types of MCS to utilize: results, actions, personnel and cultural. (Merchant and Van der Stede, 2003).

The results control type of MCS monitors the results or outcome of employee participation in company activities. The objective is to influence the employee to do a better job since the outcome is tied to a bonus, where the higher the outcome is the higher the reward will be. This can be seen commonly among managers who have a bonus function in their pay. The requirement concerning this type of control is the need for controllable and measureable outcomes, and it can therefore not be applied to all types of work (Merchant and Van der Stede, 2003).

The second type of MCS discussed by Merchant and Van der Stede is the actions control. This emphasizes the controlling of the actions of employees and can take many different forms. For example the MCS can be a set of documents explaining who is accountable for specific actions and operations, but also behavioral constraints and boundary setting in that way. The idea is to ensure that employees act in the organizations best interest and thereby reach goal-congruence (Merchant and Van der Stede, 2003).

The third and fourth type of controls, personnel and cultural controls, are very similar since the cultural control is the result of accumulated personnel control. These controls are supposed to have a self-monitoring effect, since the culture of the firm should create goal-congruence. The idea is that the employees should have mutual monitoring where the

employees work to see that the norms and values of the firm are followed (Merchant and Van der Stede, 2003).

We argue that this MCS concept does not fit our study since it does not have the customizability needed to configure it for knowledge-intensive firms. Much of the focus of this concept lies on formal control, such as financial measurements and actions control. Even though there are parts of the concept that could be applicable to a knowledge-intensive firm, we argue that this concept is more applicable on a larger scale than a focus group like knowledge-intensive workers.

3.2.2 Formal MCS

Characteristics of MCS, as defined by Anthony and Govindarajan, are the lack of informal control mechanisms, especially the absence of cultural controls. The authors argue that the purpose of MCS is to control the activities of an organization and influence its members in order to implement desired strategies. Their definition is characterized by a command and control understanding of MCS. The focus of this concept lies on the production firms, in which the control is achieved through formal controls such as budgeting, responsibility and accountability documents, performance follow ups and rules (Anthony and Govindarajan, 2007).

Since the knowledge-workers work in a far more innovative and autonomous manner than employees at a production firm, we argue that this concept is not well suited for this study. The lack of cultural controls makes the concept inapplicable, since the social control is argued to have large effect on innovative work. The concept does however bring up some interesting ideas on formal control, which can be used to analyze of knowledge-workers from a formal control perspective.

3.2.3 Levers of Control

The MCS framework, as defined by Simons has four levers of control, each with separate functions and effects on strategy and control. The system is distinguished as information based, since the control is first supposedly apparent when it is documented and communicated (Simons, 1995).

The first lever refers to cultural controls, which centers on core values. According to Simons the core values, such as values and purpose of the company, needs to be documented and communicated to employees in order to have a controlling effect (Simons, 1995).

In order to control the behavior further the company needs to use boundary systems. Since the core value part of the lever's system has no boundaries, but rather a direction, the boundary system will keep the activities in the firm within the targeted limits. The boundaries consist of several components, often of negative character, such as responsibilities, standards and rules (Simons, 1995).

The third lever is characterized as formal controls, and goes under the name diagnostic control system. This lever has elements of monitoring, coordinating and diagnosing results. The idea with the third lever is to measure and evaluate the various processes. This is often done through comparing performance variables to predetermined standards (Simons, 1995). This allows managers to pay attention to critical performance deviations and can be used as a goal-congruence system (Simons, 1995).

The interactive control system is the fourth and last lever of control. It is essential for the understanding of emerging strategies. The lever's focus lies on strategic uncertainties and opportunities, which is found through systems that gathers information on various markets and segments with the purpose of anticipating strategic actions for managers. The interactive control system can also be various forums and discussions where managers and employees discuss strategic opportunities and action plans (Simons, 1995).

Even though this concept has many of the crucial parts needed to analyze a KIF, we argue that the concept has a much larger scope than what we intend to study in this research. The concept has a strategic dominance, where one of the four levers concentrates on strategies at a company level. The need for a more in-depth MCS concept would be more applicable to the study that we are conducting.

3.3 Management Control Systems as a Package: The Concept by Malmi and Brown

After the description of the three previous concepts of MCS we can conclude that the methods differ. The concepts are however too narrow for the purpose of this thesis. The Merchant and Van der Stede concept however, is broad enough, although we argue that it is too abstract in

its construction. Therefore we believe that the concept by Malmi and Brown (2008) is the best candidate for this study.

The Malmi and Brown concept consists of thirteen components, which together create a MCS package. This way of looking at a MCS is not new, but has recently gotten more attention among scholars and researchers within the area (Strauss and Zecher, 2012). Earlier research within the area of MCS as a package can be seen as early as in 1980's, when Otley first started studying the concept. The rather new typology of the concept by Malmi and Brown is easy to understand and apply, but it also has a different approach than earlier authors. The typology is categorized into five control types, which all have different effects and different application methods. The five control types are described as cybernetic, administrative, and cultural controls, as well as planning and reward and compensation systems (Malmi and Brown, 2008). An important aspect of the framework is that various control mechanisms can fit under these control types and thereby makes it customizable (Malmi and Brown, 2008).

Since the various definitions of MCS have different purposes, Malmi and Brown (2008) argue that the key to understanding the MCS package concept is to have a clear idea of what its purpose is. The concept's purpose is to ensure that the behavior among employees are consistent with the firm's goals and visions, and that the mechanisms and components within the package are not pure decision-support systems (Malmi and Brown, 2008). Thus there are some boundaries to which type of control mechanisms that can be fitted into the package, which needs to be considered when customizing it. The typology is visualized in figure 3.3.

<table>
<tr><td colspan="7">Cultural Controls</td></tr>
<tr><td colspan="2">Clans</td><td colspan="2">Values</td><td colspan="3">Symbols</td></tr>
<tr><td colspan="2">Planning</td><td colspan="4">Cybernetic Controls</td><td rowspan="2">Reward and Compensation</td></tr>
<tr><td>Long Range Planning</td><td>Action Planning</td><td>Budgets</td><td>Financial Measurement Systems</td><td>Non Financial Measurement Systems</td><td>Hybrid Measurement Systems</td></tr>
<tr><td colspan="7">Administrative Controls</td></tr>
<tr><td colspan="2">Governance Structure</td><td colspan="2">Organization Structure</td><td colspan="3">Policies and Procedures</td></tr>
</table>

Figure 3.3 Management control systems package (Malmi and Brown, 2008, p. 291)

3.3.1 Cultural Controls

A widely supported definition of organizational culture is the one defined by Flamholtz et al. (1985) who describes it as "the set of values, beliefs and social norms which tend to be shared by its members and, in turn, influence their thoughts and actions" (p. 158). This is the view of organizational culture that Malmi and Brown (2008) also support. They argue that organizational culture can be seen as a means of control when it is used to influence behavior (Malmi and Brown, 2008).

There are several different authors who argue various ways of controlling through culture. The ones Malmi and Brown (2008) use in their typology are three aspects developed by Simons (1995), Schein (1997) and Ouchi (1979).

Simons' aspect of cultural control is based on *value* controls through belief systems, and is described as one of the four levers earlier discussed. The belief system of an organization is the explicit and formally communicated values, purposes and directions of the firm. It can be seen as a rather strategic control, and works as a way to get employees into the mind-set of the firm (Simons, 1995). The value control can be applied in three ways. The firm can either recruit employees with values in accordance of the firm, or it can form the values of the employees through socialization. The third and last way that control can be applied is through explicit statements to which the employees need to act in accordance with during work, even if they do not identify themselves with them (Malmi and Brown, 2008).

The second aspect of cultural control is the one developed by Schein. He discusses a *symbol*-based idea, where different physical expressions create a form of control. These can be dress codes, building architecture, office styles or even placements of coffee machines. The idea is that these symbols create, for example through open landscape offices, a culture of communication and collaborations. Another example is a sense of professionalism, which could occur when employees all dress in nice tailor-made suits (Schein, 1997).

Ouchi's aspect of cultural control is a concept that discusses the effects of groups and teams in organizations. Ouchi calls these teams *clans*, which can be seen as a robust team, where ideas, skills and values are shared. The idea is that a clan develops a sense of culture within itself, which in turn can be used to control in which way a team acts. The clan brings forth its ideas, values and skills through meetings, or so called ceremonies and rituals. Typically clans can be formed either through professions, such as doctors or accountants, or within

organizations where teams have boundaries and work together in an explicit part of the organization (Ouchi, 1979).

3.3.2 Planning

In contrast to Merchant and Van der Stede (2005), Malmi and Brown argue that planning can take a different approach than the purely financial type. The different approach is a more strategic style of planning, which focuses on non-financial goals as well as financial. The authors divide the planning into two separate type *long range*, and action. Long range planning, which typically is longer than a 12-month period has a more strategic approach. It provides a sense of strategic coordination between various parts of an organization, creating a commitment and a sense for the larger cause behind every day work (Malmi and Brown, 2008).

The other type of planning is called *action planning*, which typically is less than a 12-month period. This planning creates goal congruence between functional areas within the organization and aligns the work and processes in a way that gives desired outcomes. This type of action planning could be dissolved into smaller checkpoints and milestones, which together make up for a total action planning (Malmi and Brown, 2008).

3.3.3 Cybernetic Controls

Cybernetic controls has long been a concept of control, and is defined as a feedback loop representing measurements, standards and other types of information which can be analyzed in order to decrease variances that are undesirable (Malmi and Brown, 2008). For example, Mintzberg (1983) discusses how a firm can control its employees through setting up different standards of outputs, work, skills as well as a concept called mutual adjustment where employees control each other. These outputs for example, are then measured, and compared with the standard in order to get an idea of how the activity has performed. Based on variance from the standard, a performance feedback can then be sent back into activity owners, and thereby control the performance of employees to not deviate from the set up standard (Malmi and Brown, 2008).

Malmi and Brown discuss four different types of cybernetic control types: budgets, financial measures, non-financial measures and hybrid measures (Malmi and Brown, 2008).

Using *budget* in order to control is one of the most traditional ways to get goal congruence in a firm. The budgets work as boundaries in which the employees must find themselves. Through budgeting a comprehensive plan can be set up, giving a clear idea of how the different parts of an organization is expected to perform with a preset level of resources (Malmi and Brown, 2008).

In contrast to the budget, a *financial measure* can be more narrow and target-specific, giving a more precise control. A common financial performance measure is return on investment, which is a figure that describes the financial return on invested capital (Malmi and Brown, 2008).

The *non-financial measurements* are often softer types of measurements and have become more popular and important in recent years. It is common that this type of measurement focus on strategic goals, such as customer satisfaction and market shares, but also internal measurements such as employee satisfaction (Malmi and Brown, 2008).

The *hybrid measurements* contain both financial and non-financial measurements, which together create a mixed type measurement. This is argued to be broad as well as descriptive, and covers many of the important parts of a business. An example of a hybrid measurement is the today very popular tool balanced scorecard, developed by Kaplan and Norton (1992) (Malmi and Brown, 2008).

3.3.4 Reward and Compensation

The *reward and compensation* control function is a common and well known mechanism that creates goal congruence through motivating employees to act in a way that the organization desires and thereby get compensation for it (Malmi and Brown, 2008). It can be compared to Merchant and Van der Stede's result control, where a bonus is attached to the result of an employee or group (Merchant and Van der Stede, 2007).

