Leading Learning:
A managerial perspective on promoting team learning in a software development company

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Abstract

Fast pace of change in the business of technology is the reality of many organizations today. The software development industry is one example where this nature is prominent. Companies need to adapt in ways that eases the persistence against change from external forces. Companies need to turn into Learning Organizations as these help people and organizations embrace change. Two key components of the Learning Organization are the teams, as they are considered to be the fundamental units of organizations, and managers, as they have the biggest impact on facilitating learning in the organization. Therefore, this study has investigated how managers could act to create conditions for encouraging team learning of a software development company to become a Learning Organization.

This has been done by conducting a case study at the company Ericsson in Kista, Sweden, who is market leaders within the software development industry. The case design consisted of a two phase method that included both a quantitative and qualitative data collection method.

The results indicate that Ericsson could be classified as a Learning Organization and in addition display promising characteristics when it comes to having team learning capabilities. Furthermore, the findings suggest that in order for managers to encourage team learning they should take on a coaching and supporting role to understand the need of the teams; challenge the status quo; empower teams through giving them mandate; allocate time for learning as an integral part of the daily work; and reward learning in teams.

The findings of this study have implications both in a theoretical aspect and a sustainability aspect. From the theoretical aspect, the findings provide with further empirical data in a field that is currently dominated by theoretical literature. Furthermore, the findings display a practical example of how managers of a market leading company with promising characteristics of team learning capabilities have acted to create such conditions. From a sustainability aspect, the results of this study give firms a sustainable competitive advantage through increased business performance, healthy labor conditions that are a result of healthy team dynamics and possible encouragement to future attention towards emphasis on environmental aspects.

Key-words: Learning Organization, leadership, manager, software development company, team, team learning, team learning capabilities

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Att Leda Lärande

Ett ledarperspektiv på att uppmuntra teamlärande på ett mjukvaruföretag

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Sammanfattning

En snabb förändringstakt i teknologibranschen är i dagsläget verkligheten för många organisationer. Mjukvaruutvecklingsindustrin är ett exempel där den snabba förändringstakten är observerbar. Företag måste anpassa sig på sätt som förenklar framhärdandet mot förändringar från externa krafter. Företag måste transformeras till Lärande Organisationer, då denna typ av organisation hjälper människor och organisationer med att hantera förändring. Två viktiga komponenter i den Lärande Organisationen är team och chefer, där team anses vara de grundläggande enheterna i organisationen och chefer anses vara de som har störst inverkan på att underlätta lärande i organisationen. Därför har denna studie utrett hur chefer skulle kunna agera för att skapa förutsättningar för att befrämja teamlärande på ett mjukvaruföretag för att företaget ska uppnå möjligheten att bli en Lärande Organisation.

Detta har utförts genom att anföra en fallstudie hos Ericsson, som är ledande aktörer inom mjukvarubranschen. Konstruktionen av denna studie bestod av en tvåfasmetod som innehöll både en kvantitativ och kvalitativ datainsamlingsmetod.

Resultaten indikerar att Ericsson kan klassificeras som en Lärande Organisation som även uppvisar lovande egenskaper när det gäller teamlärandeförmågor. Vidare föreslås att om en chef ska kunna främja teamlärande borde de ta sig an en coachande och stödjande roll för att lättare förstå teamens behov; utmana de existerande metoderna; uppmuntra självstyrande team; avsätta tid för lärande så att det blir en integrerad del av det dagliga arbetet; och belöna teamlärande.

Resultaten av denna studie har implikationer av både en teoretisk och hållbarhetsmässig aspekt. Sett till den teoretiska aspekten bidrar resultaten med mer empirisk data i ett fält som, för närvarande, domineras av teoretisk litteratur. Dessutom visar resultaten ett praktiskt exempel på hur chefer på ett marknadsledande företag med lovande egenskaper på teamlärandeförmågor har agerat för att skapa dessa förutsättningar. Från en hållbarhetsmässig aspekt visar studiens resultat hur företag kan få en hållbar konkurrensfördel genom ökat affärsresultat, sunda arbetsvillkor som är ett resultat av hälsosam gruppdynamik, och möjlig uppmuntran till framtida uppmärksamhet med betoning på miljöaspekter.