Even though compensation in many cases is related to monetary bonuses, there are many other types of compensations and rewards. For example a new job title, wider responsibilities and a new office location are among others different ways to reward a desired activity from an employee. There are also other benefits such as trips, access to gyms and company cars, which often can be tied to the reward bonus. The importance of rewards and compensation is to link them together amongst several different groups and employees in order to get a total

performance in the right way. Therefore it's not uncommon that goals are often set on a larger scale, for example it could be linked to the firm's total performance, which could have an effect of less competition amongst employees, leading to better communication and cooperation (Malmi and Brown, 2008).

3.3.5 Administrative Controls

The administrative controls work through organizing a firm in a specific way in order to affect the behavior of employees. This can be done through stating organizational structure, governance structure as well as documenting policies and procedures (Malmi and Brown, 2008).

The *organizational structure* can set boundaries and thereby limit how employees interact. Through organizing a firm in a certain way, managers can control how employees interact and communicate, giving them the opportunity to create cooperation between certain groups and parts of the organization (Malmi and Brown, 2008).

Governance structure refers to the system of who is accountable to whom, and for what. It can be seen as the hierarchy of the firm, and is a formal set of accountabilities and authorities within the firm. This affects the behavior of employees through creating accountability between them, and thereby control. An important finesse with the governance structure is its ability to create accountability and authority between parts of the organization, creating a need for cooperation and dependability (Malmi and Brown, 2008).

Through *policies and procedures* a firm can set up specific processes and thereby affect behavior in an organization. This is a formal form of control, and sees to that dependabilities between activities are fulfilled in order to get efficiency in the firm. It can also take form in specific ways to work, in order to keep up with standards like ISO 9001. The policies also work as a form of standardizing work, creating predictability and behavioral constraints (Malmi and Brown, 2008).

3.3.6 Discussions on Applicability of the Malmi and Brown Concept

Since the perspectives on MCS are very different between authors (Strauß and Zecher, 2012), we find the framework by Malmi and Brown to be both useful and applicable. The many different MCS frameworks, which were discussed earlier, usually have applicability to specific sorts of work. For example Anthony and Goveridajan have their main focus on

formal control mechanisms in production firms (Anthony and Goveridajan, 2007). Since we could not find any pure knowledge-intensive work focused control systems we find the concept by Malmi and Brown to be a good substitute.

The framework set up by Malmi and Brown (2008) implies that the entire management control system is to be seen as a package from an accumulation of several smaller control components, giving it a broader perspective than many others (Strauß and Zecher, 2012). These various components are linked to each other in several ways (Malmi and Brown, 2008), which will give an interesting perspective on our research. The broadness of the framework also suits the research area impeccably since our goal is to analyze, in an exploratory way, what actively controls knowledge-intensive work.

Another reason to why the control package framework is advantageous is its customizability. The various packages can be customized with existing theories on how knowledge-intensive work is controlled, giving the framework a better applicability to the intended research area (Malmi and Brown, 2008). Drucker argues that a traditional MCS are not to prefer when controlling knowledge workers, the system needs some modifications and changes in order to be effective on these types of employees (Drucker, 2001).

The MCS package framework has the purpose to "ensure that the behaviours and decisions of their employees are consistent with the organisation's objectives and strategies, but exclude pure decision-support systems" (Malmi and Brown, 2008: p.290-291). This purpose fits our research area well since the decision-support systems are not interesting when analyzing how goal-congruence between employee and firm is fulfilled.

Criticism towards the MCS concept has been its lack of documented relations and dependencies between the components. There is empirical evidence that the various components affect each other, but why and in what way are not as evident (Malmi and Brown, 2008). This could however be due to the customizability of the MCS package, leading to different results in the studies made. For example, Sandelin (2008) studies the effects of different configurations of the package and finds that the outcome from these are equally as good, but that the internal functionality depends on consistency between the components.

Some argue that there actually are little to none connections between the different components (Dent, 1990; Chenhall, 2003), which could also be seen as critique to the concept (Malmi and Brown, 2008).

3.4 Theoretical Framework

In this part we will discuss how we choose to analyze our empirical data through a framework constructed from theories earlier discussed, which we argue are core to this thesis.

In order to get a good perception of how MCSs applicability in KIFs we argue that firstly, an analysis of the knowledge concept is needed. This is important due to the various concepts about knowledge, and its applicability in organizations and more specifically in KIFs. The theory is here mainly from Blackler (1995). Secondly, the knowledge-workers will be analyzed. In this section we will focus on what constitutes a knowledge-worker, what motivates them and their environmental needs for flourishing productivity. In this part, Drucker's (1999) and Frick's (2011) work are mostly used. Furthermore, the knowledge-worker will be put in relation to theories on the MCS package package by Malmi and Brown (2008), in order to get a concept of how MCS affects the work in a KIF. To summarize, our goal is to analyze how a MCS is applied in a KIF. In order to see what is missing from it, what can be removed and what works well we analyze in accordance to our theoretical framework. The theoretical framework is visualized in the figure below.

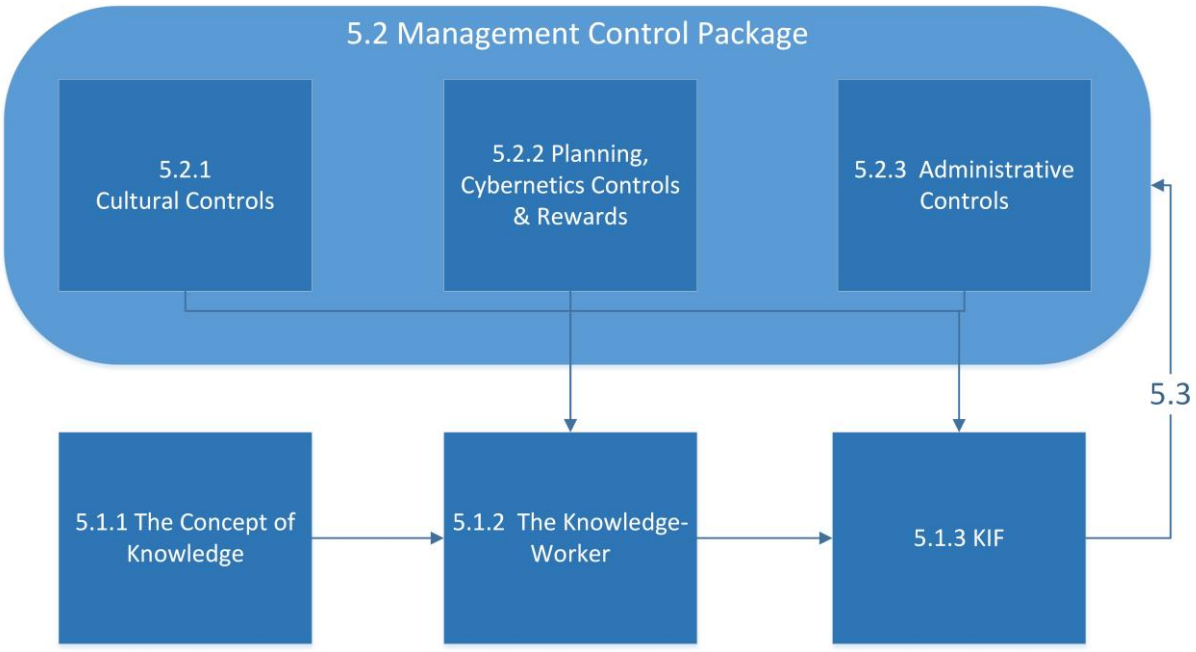

Figure 3.4, Theoretical Framework

4. Empirical Findings

In the following section we will present our gathered empirical data. It includes our main data from interviews conducted at BMOD in Lund, as well as observations, and secondary data from earlier research and BMOD-documentations. The empirical data is structured accordingly with our theoretical framework in order to give a clear and understandable picture.

We start off by present empirical data concerning the concept of knowledge. This will be followed by examining our data concerning if the engineers at BMOD see themselves as knowledge workers, and fit the profile discussed in existing theory. In order to follow the structure of our theoretical framework, we will follow the empirical data on KIFs with data on the MCS part of this study. This is done through examining each component in the MCS package. We conclude the chapter with empirical data that does not fit into our theoretical framework, but which we still find valuable to analyze further.

4.1 The concept of knowledge at BMOD

As stated in the theoretical chapter, we will use Blackler's (1995) categorization of knowledge when discussing the concept of knowledge in this paper. We will therefore use Blackler's categories in an attempt to distinguish what types of knowledge are prominent at BMOD.

An observation we made was that all the respondents had a clear specialization within their education, which the most of them still works with. The knowledge amongst the employees is clearly esoteric and most of them commented on the fact that they only know a very small fraction of the complete product. Their esoteric knowledge is needed for complex work tasks and problem solving and is based on their education and cognitive skills. This is best described as what Blackler (1995) would call embrained knowledge. BMOD's organizational structure at engineering level is characterized by teamwork and will be discussed further below in this chapter. The fact that there are hundreds of people involved in the development of their product, along with the structure of teams, makes communication vital. This communication-intensive way of sharing ideas, problems and knowledge on, according Blackler (1995), is referred to as encultured knowledge.

During our initial pilot study, we were shown how the anatomy of a product development project is structured step by step. Tasks were planned very closely and the anatomy showed critical dependabilities and time frames. This precise planning was the consequence of historical data from previous projects and routines that had been proven to work. These routines that are embedded in the company are based on existing knowledge inside the company, which by Blackler (1995) is called embedded knowledge.

We cannot draw the conclusion that embodied or encoded knowledge are important categories of knowledge at BMOD. Embodied knowledge is not present because of the lack of physical interaction with machinery or other tools of production aside from computers, which does not require the same physical knowledge. Encoded knowledge, information through signs and symbols, is a category that we got the impression of was none existing. The flow of information is typically conveyed through personal interaction and not through documents or electronically to a greater length. Our impression is at least that it is not in information sharing that BMOD has their greatest knowledge base.

4.2 Knowledge-worker Productivity

For the sake of a clear structure, we will divide the answers our interviewees according to the six characteristics that affect knowledge-worker productivity by Drucker (1999). This will give us further insight of how well the engineers at BMOD fit in to concept of knowledge-workers and how well the company adheres to this.

4.2.1. What is the Task?

"Knowledge-worker productivity demands that we ask the question: 'what is the task?'".

The interviewees agreed on the fact that the only way to do their work efficiently is to get a task to complete, and not an instruction. One of the engineers put it in a very descriptive way, "We get a point to where we need to go, and it is up to us how we sail the ship there". Another engineer was more frank and said; "How I complete my tasks is none of their damn business, it is completely up to me". We got the impression from all interviewees, that nobody questions the way tasks are completed.

4.2.2 Autonomy

"It demands that we impose the responsibility for their productivity on the individual knowledge workers themselves. Knowledge Workers have to manage themselves. They have to have autonomy."

The engineers at BMOD are managed through specific deliverables, which are expected at a particular date. They basically get a description to get from point A to point B. With these deliverables, the teams manage themselves to a high degree by taking part in how they should prioritize and divide the workload between each other. Higher management often defines the amount of deliverables, but planning the execution of these is to a very high degree managed by the engineers themselves. One of the line managers described this autonomy as; "It's a distributed responsibility. Large parts of the responsibility are on team-level. This is because the work is very complex, and as a manager you do not know how to solve problems and it is also a matter of time efficiency".

4.2.3 Innovation

"Continuing innovation has to be part of the work, the task and the responsibility of knowledge workers."