Nyckelord: Lärande Organisationer, ledarskap, manager, mjukvaruföretag, team, teamlärande, teamlärandeförmågor

Foreword

This report was made as a master thesis at the department of Industrial Engineering and Management at KTH – the Royal Institute of Technology in Stockholm, Sweden. The thesis was a 30 credit university course and was conducted during the spring of 2014.

Acknowledgements

When conducting this thesis we have come across a number of people who have been very helpful in enhancing the quality of the research outcome. We would like to thank all of these people and hope you know who you are.

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We would also like to express our appreciation to the group at Ericsson, Core Networks, and its subunits who have been of great support and a help throughout the entire thesis work. In addition to this we want to extend our gratitude to the participants of the survey and the managers who volunteered for the interviews. This thesis would not have been possible without your help.

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Finally, we would like to dedicate a special thanks to our families and friends for supporting us through our hardships, alleviating our stress and for giving a helping hand when it comes to questioning our assumptions. Your patience has been a virtue.

Thank you for making this happen!

Stockholm, May 2014

Sivan Bapir and Kajany Varatharajah

Abbreviations

Ericsson
BNET – Business Unit Networks, one of four large units at Ericsson
CN – Core Networks, a subdivision of BNET

Others
DLOQ – Dimensions of the Learning Organization Questionnaire
CL – Create continuous learning opportunities
ID – Promote inquiry and dialogue
CT – Encourage collaboration and team learning
SCL – Create systems to create and share learning
EMP – Empower people towards a collective vision
CO – Connect the organization to its environment
SL – Provide strategic leadership for learning

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1 Introduction

The introductory chapter gives a brief overview of the theoretical fields the research was based on. The problem formulation, the purpose, the research questions, as well as the delimitations of the research are presented.

Today we live in a society where rapid changes occur faster than ever. It involves everything from the fast pace of technological development to wanting to optimize your everyday life. The software development industry is one of the industries with the most rapid and complex changes in the business environment (Chouseinoglou et al., 2013). In order for companies to succeed, they need to learn to be efficient in a world that is getting more complex due to these continuous disruptive changes. One way of handling this is by transforming oneself into a Learning Organization. In fact, Learning Organizations help people and organizations "embrace change" (Senge et al., 1994) which could be seen as the approach for sustainable development of companies. In terms of the Learning Organization, team learning is seen as one of the core disciplines for organizational learning and change (Senge, 1990). This is because organizations are increasingly reliant on teams to carry out strategic and operational tasks (Edmondson et al., 2007). In the same way, it is argued that leaders and managers play an important, if not one of the most important, roles in the Learning Organization (Watkins & Marsick, 1996; Slater & Narver, 1995; 1994; Senge, 1990). Managers' role of encouraging and creating a climate for employees' learning has been shown to be a crucial aspect for continuous learning (Senge et al., 1994; Garratt, 1990).

However, what seems to come across as the continuous weakness in the theoretical field regarding this area is the limited practical empirical research that elaborates on how companies have put the concept of Learning Organization into practice (e.g. Lipshitz & Popper, 2000). This may be seen as why many organizations, such as software development companies, that strive to become a Learning Organization are less successful (Harrison, 2004). There is therefore a clear need for additional empirical data in this field that is currently dominated by theoretical literature.

Ericsson, a company in the software development industry has recently adopted a transformation that focus on lean and agile working methods. A subpart of this transformation is to also focus on becoming a Learning Organization.

1.1 Problem Formulation

Core Networks, a subunit within the business unit BNET at Ericsson, has expressed a need for becoming a better Learning Organization in order to tackle any types of changes that organizations can face. At the same time, BNET is going through a major organizational transformation in the ways they work. Core Networks wants to therefore know what the current learning culture is and what prerequisites additionally need to exist, not only to successfully handle this current change but also future changes. This is to be done by supporting continuous learning and collaboration in teams in order to further reach the goals of becoming a Learning Organization.