First of all, the engineers at BMOD work in a research and development setting. Their work is innovative in its nature. They produce new technology that is always at the cutting edge of technology. Even though their work is of innovative character, the engineers do not appear to take it for granted. The interviewees all stressed the importance of innovation during work time. One of the engineers expressed this as; "Innovation is really important. To not just do the same kind of work over and over again. Otherwise you get bored immediately". Another engineer argued; "The interesting part about our job is finding new methods and paths in order to make our products more efficient".

4.2.4 Continuous Learning

"*Knowledge work requires continuous learning on the part of the knowledge worker, but equally continuous teaching on the part of the knowledge worker."*

There is a clear consensus between the interviewees on the matter of continuous learning. They all said it is very important to them, and four of them even stated that it was one of the

major motivational factors. One of the engineers described the importance by saying; "We're guided by knowledge, and you need to keep on learning new things all the time. Our job is extremely complex and I only have deep knowledge within a very small area. It's fascinating and frightening at the same time, but learning new things is motivating". The interviewees however argued that due to the financial situation of the company, an effect of the cost-reducing actions have been cutting back on new opportunities to attend seminars and other knowledge-creating activities. One of the engineers saw the opportunity to learn from other co-workers on a daily basis as a substitute for this and said; "I learn something every day and I believe that the company would benefit if all employees would share the knowledge between each other".

4.2.5 Quality vs. Quantity

"Productivity of the knowledge worker is not - at least not primarily - a matter of the quantity of output. Quality is at least as important."

During our interviews at BMOD, not once did the employees mention quantity. However, a reoccurring theme was predictability and quality. As one of the engineers mentioned; "We have a strong technical drive to perform. At Ericsson we always deliver 100% from a technical perspective".

4.2.6 Asset Rather than Cost

"*Finally, knowledge-worker productivity requires that the knowledge worker is both seen and treated as an 'asset' rather than a 'cost.' It requires that knowledge workers want to work for the organization in preference to all other opportunities."*

The engineers feel like they are the backbone of the company and that they play an important part in the value creation at BMOD. But it is clear that not everyone feels like an important "asset" to the managers. For example, one engineer said; "The way I get confirmation that I am appreciated is through my salary", another one said; "Appreciation is something you get from your closest manager in the hierarchy, but it doesn't seem to reach further up in the organization than that". One of the line managers endorses this view by saying; "There is an extreme mistrust between the layers of the organization. Between the engineers and their managers, and between their managers respectively". He says that the negative trend of the company is contributing to this distrust.

4.3 The Knowledge Intensive Firm

The majority of authors that have contributed on the field of knowledge agree on that knowledge-work is conducted by people with a high degree of formal education (Alvesson, 2001; Starbuck, 1992). Starbuck (1992) even tried to define a KIF as a company where at least one third of the employees have formal education and experience equivalent to a PhD.

All our interviewees had at least five years of formal education as an engineer, and they had all worked at least six years at the company as an engineer. According to a document provided to us by BMOD, the firm has a majority of employees in the organization working with R&D (Ericsson, 2014c). The interviewees also described themselves as the most important and value-creating part of the firm, or as one the engineers described it; "We are the backbone of this company". Another engineer stated; "The way we work is very influenced from the bottom-up, it is mostly decided by the engineers". The view of the importance of the engineers were shared by all interviewees, but at they were humble enough to say their job was no more secured than others within the organization. As noted earlier in this chapter, all the respondents had a clear specialization within their education, which the most of them still works with. The knowledge amongst the employees is clearly esoteric.

4.4 The Malmi and Brown Typology

In the following part we will summarize the empirical data, which can be categorized in the Malmi and Brown typology. The information is structured in the same way as in the theory chapter in order to keep it structured and easy to follow.

4.4.1 Values

The data from the empirical findings was two sided in the matter of values. The first impression we got was that the values on how to behave and act towards other employees are clear and perceived as important to everyone we met. For example one of the line-managers said; "Professionalism, quality and trust is important to the company". Another one stated; "It's important with values […] you should be professional and resilient".

However, the other side of the story is that even though the values are clearly understood it seemed as if it was nothing the employees actually thought about and they felt that it was poorly communicated. No one could mention exactly what they were. Most of the employees agreed that the values present at BMOD were due the history of Ericsson, "It's in the walls".

One of the line-managers mentioned; “The values at Ericsson are pretty common sense and rather obvious”. One engineer also said; “It is important with values, but much of it is obvious”. The collective view on values communicated from top management seemed to be that these obvious phrases are important but just “gibberish” and nothing that the engineers take very seriously.

Another important observation we made was that the interpreted values were lacking business orientation and consisted of behavioral guidelines towards each other. This was an observation that several of the employees also had done. Only one of the employees we met could tell us anything about the vision or mission of BMOD. Although they could not tell us what they were, five of interviewees agreed on the importance of this type of control. “Culture beats strategy every day of the week” said two engineers. Hans Vestberg, CEO at Ericsson, came to BMOD and explained how the central management viewed their business unit and what they were expected to contribute with to the company. This gave a lasting impression on several of our interviewees. One engineer for example said; “It made it easy to know where in the organization we fit in”. Another one said that they had been very clear on showing how important BMOD was to Ericsson and that “this motivates you much more than acting in accordance to some slogans”.

4.4.2 Symbols

One way that BMOD enforces working together in teams is through the layout of the office. The office landscape is open since a remodeling of the building a couple of years ago. The previously separate office rooms that to some extent still exist are today used as meeting rooms. The several other offices has been torn down and merged into large office landscapes. The coffee machines and the canteen are placed between office landscapes, which effectively makes them into meeting point between employees from different sections of the company. All though the restructuring of the office landscape had some initial resistance, everyone we talked to seemed to understand why it was done, and acknowledged the positive outcomes of the restructuring. For example one of the engineers said; “It works well with the open landscapes”. Another engineer stated; “We would not be able to work the way we do today without the office landscape we presently have”.

An informal symbol we observed was the dress code present at BMOD. The dress code is basically “wear what you want”, and everyone we met was casually dressed. One of the

engineers said; “We’re allowed to dress however we want to, as long as you focus on the job at hand”. The freedom to wear whatever you want seems to, however, have resulted in a dress code of its own. As an engineer expressed it; “If you come office wearing a suite, the others will probably make fun of you”.

4.4.3 Clans

The general consensus between our interviewees is that working in teams is great. We can however see that there are differences between the teams and sections. The most evident example of this is not between teams but rather between departments. The hardware and software departments are described to be very different from each other. As a line-manager said; “We (hardware) are let’s say Muslim, while software are Christian. We are completely different”. Another observation we made was that there was no cohesiveness between different work levels. For example, the experts do not all stick together; they are all seen as engineers. During one of our interviews the respondent said; “There are no hierarchies between the technical ranks”.

Even though they feel that there are differences between the teams at BMOD, all our interviewees said that in their team they are very cohesive and have a strong team spirit. Furthermore the interviewees agreed on that in their respective team, everyone helps each other and that they deliver together. There are no hierarchies between the various team members. The teams are used as sounding boards, where the members discuss ideas, problems and solutions. One of the engineers said; “Teamwork is crucial for me, it facilitates my job a lot. We always deliver together”. Another one goes as far as saying; “I’m proud to be working with my teammates”.

This however, is something that Kärreman and Alvesson found to be the opposite during their empirical study of a multinational IT/technology consulting company. They observed big differences between group members and their specific role. There was a clear hierarchy among the team members (Kärreman and Alvesson, 2004).

Another observation we made was the competition present between teams. The interviewees argued that a certain amount of competition is good. However, the competition can easily get out of hand and can have negative effects. As one of the engineers said; “The competition is not always at a healthy level”. This is because of lack of clear responsibility structure between

the teams. Sometimes tasks overlap and it becomes a matter of competition of whose task it actually is.

It was also brought to our intention that the engineers all feel that the team spirit is a natural consequence of the way they work together. They do not feel that it is something driven from higher management. On the other hand, one line-manager told us; "I try to not adjust the teams, even though it would be beneficial in the short term, in the purpose of maintaining a strong team spirit".

4.4.4 Long-range Planning

We got an extremely unified answer regarding the importance and influence of long range planning. All our interviewees agreed on that this type of planning was not of importance at all to them and was given no thought. For example our interviewees said the following:

"Long range planning is nothing we look at"

"Long range us planning give us no support or guidance"

"The long range planning is nothing you use, you don't even look at it"

"Long range planning is something that just floats in the background"

"It's a good idea, but it keeps changing and is hard to relate to"

4.4.5 Action Planning

In contrast to long range planning, action planning is a very important tool at BMOD. The action planning is detailed and well-structured to the point that the employees know what needs to be done, but not necessarily in what order or how. One line-manager even says; "Action planning, prioritizing and follow-ups are my main control mechanisms". Much of the planning takes place on team-level, which makes the engineers involved in it. Another line manager discusses why it is important that the engineers are involved in the planning. He says; "To see the big picture and to know what others are doing empowers the engineers to take decisions".

Another important aspect of action planning is determining lead times. This is done by looking back at historic data on how much time is usually needed for a certain task or process.

At BMOD, the various activities are very dependent on each other, and critical dependencies are prioritized through the action planning. The majority of the work revolves around developing new features in a certain time limit in order for other developments to begin. As one engineer said; “When it comes down to it, lead times are the most important control mechanisms”.

4.4.6 Budgets

We can with certainty state that budgets are not used at an engineer level in BMOD. Not even the line-managers use a budget. The only resource they have at their disposal is man-hours. If more hours are required to complete a task in time, higher management only appreciates that the engineers put in the hours rather than not finishing in time. The following statements are made by our interviewees concerning the non-importance budgets:

“Budgets is not something that controls or guides us”

“Budgets are barely used, the only time we are affected by it is when it comes to the amount of traveling we can do”

“Not even the line managers have a budget. It is only man-hours and travel expenses where you can see that something have a cost. Budgets exists on a level where the responsibility of employees are about 300 people”

In contrast to this, Kärreman and Alvesson (2004) found that budgets were used extensively at project level in the KIF they studied. They saw that budgets were used as an elaborate financial control mechanism (Kärreman and Alvesson, 2004).

4.4.7 Financial Measures

Just like budgets, the interviewees all agreed on the non-existence of financial measures at their level. “Financial measures do not control us. We know that costs are an important, but only to the degree that we should be conscious about it” is an example of the responds we got to a question regarding financial measures. The line-managers also agrees on this matter. One of them said; “We work extremely little, more like not at all, with financial figures”.

4.4.8 Non-financial Measures

In contrast to the financial measures, non-financial measures are used more frequently. The most common usages of the measurements between different sections are customer satisfaction (even though the customer may be another team of engineers), response time and on-time delivery. Our impression from the interviews is that these type of measures are much more important than financial measures. As one the line-managers put it; "We use non-financial measures often, partly in form of on-time delivers, but also through internal customer satisfaction. We also measure the quality of deliveries through error logs and response time to these. The non-financial measures are often communicated individually through comparing to goals. All employees have individual goals".

4.4.9 Hybrid Measures

As mentioned earlier, there is no presence of financial measures at engineer level, which in turn makes it hard to develop, for example, a balanced scorecard since it consists of a mix of financial and non-financial measures. During our interviews we did not get a single impression that hybrid measures were used at engineer level. As one of the engineers said; "Hybrid measures are not used at all".

4.4.10 Reward and Compensation

We have been able to identify two different types of reward and compensations. The first one is purely monetary and serves as a bonus. The second one is technical rank between engineers and the ability to be promoted and the benefits that follow. The second one is also connected to the monetary bonus system, since it is first at a certain technical rank that you get to take part of the monetary bonus.

Both the reward systems are connected to an individual performance management system, or IPM-system. The IPM-system will be further discussed in the last section of the empirical findings.

We found that there were few positive remarks towards the rewards and compensation systems at BMOD. Not everyone is completely dissatisfied, but our impression is that no one thinks that the system is well constructed or motivating. For example, one of the engineers commented on the monetary reward system and said; "The reward system is nothing you think about and does not motivate at all. I never have it in my mind, even when I put in extra

work. The reward system is tied to the IPM-system, but is mainly based on the performance of the firm as well as your department". Another one had similar views on the technical rank system and argued; "The technical rank system works in such way that the first levels does not mean anything basically, they only take you closer to the ranks actually matter". Others stood for a more critical opinion, one engineer told us that he does not think the reward systems works, a lot because of the financial situation at BMOD, and that "you can do a lot very well without any anything happening. You have to do something exceptional to be able to advance within the company". The extra monetary reward given once a year, if requirements are met, are not perceived as motivating in terms of the amount of money given. One engineer said; "the compensation from the reward system is very low in relation to the salary" and another one told us that "the extra money is not very important since it is just paid out once a year. It is nothing that you have in the back of your head and that motivates you in your daily work but it would be de-motivating if it were to be removed".

The general answer given by the interviewees when asked about the importance of money was that the technical aspects of the work are far more important than the monetary compensation you get for doing your job. As long as the salary is "high enough" or "above a certain level", the effects of more money become marginal. "There are more hobby-hackers than careerists here" as one of the line-managers put it.

4.4.11 Organizational Structure

We have previously discussed the presence of teams at BMOD, and the importance of these. We will in this part however focus on the structuring of teams, rather than the culture within them. The organizational structure at BMOD as a whole will also be examined.

Projects are the main way of working at BMOD. The projects are part of a program, and the program itself can be developing, for example, a new product. Because of the complexity behind the products at BMOD, a need for breaking down the development into projects is necessary. The projects are purely operative with a shorter focus.

Hardware and software development is as mentioned two completely separate functions within BMOD. They are also structured differently due to the way they work. The software department works in a newly implemented agile way with cross-functional teams. According to a line-manager within software development, the transition to agile development was not trouble free. Previous to the new agile way of working, the teams were divided by function,

where someone knew one part and another one something else. This meant that the project manager had to bring in the people he needed from different parts of the organization. Today, according to agile development, the engineers are divided into cross-functional teams, as mentioned above, which means that a single team are basically supposed to be able to do everything. “To put together a team that can do everything is not easy and we are not there yet” said a line-manager.

The hardware however, does not work in this agile way. Within the line, a line-manager has responsibility over a number of people. Together they form a team and it is from these teams that people are allocated to different projects. For example, a line-manager has responsibility of 15 people, he can then dispose of them to let’s say two project, giving one 10 people and the other 5, depending on need. The team however, still sits together, but also form a new sort of team with the other people in the project. Each project team has team-leaders, which communicate through conducting meetings and via e-mail. This is important because of the many dependabilities between activities and teams, and a constant communication is crucial for deployment of tasks in time. We can however see a two-sided opinion of the structure at BMOD. On one hand, the line-managers seem to be satisfied with the current structure, as one of them said; “The organizational structure with projects, programs and lines works well and is easy. There is a good dynamic between projects and personnel”. On the other hand, some of the engineers were not as satisfied with how the current structure works. One engineer said; “The communication works well between engineers in the same technical area. But when communicating between teams, and especially between foreign teams, the communication is not working that well”.

4.4.12 Governance Structure

Our first impression of the governance structure at BMOD is that the structure is not clear to everyone. There are discrepancies between the parts of the organization regarding who is responsible for what. We can see that the largest problem lies between the line and projects. Most interviewees agreed on that it is easy to know who to talk to in case they are having a problem or a question; the problem is at a managerial level. As one engineer said; “There are always conflicts of interest between the line and the projects. Is it the line’s vision or the project’s that should be prioritized? It has to be decided higher up in the ranks”. A line-manager also said; “There is a problem regarding responsibility, either you don’t know who has responsibility or you take on to much of it”.

At team-level however, the governance structure works well. Each team has a leader, who coordinates and controls the team. Even though the team leaders have control, they do not use it to a higher degree. As one of the team-leaders said; "We work very pragmatic and discuss everything. Even if I am a team leader we make decisions within the team through discussions. This is the optimal way of making decisions, since everyone in the team has their special areas". A line manager also said; "A lot of responsibility lies on team-level. This is because the work is very complex and as a manager you don't know how to solve the problems". The team leaders coordinate during meetings with other leaders in order to plan and prioritize according to need.

4.4.13 Policies and Procedures

Policies and procedures are one of the most important control mechanisms at BMOD. All the interviewees agreed on the importance of policies and procedures to different degrees. One of the engineers even argued that it is "the one true control mechanisms we have". Since the work at BMOD is very cross dependable, the policies and procedures are very detailed and important for work with strong dependabilities to be executed correctly. In order to keep the various teams in the same timeframe, BMOD uses milestones, which can be for example a set of tasks. One of the engineers argued; "Milestones are the glue that keeps the work together". At BMOD there are several different kinds of policies and procedures. The most frequent answers we got when asking what policies and procedures they have was milestones, checklists, and process descriptions.

Many of our interviewees highlighted the importance of processes at BMOD. The process description is the procedure that both software and hardware development have in most common. However, since the software development works in an agile way, the presence of other procedures is naturally lower than in hardware. According to a line manager in software development, guidelines and policies do not direct them much since they implemented an agile way of working. As an engineer at the software department put it; "The main guidance we have in our work is process description. We do not use guidelines and policies as much as we used to".

In the hardware development on the other hand, all the line managers we talked to specifically said that the structuring of policies and procedures are very tight. They argued that Ericsson has a strong history and culture of detailed structuring of the work with policies and

procedures. One of the line managers said; “We have checklists and process descriptions for everything. We have always worked like this and it works”. Another manager agreed on that remark and said; “Few things falls through the cracks at Ericsson“.

During an empirical study by Kärreman and Alvesson (2004) of an IT/technology consulting company, clear standardized work procedures were seen to be important and present throughout the firm. They used six different methodologies on how to work during projects. These methodologies are seen as one of their big strengths and perceived as a competitive advantage (Kärreman and Alvesson, 2004).

4.5 Other Findings

In this final part of our empirical findings we will show our findings which we argue can be interesting to analyze further, but does not fit under any of the previous headings.

4.5.1 The Lack of an Holistic Picture

Firstly, we would like to add a clear observation we made during our interviews. We got the impression that the interviewees know very well how they work in their team and within their line, but regardless of the question asked, they stated that they could not answer for any other part of the organization or even related teams. Several employees highlighted the fact that the different managers they have had worked and managed their employees in different way. Even the one of the line-managers argued that there are large differences between managers. He said; “The managers at BMOD control has their own way of working. Some do not care about the projects at all, while others try to control them”.

4.5.2 The view on Management from an Engineers Perspective

Another remark we made during our interviews was the view on management the engineers have. We got the impression that there is, as earlier discussed, a mistrust between the line managers, engineers and the higher management. As one of the line-managers puts it; “There is an extreme mistrust between the layers of the organization. Between the engineers and their managers, and between their managers respectively”. One interviewed that we interviewed gave us another perspective on this subject, he meant that since it is difficult to climb in the technical ranks many senior engineers move on to become managers instead. He argues that they often lack the competence to lead, and continues to say that this problem gets worse the

higher up in the managerial ranks you get. “The leaders just say ‘solve it’ instead of giving clear directives. It’s demotivating and time consuming”.

4.5.3 Peer-control

Other authors argue that the control in complex work situations, as in this case, are mainly accomplished through peer control (Rennstam, 2007). At BMOD we found that peer-control had some presence, but rather than controlling it was more at a motivational and supportive level. The employees do not control each other through explicit demands, but rather through working closely together. They depend on each other, which makes it hard to slack. One of the employees described the peer control as; “We work together in the team, and it therefore hard to slack. We don’t control each other, we rather help each other out. One of the important aspects with working in a team is the ability to ask questions in case of problems”.

4.5.4 Motivational Factors

Another observation we found interesting was the motivational factors present in the engineer workforce. One of the most commonly discussed motivational factors was working with technical problems and problem solving. One of the engineers said; “The technical problem solving is very important, to have a challenging work is really motivating”. There is a general consensus among the engineers that working with what they love is one of the best motivations. One our interviewees said; “To work with something that you are dedicated to and is interesting is the biggest motivational factor for me”, another one agreed on this remark and said; “The urge to work with something you love is the biggest motivation”.

4.5.5 Individual Performance Management – IPM

At BMOD, all the employees get evaluated through a system called the IPM. The evaluation is based on personal goals, set by engineer and manager, which make the goals customized to every individual. The goals can for example be to extend learning and knowledge, it can be to decrease response-time in case of errors or it can even be to sign a patent. We got the impression from the engineers that the IPM works well, much due to the individuality of the goals. The goals are motivating trough not being too hard yet not too easy. One of the line-managers described the IPM as; “Even if the goals sometimes are a bit fuzzy, they’re usually specific expectations. The goals are really good to give individuals clear yearly goals, and check them a couple of times every year. The goals can be everything from general goals,

such as become a better supporter. But they can also be to for example read a book and learn something new. The goals are motivating".

The IPM, as discussed earlier, is one of the factors that impact the yearly bonus. It is also looked at when engineers climb the technical ranks. It does however get more difficult to get a high grade in the IPM the higher up in the technical ranks you get. This is because the personal goals for an expert within an area are much higher set than for an engineer at the lowest technical rank.

IPM can be seen as continuous evaluations of individual performance, something that Kärreman and Alvesson (2004) observed to be used at The KIF they studied. The feedback and evaluations of their case company used the same type of goals, based on individual strengths and weaknesses (Kärreman and Alvesson, 2004).

5. Analysis

In this part we will firstly analyze the knowledge at BMOD, followed by an analysis of motivational factors and important aspects of the work from a knowledge-worker's perspective. This section concluded with analysis of BMOD as a KIF. Secondly, we will analyze the MCS package and its effect at BMOD. Finally, we will give our perception of the importance and applicability of each mechanism of control in a KIF.

We will use our theoretical framework developed in the theoretical chapter, see figure 3.3, as a base when analyzing our empirical findings. Our aim is to combine Malmi and Brown's concept of a MCS package with theories on KIFs as well as our empirical findings to explore which type of control structure is suitable for a firm of this sort.

To follow the already established structure of this thesis, we will start off by examining the empirical findings with the theories on knowledge and KIFs. After that we will discuss the different control mechanisms and analyze their role in BMOD.

5.1 Knowledge and BMOD

There is a lot of ambiguity surrounding the concept of KIFs. We will therefore analyze BMOD according to the theory in order to establish whether they are considered a KIF or not. This will be done by analyzing the concept of knowledge and apply it to the engineers in order to view them in a knowledge-worker perspective. This will sequentially create a basis to analyze BMOD as a KIF.