1.2 Purpose and Aim

The purpose of this thesis is to investigate how managers could act to create conditions for employees of a software development company to strive to become a Learning Organization. More specifically, it looks into conditions that need to exist on the team level.

The aim of this research is to support the subdivision Core Networks in Ericsson to reach the goal of becoming an even more learning organization.

1.3 Research Questions

The purpose will be achieved by answering the following main question:

> *How can managers encourage collaboration and team learning in order to become a Learning Organization in a software development company?*

In order to address the main research question, three sub-questions are posed:

1. *What is the current status of teams' capabilities for learning in the software development company including strengths and areas of improvement?*

2. *To what extent does the managers' perception of their role to team learning capabilities in the case company, coincide with the traits of the managers' role in a learning organization?*

3. *In the software development company, how well does the managers' view of team learning challenges relate to the current status of teams' capabilities for learning?*

1.4 Delimitation

Ericsson consists of four business units in total. The thesis was limited to only look into one of these, Business Unit Networks – BNET and further a subdivision within it named Core Networks. Core Networks is further comprised of ten subunits. To give a thorough analysis of each subunit has not been a possibility given the constrictions with the time frame. Thus for the purpose of this study three of these subunits have been scrutinized.

One of the methods for collecting data in this study was by distributing a questionnaire. The questionnaire was sent to all ten subunits regardless of operating country. This was done to get a holistic view of the whole organization. Furthermore, 1,200 employees from Core Networks were excluded from the sample since they recently received a similar survey on change management previous year. This exclusion was made due to the hope that this would increase the response rate since the excluded employees would maybe feel less inclined to answer a similar survey once again.

Given the geographical restrictions the study was conducted from the Sweden office and thus it was more convenient to only interview managers that are located in Sweden.

1.5 Disposition

This introduction has covered the topic of the research, the reason to why it is of interest to the case company and the exact purpose of the research. The following chapter will discuss the literature review in order to familiarize the reader with the key concepts. This is then followed by the methods of how the research was conducted and how the research questions have been approached. Thereafter, some background information of the company that is considered to be relevant for the study is described. Finally, the results of the empirical research is presented, analyzed and discussed. This leads to the conclusions drawn regarding the research questions and the aim of the thesis. The disposition is illustrated in Figure 1.