5.1.1 The Knowledge at BMOD

We will start this analysis by firstly discussing the different categories of knowledge constructed by Blackler (1995) and then move on to discuss the categories that are most prominent at BMOD. The categories that Blackler developed are embrained, embodied, encoded, embedded and encultured. We argue that not all of these types of knowledge can constitute the majority of knowledge in a KIF. If we start by discussing embedded and encoded knowledge, they are both a type of knowledge that exists in the company itself rather than in the employees within it. Embedded knowledge is a kind of knowledge that exists in a company's routines and encoded knowledge is information communicated through signs and symbols. As neither of these categories of knowledge are "located" in a human being, we

argue that they cannot represent the knowledge of a knowledge-worker. We do however acknowledge the importance of these categories in a KIF, as they are often crucial for a company to operate smoothly. Almost any company needs well-structured routines and knowledge, as well as information, sharing is an important aspect in KIFs.

Embodied knowledge is action oriented and "located" inside human beings in contrast to embedded and encoded knowledge. But we argue that this is not representative knowledge for a knowledge-worker either. Definitions of knowledge-workers state that a high degree of formal education is a key feature, which indicates that the knowledge is theoretical in contrast to embodied knowledge, which is more practically based.

The two remaining categories of knowledge, encultured and embrained, we argue are core for knowledge-workers. The embrained knowledge is the explicit type of knowledge that is cognitive and used when conceptual skills are needed. This is typical for a knowledge-worker whose tasks are often complex, unique and problem solving-oriented. Encultured knowledge on the other hand is located inside the company, but consists of dialogues based on high levels of embrained knowledge and strives to create a shared knowledge base within the firm. This is crucial in many KIFs due to the complexity of the products or services produced and its many specialized components.

We found that the embrained and encultured knowledge are prominent at BMOD. We argue that this is mainly due to the tasks at hand and the need for continuous communication. There were also clear influences of deeply embedded knowledge in form of well-structured process descriptions and planning techniques. The other two types of knowledge were less apparent at BMOD. Because of the types of knowledge that we argue needs to be the principal form of knowledge is prominent, we can conclude that the employees at BMOD are to be considered as knowledge-workers, from a knowledge theory perspective.

5.1.2 Understanding the Knowledge-Worker

Understanding what motivates a knowledge-worker and what working environments encourage their productivity is key to be able to say how they should be controlled. Knowledge-worker productivity is a subject that Peter Drucker has spent decades on studying. Drucker's (1999) six factors that determines the productivity of knowledge-workers were all important to every engineer we met, which leads us further towards the conclusion that the engineers can be labeled as knowledge-workers. We can conclude from the empirical findings

that four out of these six factors were fulfilled according to the engineers. They were satisfied with the autonomy they had in their work as well as receiving a task to perform rather being told how to do their job. They also felt that an opportunity to be innovative is present in their work and that quality is always advocated over quantity. In contrast to the four fulfilled factors, the engineers did not feel that they were granted continuous learning on the job or that they were showed the appreciation from management to say that they were seen as an asset rather than a cost within the organization. Both of these factors were demotivating for the engineers. The engineers said that opportunities to learn had been present at the company before their current economic situation but the lack of appreciation and acknowledgement from senior management contributed to an unhealthy relationship between the engineers and their managers. One line-manager expressed that there is an "extreme mistrust between layers of the organization" that we could clearly see stemmed partly from the lack of acknowledgment. This tells to show that these factors are both motivating and important for the engineers and their productivity.

Other motivational factors we found to be important to the engineers were all connected to the work they were conducting. To be able to work with technology, which they all said they love, and to be able to see the product they were a part of in stores, is to our understanding the most important motivational factors for them. This is consistent to a high degree with Frick's (2011) empirical findings. Emotional and intangible factors is what he found to be the most important and with the number one factor in his study being meaningful work. One large deviation from Frick's findings though is "belief in mission" which Frick found to be the second most important motivational factor. None of our interviewees mentioned anything related to a belief in the company's mission. This could be argued to be a consequence of the lack of clear mission statements acknowledged by the engineers at BMOD. This will be further discussed below. As a concluding remark, an interesting fact is that none of the interviewees claimed that the monetary compensation was in important for them in terms of motivation.

5.1.3 Can BMOD be categorized as a KIF?

The ambiguity surrounding the concept of knowledge and KIFs has been discussed in our theoretical chapter. There are no established ways of categorizing a company as a KIF even though some have tried, for example Starbuck (1992). The ambiguity concerning what the term knowledge actually implies is even more evident than that concerning KIFs. This of

course makes it even more troublesome. But there are certain aspects of knowledge, knowledge-work and KIFs that researchers agree on. If we start by looking at what the majority of researchers believes should be required for work to be labeled as knowledge-intensive, there are a few common features that we can quickly see is evident within BMOD.

To begin with, a high degree formal education is a necessity for engineers at BMOD to be able to their job. The tasks are so complex, as Rennstam (2007) put it, and technically advanced that it would be impossible to learn at the company. All of our interviewees at BMOD also had a specialization within their engineering degree. This points to the fact that the engineers all have an esoteric expertise, something that several authors views as an important characteristic among knowledge-workers (Starbuck, 1992; Blackler, 1995). Drucker (cited in Frick 2011) wrote that one of the most distinguishing features of knowledge-workers is the fact that they often know more about the job than their managers. This is also clearly the case in BMOD. As we showed in the empirics, one line manager expressed this by saying that the job is too complex for managers to be able to solve problems that the engineers encounter.

It is evident that the work conducted at BMOD fits the description of knowledge-work. However, a company cannot automatically be labeled as knowledge-intensive just because employees are conducting knowledge-work. Starbuck (1992) argues that at least one third of the employees need to be involved in knowledge-work for the company to be classified as a KIF. Other researchers (Alvesson, 2001), as well as Starbuck (1992), argue that a company is knowledge-intensive when the firm's main input in the production is considered to be knowledge. As noted in the empirical chapter, the majority of employees in BMOD are engineers working in a R&D setting. By the logic of saying that the main input should be knowledge, in contrast to labor or capital, we can conclude that BMOD can without hesitation be categorized as a KIF. Even by Starbuck's (1992) attempt to define KIFs by the number of knowledge-workers, BMOD fits the description.

5.1.4 Summary of knowledge at BMOD and BMOD as a KIF

The categories of knowledge that we argue need to stand out in the knowledge of employees and organizations in order to classify them as knowledge-intensive are embrained and encultured knowledge. These, along with the embedded knowledge in processes, procedures and planning, are clearly the significant types of knowledge we believe to exist at BMOD. This in turn leads us to the conclusion that there is no doubt that we can classify the engineers

at BMOD as knowledge-workers. Along with the fact that the engineers can be labeled as knowledge-workers, BMOD also fulfills other criteria of what constitutes a KIF and we can therefore conclude that BMOD is a KIF.

We have also shown how engineers at BMOD recognizes the importance of Drucker's (1999) six factors that determine productivity and how engineers feel that the factors reflect their needs. The answers we got from the engineers show how they do not feel that they are given enough possibilities for continuous learning and how they feel a lack of acknowledgement from management. These factors do not just affect productivity but also motivation for the engineers. The biggest motivational factors are otherwise connected to their work, including working with what they love, and not, for example, monetary compensation.

5.2 MCS Package in BMOD

In this part of the analysis we will evaluate the various parts of the management control system package. This is done through comparing the typology to our empirical data, hence getting an input on which control mechanisms are active in BMOD, and which are not.

5.2.1 Cultural Controls

To start off, we will analyze the presence of cultural control at BMOD, how it is perceived and how active it actually is.

There are clear symbols at BMOD in form of open office landscapes, coffee machines and the placement of a large canteen where all employees eat. These symbols clearly create an environment optimal for communication, both planned and spontaneous. Within office landscapes communication thrives through keeping them open. The engineers can practically yell out a problem, and get an answer from someone else in the office landscape. This increases both the sense of team spirit as well as effectiveness. On another level, the employees in various landscapes are also prone to communicate with each other due to the placement of coffee machines, which typically are between the different office landscapes. To top off the communication between employees, a single large canteen can be argued to be a meeting place for all employees, where they can converse, socialize and share ideas between each other. The canteen is place in the center of all office landscapes and can be seen from the top floor down, which also indicates a sense of openness between the landscapes. It is clear that the symbols at BMOD have the purpose of increasing communication, which in this sort

of company is vital. We got a clear impression of this from the engineers we interviewed as well. Going back to the old closed offices is not an option for them.

There is also an informal symbol, the lack of dress code. At the office, people are dressed however they like, which in turn has created a sort of dress code. An engineer does not come to work in a full suit, this would be considered as weird by the co-workers. We interpret this symbol as something that is grown from the engineers themselves, rather than something that management set out. The dress code could be argued to create an environment where the focus lies on the work, and the autonomy of the engineer.

The existing office landscapes and the obvious intent by management on stressing the importance of communication have unquestionably contributed the strong sense of team spirit that everyone felt, which was evident for us during all our interviews. What we found particularly interesting was that the sense of a strong team spirit was just as evident in hardware development as it was in software although the structure of the teams is fundamentally different. The team spirit, or what could be described as a clan culture, is understandably strong in hardware development where the teams are structured in terms of function but it felt equally strong in software development where teams are structured as cross-functional teams.

All engineers we talked to argued that working in a team results in several benefits. Among these are the ability to share knowledge, problems and ideas within the group and collectively contribute to finish the tasks. Another positive outcome of working tightly together, the engineers claimed, is the motivational aspects of being an important part of a team. The benefits of working in teams all relates to the key characteristics of a strong clan culture. It also results in a form of peer control where the collective effort reduces the ability, or rather the will, to slack.

The cultural presence at BMOD contains more than working tightly together in teams and stressing good communication, there are also clear values among the engineers regarding, for example, the importance of being professional. The behavioral values are however something that the engineers argue is common sense, and not something formally communicated from management. Engineers see the values that management communicates as nonsense. They were explained as just a couple of words on a sheet of paper that no one ever acknowledges. There is a clear lack of formally communicated values, even though they seem to be requested

by the engineers. Additionally, the engineers do not have a clear vision of where the company is heading, and how they fit in the big picture of the firm. There is a clear lack of communicated mission and vision statements, something that undoubtedly is important for the engineers. One line manager explicitly expressed the lack of a clear vision and argued that it should exist in a healthy and well-working organization. During one occasion Hans Vestberg, CEO of Ericsson, visited BMOD and explained to the employees what role they play in the firm. This was seen as interesting and motivating to the engineers, which indicates a need for vision and mission statements that reaches everyone in the organization. This leads us to the conclusion that there is a lack of formally communicated business-oriented values.

5.2.1.1 Summary of Cultural Controls

To summarize, the cultural controls at BMOD takes many different forms. Partly, it's the well-functioning symbols that foster communication and autonomy, which is important when working in such a complex field as the engineers at BMOD. We argue that BMOD has done a good job to facilitate this as much as possible. Furthermore, the teams at BMOD work well, and functions as sounding boards where ideas and knowledge is shared, and problems solved together. This is highly appreciated and creates an environment where creativity and innovation can flourish. The team structure at BMOD is in our opinion a good way to implement a strong clan culture. Finally, the values shared by the engineers are behavioral and focus on being professional and be respectful to others. We argue that a sense of business oriented values, in form of vision and mission statement for example, is however lacking. This is an area that the engineers are unsatisfied with, and would like to see more of.

5.2.2 Planning, Cybernetic Control and Reward Systems

This category is characterized by contrasts between controls. Firstly, the long-range planning is uninteresting for the engineers. The scope is too far into the future, and the specifics of it change much with time because of the nature of the high-tech industry. The action planning however, is seen as one the main forms of control. The work revolves around finishing tasks in time, due to critical dependabilities and the time frame of the projects. An interesting feature in the action planning is the degree to which engineers are part of it. Due to the complexity of the tasks, the planning needs to be influenced and approved by both engineers and managers in order for it to be viable.

Secondly, neither budgets, financial, nor hybrid measures are used when controlling the engineers. The engineers are never part of financial issues, which leaves them to focus on their work and applying their esoteric expertise. They do however work with non-financial measures on a daily basis, as they reflect the work they are conducting in contrast to financial measures. The non-financial measures mainly focus on customer satisfaction and response time to error logs and correction of these. We argue that there is no purpose to including the engineers in financial issues, since this is outside their esoteric expertise, and could take focus away from their main job. The nature of the knowledge-worker includes the notion that they know more than their managers. To impose financial measures and budgets, we argue, would only be counterproductive as the engineers know how to solve their tasks in the most efficient way, and one of the main costs of development is the one connected to man-hours.

Finally, the reward system at BMOD is also characterized by contrast. On one hand, the reward system itself does not work that well. The reward system is based on several different factors, which are hard to impact for the individual, and therefore loses its motivational powers. On the other hand, the engineers still feel that it should not be removed, since this would be directly demotivating, even though no one seems to be motivated or think about it on even a monthly basis. We argue that the reward systems should be less tied to corporate results, and focus on personal goals. Due to the individual performances of engineers we believe that this would have a larger motivational and thereby controlling effect.

Another type of reward system is the technical rank, and the possibility of a higher wage tied to it. We found this to have a larger motivational impact than the bonuses. There are, however, problems with this reward as well. The engineers argue that the requirements to climb in the technical range are far too hard, and that the ranks do not mean much under a certain level. We argue that the reward system as a control mechanism is good due to its motivating effects and its ability to acknowledge performance, but the structure of them at BMOD are not well suited for the engineers.

5.2.2.1 Summary of Planning, Cybernetic Control and Reward Systems

To summarize, the long-range planning is of no interest for the engineers at BMOD, mostly due to its change with time. The action planning however, is seen as one of the main control mechanisms and is very important since the time-frame of the projects are crucial and we argue that it is important to involve knowledge-workers in the action planning due to the

complexity of the work. Furthermore, financial measures, budgets and hybrid measures are not communicated to the engineers. It is our opinion that it is not necessary to involve financial measurements or budgets if financial figures are not a natural part of the work conducted by knowledge-workers. In contrast, the non-financial measures are important in measuring and evaluating the work of the engineers on a daily basis.

Lastly, we argue that reward systems are a good control mechanism, but the systems at BMOD are not structured in the most optimal way. The main reward system is tied to corporate result and therefore difficult for engineers to influence. The possibility to climb in technical ranks is more motivating for the engineers but taking a step to the next level is sometimes too difficult. Despite imperfections, the engineers viewed these systems with positive eyes.

5.2.3 Administrative Control

The following section is mainly based on the hardware development department of BMOD. This is due to the recent implementation of an agile way of working in the software development department, which during our interviews was not fully operational. We believe that using data from the software department could skew our results in this section.

Policies and procedures are, together with action planning, one of the most important and effective mechanism of control in BMOD. Because of the strong dependabilities between parts and activities of the organization, policies and procedures are important in order to make sure that all tasks follow certain structures. Tasks that teams or individual workers carry out require esoteric expertise, which means that the majority of work is very specific yet it is inter-related. This means that policies and procedures are important in order to bring structure to the organization. This is both our opinion as well as the employees we interviewed. Kärreman and Alvesson (2004) also noticed the importance of policies and procedures during their study of a computer consultancy company. A consultancy firm is a KIF of a different character and it is interesting that this form of control is equally important in a company that relies heavier on key individuals. Policies and procedures are deeply rooted in Ericsson and is a perfect example of the embedded knowledge in BMOD.

The structure of teams is what characterizes the organizational structure at BMOD. The implications that a team has on the ability to share knowledge and problems for example, have been discussed previously in the cultural control section of this chapter. What can be

said about the structure of teams is that all employees appreciated the structure and the benefits that come with it. Furthermore, we argue that in a company with knowledge-workers, who possess an esoteric expertise and know more about their work than their managers, will be more productive when working closely with people that have similar knowledge due to the ability to share amongst each other.

The organizational structure in BMOD is, in hardware development, matrix structured. Engineers are working within a line, divided by functional areas, and allocated to different projects by a line manager. The engineers felt that occasionally problems arise when managers cannot decide whether a certain area belongs to a project or a line, which in turn slowed the project down. We argue that is due to an unclear governance structure, which is essential in a matrix organization. This leads inevitably leads us to our last control mechanism – the governance structure.

As we just mentioned above, clear governance structures are crucial for work to go smoothly. That is especially important between the line and the projects at BMOD. When questions about responsibility arise, the work suffers. On engineering level, a lot of responsibilities are put on the teams. This is because of the complex nature of the work, which means managers do not have the ability to solve problems or know what the best course of action is. The managers are pragmatic and discuss continuously with their teams. In order to reach a high level of productivity among the engineers, we argue that it is important to allow them to participate in decision-making. This reinforces the feeling of autonomy and the sense of being handed a task rather being told what to do, factors Drucker (1999) claims are important to knowledge-worker productivity.

5.2.3.1 Summary of Administrative Control

To start off, we want to highlight the importance of policies and procedures. It is vital in order to keep a clear structure of tasks in a big company where work is inter-related and of a complex nature. It is also a perfect example of the embedded knowledge at BMOD. We can also, once again, see the benefits of working in teams and we argue that teams are the best way of structuring knowledge-workers in this context, since they possess an esoteric expertise. The governance structure at an engineering level is largely put on the teams due to the complex nature of the work. Our opinion is that when employees know more about the

work than their managers, they need to be highly involved in decision making to be as productive as they can be.

5.3 Applying the MCS Package to the KIF

In the following section, we will analyze the components of the MCS package based on both the analysis of how the various parts are perceived by the engineers at BMOD, but also from the perspective of theory and empirical data on KIFs and Drucker's (1999) six factors of knowledge-worker productivity. The type of KIF analyzed in this thesis is a technical company in an R&D setting, which we argue could give different results than if analyzing a KIF of another character. The following analysis of the control package focuses on control of knowledge-workers, and not necessarily an entire organization.

The structure of the following section is based on the MCS package typology. The section is divided by element of control but each component will be discussed separately.

Cultural controls

We start by discussing the importance of cultural controls. To start off, we argue that controlling through *values* is important at a KIF for several reasons. Firstly, vision and mission statements are an important factor for both control and motivation. Both our empirical data from BMOD and the results of Frick (2011) show that knowledge-workers are motivated by the belief in a mission. Furthermore, values can influence employee behavior and actions at certain situations, an important aspect when autonomous work is central to productivity.

Clans are a good way of controlling behavior in smaller groups of people. It gives the knowledge-workers possibilities to work tightly together and to share knowledge, problems and solutions and thereby contributing to continuous learning. The formation of clans can also have a controlling effect in form of peer control. However, it is important that clan culture does not create unhealthy competition between teams to the degree where communication and information sharing becomes hampered.

Another effective way of controlling behavior and actions with cultural controls is through *symbols*. We argue, however, that symbols alone have a limited controlling effect and should be used as reinforcement together with other forms of control. The purpose behind the

symbols needs to be communicated in order for them to truly have an effect. The way symbols are used at BMOD to enhance communication is a good example of the reinforcing effect symbols can have.

The use of cultural controls has been argued by researchers (see for example Alvesson, 2001; Kärreman and Alvesson, 2004; Starbuck, 1992; Nonaka, 1991) to be the most effective way of controlling knowledge-workers. Alvesson (2000; 2001) has especially emphasized the social identity of the knowledge-worker. Cultural controls are what influences the social identity and therefore increases the importance of the element.

Planning

The importance of *long range planning* to knowledge-workers is limited. The planning of specific work is located far into the future and thereby too uncertain to have any value. We argue that there are other positives outcomes of long range planning. If constructed properly, long range planning can be used to express the vision and strategy of the company but as a mechanism of control, it is ineffective. Short term planning, or *action planning*, however, is in our opinion one of the most important and effective forms of control in a KIF, due the complexity of the work. There are several elements of action planning that makes it an effective tool. In BMOD, for example, it is vital to ensure through planning that tasks with dependabilities between them runs efficiently.

Another important aspect of action planning in KIFs is to involve the workers in the process due to several reasons. Firstly, it can give workers a possibility to influence the amount of work they believe they can handle and more importantly, the kind of work they want to take on, thereby ensuring that the work is on a level that they feel is challenging and motivating. Secondly, being involved in the planning process can contribute to a greater sense of autonomy for the knowledge-workers as well as being handed a task rather than being told what to do. Finally, the work in a KIF is often of a complex nature and managers need to involve the knowledge-workers to ensure that the planning is viable since they do not have the expertise to fully grasp the character of the work.

Cybernetic control

The cybernetic controls involve *budgets*, *financial measurements*, *non-financial measurements* and *hybrid measurements.* We argue that the forms of control that involve

financial figures, budgets, financial measurements and hybrid measurements, are not the most effective nor important control mechanisms when controlling knowledge-workers. This argument is based on the fact that knowledge-workers often possess an esoteric expertise, which means that no manager knows how to do their tasks more efficiently than them and therefore, the need for financial restraints are less important. If financial figures are not a natural part of the knowledge-workers job, we do not consider any control of a financial nature to be suitable. We believe that they are more likely to hamper the knowledge-workers' productivity. If, however, financial figures are an important element of the work, then financial controls become equally important.

In contrast to the controls discussed above, we regard non-financial measurements to be a very useful form of control. Non-financial measurements have the ability to be configured according to specific tasks, which makes it more applicable than financial measurements. If tasks can be measured in a clear and consistent way, non-financial measurements can be an excellent way to control the knowledge-worker; otherwise they are an equally ineffective form of control as the other measurements.

Reward and compensation systems

According to the empirical data it is clear that monetary *reward and compensation systems* are not affecting the daily work at BMOD. Frick (2011) strengthens this view, since total compensation is placed low on the scale of motivational factors. Larger focus should instead be placed on creating a non-monetary reward system. This could for example consist of climbing in ranks, or greater responsibilities. From our empirical data we can draw the conclusion that climbing the technical ranks at BMOD is more important than getting a large bonus at the end of the year. We believe that this applies to the majority of knowledge-workers because of their dedication to their job. By showing appreciation through non-monetary rewards, the engineers feel appreciated, and more of an asset rather than a cost. Another important aspect of the reward systems is the need for it to be related to individual performance, rather than corporate performance. However, it is important to find a good combination of individual and corporate goals, in order to reduce the risk opportunistic actions.

Administrative Controls

Among the administrative controls, we argue that in a KIF, where people work autonomously, the *policies and procedures* are amongst the most vital mechanisms of control. In many KIFs teams and individuals carry out tasks that require esoteric expertise. These tasks are regularly dependable on each other, which makes the structuring of them crucial for operations to run efficiently. Kärreman and Alvesson (2004), also noticed the importance of policies and procedures during their study of a computer consultancy company. Interestingly, even though the KIF they studied is of a different character than that of BMOD, with heavy reliance on key personnel, the importance of policies and procedures is still equally great.

We have in the previous parts of the analysis discussed the importance certain elements in the work place of the knowledge-worker, one of these being autonomy. By having an *organizational structure* and governance structure that enhances these elements, we argue that the productivity of the knowledge-worker will increase. We found that at BMOD, through organizing by teams the autonomy is enhanced. The structure at BMOD is further characterized as a matrix structure, which we argue works well in a complex organization. The organizational structure is however highly dependent on the nature of the firm. The structure depends entirely on the company, but should be structured in a way that suits the knowledge-workers and the characteristics of them. Furthermore it is important to keep the knowledge-workers at the same hierarchy when the organization does not rely heavily on key individuals.