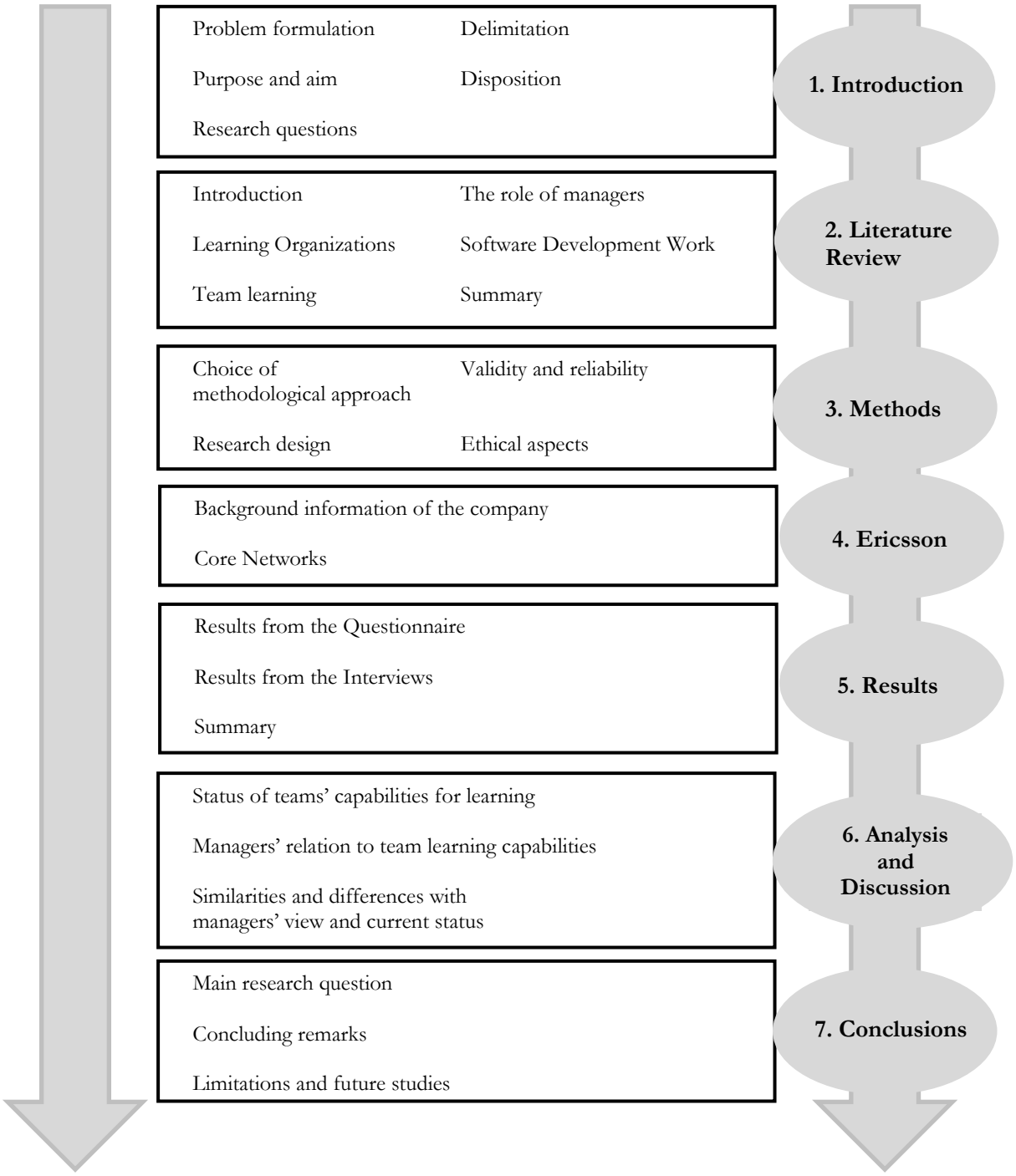

Figure 1. Disposition of the report including the main topics in each chapter.

2 Literature Review

In this chapter, existing research is presented in order to understand the theoretical background the study was based on. The chapter presents literature on Learning Organizations, Team Learning, the Role of Managers, and Software Development Work.

2.1 Introduction

The theoretical framework that is utilized in this investigation is the basis for the analysis and conclusion of the results of this study. The research questions address four major areas; Learning Organizations, Team Learning, the Role of Managers and Software Development Work. The theoretical framework is segmented according to these four areas and divided accordingly into chapters in the literature review. The relationship between these areas is that the concept Learning Organization is seen as the overall theme and the other areas are addressed as subjects within this theme. Each area is defined and introduced in the way that is appropriate for this study. Also, the current challenges or weaknesses in the literature for each area are addressed. It is however the area in which all of these challenges or weaknesses intersect that is highlighted as the knowledge gap within the theoretical field and this study aims to contribute to that area. The literature review is concluded with a summary where the knowledge gap is addressed. The relationship between the different areas and the knowledge gap is visualized in Figure 2.

Figure 2. The theoretical framework showing the knowledge gap where the themes intersect.