The *governance structure* should be structured accordingly to the organizational structure. We argue larger responsibilities should be pushed down to the level of the knowledge worker, increasing the autonomy of the knowledge-worker. The productivity of the knowledge-workers will increase by giving the teams greater responsibilities, since it will increase their sense of being handed a task rather than how to solve the tasks, and thereby increase innovation as well. However, when pushing down responsibilities to this level, the importance of clear responsibility areas are crucial, since confusion between teams could occur otherwise, creating inefficiency.

6. Conclusion

In this chapter we will conclude our findings and analysis through visualization in a configured model. We will also answer our two research questions; 'Which control mechanisms are active in a KIF?' and 'Which control mechanisms are effective and important in a KIF when controlling the knowledge-worker?'

We will begin this chapter by summarizing our main conclusions before going deeper and explaining how we reached them. Our main conclusions are:

- Structural controls are the most active control mechanisms in a KIF.
- Structural controls are equally important as controls that enhance motivation and productivity.
- Cultural controls have the broadest influence on knowledge-workers due to its ability to improve structure as well as productivity.

Active control mechanisms

To answer our first research question, which control mechanisms are active in a KIF, we use our empirical findings from BMOD. The active control mechanisms at BMOD are mainly of a structural character. The most prominent and effective of these consist of action planning, policies and procedures and organizational as well as governance structure. We also found that cultural controls are used actively, but lack penetrating power. Even though the engineers at BMOD feel controlled by the culture and argue for its importance, it is mostly self-evident to the engineers and, in their opinion, not a product of management. This leaves room for improvement for the managers at BMOD to implement better cultural controls. Furthermore the non-financial measurements also have a controlling effect since it is the only measurement that reflects the work performance of the engineers, in contrast to financial measurements and budgets that are not a natural part of their work. Similar to the cultural controls, the rewards system at BMOD are an important element to the engineers, however this control also contained room for improvement since it does not effectively control or motivate the engineers today.

Effective and important control mechanisms in KIFs

These conclusions lead us to the question of which controls we find important and effective in a KIF. We view the controls from two perspectives; important controls for structuring the autonomous work based on esoteric expertise from the knowledge-worker, and configuration of controls that stimulates their productivity and motivation.

Policies and procedures as well as action planning are crucial for the sake of structuring the knowledge-work in a KIF. This argument is based on the esoteric expertise often needed to conduct complex tasks and the dependendabilities among them. As a result, the organization needs to be structured in order for work to run smoothly. Policies and procedures are vital when employees demand autonomy while the company relies on communication and a collective effort. They can be used to make sure that the execution and outcome of the work stays within boundaries set by the company. The complexity of the tasks and the autonomous work also make the need for synchronizing activities vital. Action planning structures the activities and make sure that they follow an imposed time frame. Action planning can be seen as a tool with a larger scope to structure tasks and make sure they are completed on time, while policies and procedures establish boundaries for the execution of autonomous work.

We argue that motivating and stimulating the productivity of knowledge-workers can be done effectively through configuring organizational and governance structures along with reward and compensation systems in a way that suits the knowledge-worker. We believe that the most effective way of configuring these is to do it in adherence to Drucker's six factors of productivity. For example, an organizational structure that allows autonomy and a governance structure that let the knowledge-worker take responsibility of their tasks enhance their productivity. Reward and compensation systems also need to be configured to match the characteristics and tasks of the knowledge-worker in order to motivate them properly. According to our findings, this is most effectively done through non-monetary rewards.

Cybernetic controls however, are not equally important as other control mechanisms. We do not find this type of control to be a vital part in the control package of a KIF. We view cybernetic controls as firm specific, depending on the nature of the work they conduct. The main purpose of it is to follow up on the performance of the knowledge-worker, which due to the type of work is difficult.

Cultural controls are important for both structure and productivity. These controls have long been emphasized by researchers on the subject of KIFs as a cornerstone in control of knowledge-workers, a view that we share. Due to the autonomy of the knowledge-worker and the difficulty to implement performance measures, cultural controls become important for managers as a tool to control the behavior and actions of the workers. They can also have a motivational effect, for example when employees believe in the communicated mission of the firm.

Our conclusions are visualized in the management MCS package below which is configured to reflect which controls we find important in a KIF.

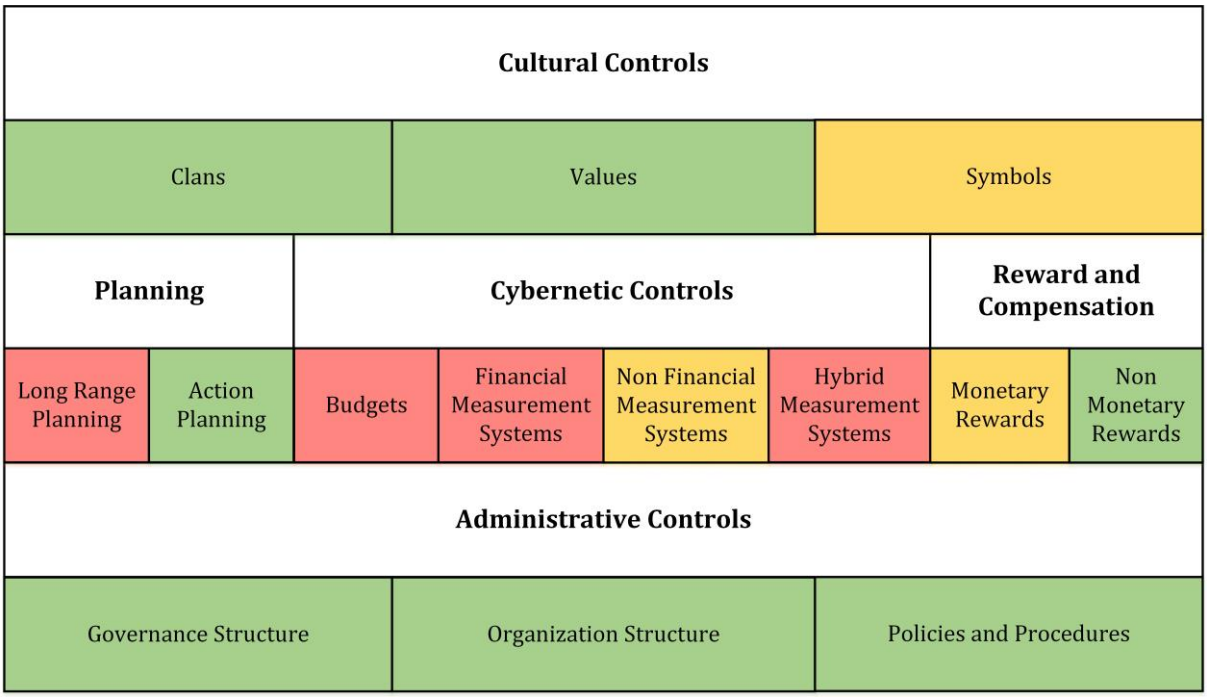

Figure 6.1 Configured MCS package

The controls colored with green are the controls we argue are the most important and effective in a KIF. The yellow reflects which controls we believe are important, but not to the same extent as the green. The red color on the other hand symbolizes, in our opinion, an ineffective control mechanism.

Furthermore, we argue that the framework of Malmi and Brown can be complemented with an additional form of reward and compensation system. This is because we find non-monetary compensations to be a more effective motivation and control mechanism in KIFs than

monetary compensation systems. It can, in our opinion, be compared to the financial and non-financial measures.

We believe that our conclusion gives a nuanced picture of controlling knowledge-workers. Put in relation to Kärreman and Alvesson's (2004) Cages in Tandem, our findings gives a deeper understanding on the impact of each type of control within the socio-ideological and technocratic controls, based on the typology by Malmi and Brown (2008). Given this understanding of the impact of the controls, we agree with Kärreman and Alvesson's view that there is a close interplay between the two forms of organizational controls and that they reinforce each other. In contrast to Kärreman and Alvesson however, we believe that the technocratic controls can be viewed from two perspectives. The first is a structural perspective and includes controls that primarily structures activities and people in an organization. The second perspective views controls from a motivational and productivity enhancing standpoint. The cultural controls in our framework are what Kärreman and Alvesson refers to as socio-ideological and we believe that they can be viewed from both perspectives mentioned above. They have the capacity to both structure and motivate the knowledge-worker.

6.1. Discussion

To conclude our thesis, we will critically discuss our findings and conclusions as well as the limitations of the study. We will also put the results of our thesis in a societal context and finally suggest areas of future research.

In today's modern world, KIFs are steadily growing. It is therefore important that we have a better perception of how knowledge-workers should be controlled in order to enhance motivation and productivity. As Drucker argues, "The most important contribution on the 21st century is to […] increase the productivity of KNOWLEDGE WORK and the KNOWLEDGE WORKER" (2007, p.118).

The applicability of our conclusions and of our configured model of the MCS package by Malmi and Brown may be limited due to our case company. We believe that BMOD can without a doubt be categorized as a KIF, however, the nature and the character of the company is different from many other KIFs. BMOD is a highly technical company in an R&D setting where the work is very complex and highly dependent on a collective effort of esoteric expertise. This differs from the nature of a consultancy firm another frequently

mentioned form of KIF, (see for example Kärreman and Alvesson, 2001; Alvesson 2004, Starbuck, 1992), where the work to a higher degree is dependent on key individuals. We have tried to generalize our conclusions to all KIFs by using secondary empirical data from other studies and comparing it to our findings at BMOD. We realize, however, that we have mainly had a perspective based on our case company and this may have impacted the generalizability of our results. To strengthen and validate our findings, empirical data from other KIFs of other natures are needed.

Important to discuss when analyzing the control mechanisms is the time frame in which they can influence behavior and action of the employee. The cultural controls, for example, are all of long-range character. Culture is not monolithic and robust (Alvesson, 2000) but may take several years to substantially shape in a new direction. In contrast, the formal controls, such as budgets, have a shorter time frame of impact. The time frame of impact has not been taking in to consideration since it is beyond the scope of this study.

6.1.1. Theoretical and Practical Implications

Theoretical implications

The aim of this study has been to provide a richer understanding on control of knowledge-workers. Our results provide a nuanced picture on existing literature on how to control knowledge-workers. We have contributed to research by demonstrating what control mechanisms are effective when controlling knowledge-workers, since the existing literature mainly focuses on which elements of control are important.

By configuring the MCS package by Malmi and Brown (2008) we have further extended their work by using their generic model and showed how it can be applied to a certain category of firms. We also distinguished the effectiveness of each component in the framework when applying it to a KIF.

Practical implications

From a managerial perspective, this study shows how various control mechanisms are perceived from a knowledge-workers point of view. Our configured framework also demonstrates how effective the various control mechanisms are in a KIF and what controls

may be the key to enhance the productivity of the knowledge-workers. We have also exemplified how different controls can be used for this purpose.

6.1.2. Suggestions for Future Research

For future research in the area, we recommend more empirical research on KIFs in general and knowledge-workers in particular. To deepen the knowledge on the role of an MCS package in a KIF and to strengthen our view on the matter, there is a need to research different types of KIFs to increase the generalizability of the framework. It may also be fruitful to see if different types of KIFs require different configurations all together.

Furthermore, it may be useful to examine how different versions of MCSs can be configured in order to be fully applicable to a KIF. We have argued that the typology by Malmi and Brown suits our study but others may find different concepts of MCSs to be more useful.

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Appendix 1: Framework for Questions in English

Cultural Controls		
Clans	This type of control can be described as the culture within a group, e.g. within a software developing team. If the culture within the group generates some type of knowledge and value-sharing the clan-idea is present. The clan-status is achieved through socialization processes.	Do you have any special kind bond within the team you work in; do you act as a group? Do you feel that there is any sort of competition between software and hardware, or between any groups for that matter?
Values	This type of cultural control is characterized by organizational definitions communicated typically through managers. The idea is to let the employees know about the company's values, purpose and strategic direction. This gives the employees a deeper sense of worth with their work and thereby motivates them.	What values does Ericsson have in your opinion? An example of values is "We believe in diversity and give everyone the same grounds to evolve and move upwards". Do you know what Ericsson's strategic goals are, for example do you know where the company is heading and where you want to be in 5 years? What is the purpose of Ericsson, why modems and telecommunication, what sort of benefits does this have? Does the values and strategic goals help you understand what to do in difficult situations or decisions?
Symbols	Symbols effects the culture at the company and can effect communication, collaboration etc. The symbols can take different form, e.g. dress code and office-landscape layout.	Is there anything here at the work place that symbolizes Ericsson? What symbolizes Ericsson for you?
Planning		
Long range planning	This type of ex-ante planning is used to set up for a longer time frame and can be seen as more strategic. It should be used to create congruence across functional areas through expected	How does the long range planning effect you work, for example roadmaps? Does this sort of planning help you

	behavior and level of effort.	make decisions? Does the planning help you recognize the innovation process between different sections of the company, and how you match together?
Action planning	The action planning are goals and actions set for immediate future. It also has the purpose to create congruence across functional areas through expected behavior and level of effort. Employees who are involved in this planning are more likely to execute it effectively.	Which type of planning do you use in you daily work? Do you use the plans set up in shorter terms as a tool for your work, e.g. checkpoints or milestones? How involved are you in planning?
Cybernetic Controls		
Budgets	Budget is the most basic and universal form of control. It has motivating and authorizing effects on employees. The focus however often being on cost reduction instead of value creation.	Do you feel that budgets limits or controls you work, and if so, in what way? Do you have the opportunity to affect budgets? What sort of follow ups do you have on budgets? How does the distribution of responsibility look, for example, who is responsible for seeing that the budget is followed?
Financial Measurement Systems	Similar to budgets, financial measurements are ultimately the universal measures of business performance. They help the organization to understand how efficient and effective various parts of the firm is. It can therefore be used as a means to control. Limitations with this type of measurement is that it can't always be used. It also has a tendency to be too late, too back-ward looking and thereby makes cross-functional decisions harder	To which degree does costs affect your work? Do you ever discuss financial measurements, for example return on innovations? Are you ever affected by financial measurements from other sections? Does it help you to know how other sections are doing?

	to make.	
Non-financial measurement systems	Non-financial measurements refers to for example market share, customer satisfaction, processes and lead time. These are often set up ex-ante and followed up, to ensure that employees acts accordingly. This type of measurement is getting more popular due to the limitations of financial measurements.	How important are lead times for you? Does it motivate you? Since you work simultaneously, do you feel that these type of measurements helps you manage different processes and activities during compared to different sections? How much does customer satisfaction and market shares control you? Is it something that motivates you? How do you work with employee satisfaction and customer satisfaction? Is this something that affects you?
Hybrid measurement systems	This type of control mechanism combines financial and non-financial measurements. An example of this is the balanced scorecard.	How much do you work with BSC? Is it something that influence and/or motivate you in your work? How important is it for you? Does this kind of measurements help keep track on processes or activities during the work? For example how other parts of the organization are doing? Do you think the mix of financial and non-financial measurements are good? How do you feel with converting financial measurements or controls to non-financial, softer measurements of controls?
Reward and Compensation	Reward and compensation systems are used as a way to motivate employees to act accordingly with goals set up. It is also a way to improve performance in individuals and groups.	What reward systems do you have? Is it something you miss that would motivate you? Do reward systems motivate you?

		Do the reward systems correspond with the important parts of your job? Are the foundations in the system easy to influence?
Administrative Controls		
Governance structure	The governance structure refers to the formal hierarchy of a firm. It includes board of directors as well as top management all the way down to team leaders. The control mechanisms allows for better coordination both vertically and horizontally, since it is clear who is held accountable for which activities. Deadlines, schemes and agendas help with the surveillance of lower ranked employees.	Do you have a clear picture of who has got responsibility of what? Does the structure of responsibility have any effect on your work? If you want authority to do something or are not sure if you are allowed to take a decision, do you know where to turn? Have there been problems with decision-making?
Organization structure	The way people are organized within the organization can effect relations and ease of communication, and can therefore be a powerful tool of control.	What are your thoughts about the structure of groups at Ericsson? Is it effective to work as you do? How easy is it to communicate with other teams? Does the structure of you workplace facilitate or limit communication? Do the organizational structure effect the way you do your work or handle a task? Do you have a clear picture of what your role in the organization is?
Policies and procedures	Policies and procedures are clear documents of specific instructions and limitations of how to work. It includes standard operation procedures and practices, as well as rules and policies.	To what extent are you working by policies and procedures? To what extent do you follow these procedures? Are these followed at all times or are they viewed more like guidelines? Do these documents help you in your work or do you feel that they impose limitations in your work?

Various Questions		
Peer Control	Peer-control can be compared to the mutual adjustment concept by Mintzberg. The purpose of it is to have the employees control each other.	Do you feel that you motivate and help each other much between co-workers? Do you ever feel that you can control other co-works, or that they control you in some way? Do you feel that controlling and influencing each other can be more effective than a manager doing it?
KIF	Knowledge intensive firms are characterized by a couple of things. For example, the need for innovation and continuous learning is important.	How much autonomy do you have in your work? How innovative are you or do you feel that you can be? How innovative can you be when developing your new products or where in the development can you be innovative? How important is continuous learning for you personally? How important is quality compared to speed or quantity in everything you do, from your point of view versus your manager's point of view? What are your thoughts on how you and your colleagues are perceived within the organization? Do feel highly valued or more of a cost? If there were to be a budget cut, do you think management would value the engineers higher than other positions within the organization? Do you think you should be considered as the most important employees?

Communication and Motivation	In order to keep a good flow and high productivity in a firm, motivation and communication are core.	Do you think that information and knowledge flows properly within the organization, especially between engineers? What motivates you in your work? How do you feel that you are being controlled? Do you use EGMS?

Appendix 2: Framework for Questions Translated to Swedish

Cultural Controls	
Clans	Har ni någon speciell gemenskap inom ert team? Känner ni att det finns någon form competition mellan mjukvara och hårdvara, alternativt mellan olika utvecklingsteam?
Values	Vad står Ericsson för, vad är företagets värderingar, t.ex. mångfald, får alla samma möjligheter att utvecklas? Vet du vad Ericssons strategiska mål är, det vill säga vart är företaget på väg, vart vill man vara om 5 år? Vad är Ericssons syfte, varför sysslar man med modem och telekommunikation? Hjälper det dig att ta beslut?
Symbols	Finns det någonting på arbetsplatsen som symboliserar er på Ericsson?
Planning	
Long range planning	Hur påverkar den långsiktiga planeringen ditt arbete (roadmaps etc)? Hjälper planeringen dig att kunna ta beslut? Hjälper planeringen dig att förstå utvecklingsprocessen i förhållande till andra avdelningar?
Action planning	Använder du planeringen som ett verktyg i ditt arbete? Vilka typer av planering använder du i ditt dagliga arbete? Hur involverad är du i planeringen?
Cybernetic Controls	
Budgets	Är budget något som styr ert arbete, och i så fall i vilken utsträckning? Har du möjlighet att påverka budgeteringen? Vad finns det för uppföljning av budgetar? Hur ser ansvarsfördelningen ut angående budgetar, vid t.ex. uppföljning?
Financial Measurement	Hur mycket styrs ni av kostnader?

Systems	I vilken utsträckning används finansiella mått hos er, t.ex. avkastning per investerad krona i utveckling etc? Påverkas ni av finansiella mått från andra avdelningar? Hjälper det olika
Non-financial measurement systems	Hur viktigt är det med ledtider för dig? Motiverar ledtider dig? Hjälper dessa typer av mått att hålla koll på processer eller aktiviteter under arbetets gång, t.ex. var är andra avdelningar? Hur mycket styr kundnöjdhet, respektive marknadsandelar dig i ditt arbete? Är det något som motiverar dig? Hur jobbar ni för att öka kundnöjdhet, anställdas nöjdhet? Påverkar detta dig?
Hybrid measurement systems	Hur mycket jobbar du med balanced scorecard? Är detta något som motiverar dig? Upplever du att det är bra att koppla incitamentsystem till BSC? Motsvarar måtten grunderna i ert arbete? Tycker du att blandningen av finansiella och icke-finansiella mått är bra?
eward and Compensation	Saknar du incitamentssystem? Är incitamentssystem något som motiverar dig? Motsvarar incitamentssystemen grunderna i ditt arbete? Är incitamentsgrunderna möjliga att påverka?
Administrative Controls	
Governance structure	Har du en klar bild av hur ansvarsstrukturen ser ut på arbetsplatsen? Får ansvarsstrukturen på arbetsplatsen någon effekt på arbetet? Om du har en fråga angående tillåtelse att agera, vet du vem du är det enkelt för dig att få svar för detta?
Organization structure	Hur tycker du gruppformationen ser ut på Eriksson, är det effektivt att jobba i team? Hur enkelt är det kommunicera med andra team? Påverkar strukturen sättet man angriper en uppgift på t.ex?

Policies and procedures	Hur mycket jobbar ni efter policies och regler? Hur mycket jobbar ni i enlighet med de uppsatta tillvägagångssätt, följs de till punkt och pricka, eller ses de mer som riktlinjer? Hjälper dessa typer av regler dig i ditt arbete, eller känner du att de begränsar dig?
Various Questions	
Peer Control	Känner du att ni motiverar och hjälper varande sinsemellan i era team och med dina arbetskollegor? Känner du att du kan kontrollera dina arbetskollegor eller att de kontrollerar dig på något sätt? Känner du att det är mer effektivt ifall er manager styr och kontrollerar er snarare än sinsemellan medarbetare?
KIF	Hur mycket jobbar ni självständigt? Hur innovativ känner du att du får vara i ditt arbete? Hur innovativ känner du at du kan vara när nyutveckling av produkter sker, och när under arbetets gång i så fall? Hur viktigt är det med kunskapsutveckling för dig? Hur viktigt är kvalité jämför med kvantitet för dig, från ditt perspektiv kontra din managers? Vad är din åsikt om hur du och dina kollegor upplevs på organisationen? Känner du att ni har ett stort värde för företaget, eller snarare en kostnad? Om det skulle ske en nerskärning tror du att managers hade värdesatt ingenjörer högre än andra arbetspositioner? Tror du att ni är sedda som de mest viktiga anställda här?
Communication and Motivation	Tycker du att information och kunskap sprids bra och på ett smidigt sätt här? Fungerar det bra mellan er ingenjörer också? Vad motiverar dig i ditt dagliga arbete? Hur känner du at du blir kontrollerad idag? Använder du EGMS?

Appendix 3: Article in Forbes Management

The article for Forbes Management is placed on next page, in order to keep the layout of the article intact.