2.2 Learning Organizations

In this section, the reasons for why organizations strive to become a Learning Organization are argued for. Thereafter, the concept of Learning Organizations is defined by considering several different definitions that have arisen through earlier research. The definition that has been appropriate for this study is thereafter concluded on. The difference between Learning Organizations and organizational learning is clarified as there are often misconceptions that these are synonyms. Furthermore, the core features of a Learning Organization are described. This is done to comprehend what Learning Organizations actually are and grasp the essence of the concept in order to understand why certain prerequisites are required for becoming a Learning Organization. These prerequisites, consisting of seven dimensions of learning, are derived from some of the most influential studies within the field of Learning Organizations. The seven dimensions are used as the main theoretical model regarding Learning Organizations in this study. This section concludes with the current knowledge gaps that exist within this theoretical field.

2.2.1 Reasons for the Learning Organization

The environment in which organizations operate nowadays is characterized by continuous and disruptive change (Kotter & Cohen, 2002; Senge et al., 1994). Due to these rapid changes in today's society, companies need a method to adapt in order to survive and maintain their competitive advantage (Wilhelm, 2006). Not only external changes affect organizations but internal as well. According to Pedler et al. (1997), a company's internal structure and individual thinking become fixed when the organization grows. This leads to a loss of learning within the organization. Given the nature of these changes, companies have started to view learning as a more critical variable (Allen & Thomas, 2006). Therefore, if companies want to remain relevant and competitive they must continuously adapt and transform through the process of learning at all levels of the organization (Senge et al., 1994). The concept Learning Organization enables a better understanding of the ways organizations change as it helps people and organizations "embrace change" (Senge et al., 1994). Therefore, management tools that address the concept have been considered to be useful when it comes to improving the way organizations change (Sugarman, 2000).

In summary, there are two main reasons for why companies should strive to become Learning Organizations; survival and excellence (Hitt, 1995). According to Revans (1982) in order for organizations to survive, the learning of the organization must be equal to or greater than the environmental change. The second reason, excellence or striving for superior performance, is related to satisfying the needs of the stakeholders of a company (Hitt, 1995). Although it may initially seem that these two reasons are different in nature, they are interrelated (Hitt, 1995). It is important to note that the business environment is not only changing fast, but that the global competition is increasing as well. Therefore, it's not only a matter of adapting to changes to survive as an organization, but also to achieve excellence at the same time in order to survive in the business environment (Hitt, 1995).

2.2.2 Defining the Learning Organization

The concept Learning Organization can be perceived as vague and unclarified. To gain an understanding to what the idea really is, a few definitions are brought up.

> *"Organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to learn together."* (Senge, 1990, p. 3).
>
> *"Learning organizations are characterized by total employee involvement in a process of collaboratively conducted, collectively accountable change directed towards shared values or principles."* (Watkins & Marsick, 1992, p. 118).
>
> *"[..] one that learns continuously and transforms itself [..]. Learning is a continuous, strategically used process - integrated with and running parallel to work."* (Watkins & Marsick, 1994, p. 6)
>
> *"A Learning Company is an organization that facilitates the learning of all its members and continually transforms itself in order to meet its strategic goals."* (Pedler et al., 1997, p.1).

Even though there are differences in approaches and definitions when it comes to Learning Organizations, there are some characteristics that are common. Therefore, this report is based on the following:

- In the approaches for the construct for the Learning Organization, the organization is assumed as organic entities that have the capacity to learn.
- The Learning Organization is seen as one that displays continuous learning and adaptive characteristics.
- The characteristics of the Learning Organization should be displayed on different organizational levels; generally, individual, group/team and organizational level. (Watkins & Marsick, 2003).

Overall it could be said that a Learning Organization aims at continuous learning where the entire organization is included through shared values. A Learning Organization is one that is capable of reinventing itself when necessary (Sugarman, 2000). More definitions on the concept of Learning Organization can be found in Appendix 1.

The Learning Organization requires a paradigm shift when comparing to the more traditional organization (Hitt, 1995). When considering the different organizational paradigms of the recent times, the first is the bureaucratic organization that focused on rationality and efficiency (Weber, 1947). Following this was the performance based organization that focused on results and effectiveness (Drucker, 1964). The current organizational paradigm is the Learning Organization that focuses on adapting continuously to an ever changing environment (Senge, 1990). Hitt (1995) describes that the relationship between these organizational paradigms is that in the bureaucratic organization the term efficiency could be seen as "doing things right". On the other hand, in the performance based organization the term effectiveness considers "doing the right things". However, in the Learning Organization the term learning looks into expanding the organization's capacity to both "do things right"

and “do the right things” (Hitt, 1995). In other words, the Learning Organization incorporates the philosophies of the previous paradigms but the focus is shifted from efficiency and effectiveness to excellence and organizational renewal (Hitt, 1995).

The Learning Organization perceives the organization not only as a center for work but also for learning. In the same way that the organization needs to be structured to do work, it also needs to be structured to learn (Watkins & Marsick, 1996). Learning is continuous, strategically used and integrated with and running parallel to work (Marsick & Watkins, 2003; Pedler et al., 1997; Watkins & Marsick, 1994).

Learning Organization vs. Organizational Learning

The two terms Learning Organization and organizational learning are closely related since the concept Learning organization evolved from the latter. However, they cannot be seen as synonyms. Preskill and Torres (1999) denote that Learning Organizations focus on systems, principles and characteristics of an organizational learning as a collective entity while organizational learning addresses how organizational learning occurs. The Learning Organization is an ideal feature of an organization with particular outcome characteristics (Lien et al., 2006). Organizational learning refers to actions to achieve that ideal status (Lien et al. 2006). According to Örtenblad (2001), there are three major differences between the concepts.

1. Organizational learning is an activity while a Learning Organization is a type.
2. Literature within organizational learning is descriptive while literature within Learning Organization is prescriptive.
3. Third, literature in organizational learning is academic in nature while literature in Learning Organizations targets practitioners and consultants.

Furthermore, organizations are not able to fully master the task of becoming a Learning Organization, instead they gradually nurture principles of it by acquiring new competencies over time (Senge, 1990). This is why the Learning Organization is often characterized as a journey rather than a destination (Jamali et al., 2006). More elaborate definitions on the differences between Learning Organization and organizational learning can be found Appendix 1.

2.2.3 Core Features of the Learning Organization

It has been clarified that the Learning Organization in its essence is one that continuously renews itself through a set of processes that nurtures adaptions, learning and change (Jamali et al., 2006). There are thereafter various methods in which authors and researchers have tried to define a set of characteristics that the Learning Organization must have (e.g. Watkins & Marsick, 1999; Pedler et al., 1997; Senge, 1990). However, these characteristics are based on the organizational paradigm of Learning Organizations (Jamali et al., 2006) which may seem too sophisticated to grasp in reality. In order to reach these sophisticated processes and disciplines, organizations may need to have more attainable core features that can support them (Jamali et al., 2006).

Jamali et al. (2006) argue that the post-bureaucratic organizations require careful and skillful management of human resources. People are treated as the most important assets of the organization and in order to do so, Jamali et al. (2006) conclude that there are six core features that the post-bureaucratic organization must possess. These are: Empowerment, Trust, Communication, Commitment, Flexibility and Teamwork. It is argued that these core features can "*combine, interact and co-evolve to shape [..] the overall capabilities of a Learning Organization*" (Jamali et al., 2006, p. 346). In other words these core features can be seen as integrative competencies for the Learning Organization. The core features and their dynamics within the organization are:

- **Empowerment** – Involves true ownership and responsibility (Peters, 1988).
- **Trust** – A fundamental piece of healthy team dynamics (Holton, 2001). Trust is said to be developed through frequent and meaningful interaction where individuals feel comfortable and open to share insights and concerns without fear (Holton, 2001).
- **Communication** – The ability to organize, create and spread information (Holton, 2001). Communication is essential for meaningful interactions and healthy collaborations. (Jamali et al. 2006).
- **Commitment** – The commitment in this context is the desire for individuals to remain within the organization because of the alignment of the individuals and organizations' core values (Greenberg & Baron, 2003).
- **Flexibility** – Encompasses agility and responsiveness and is thrived in environments characterized by decentralized power (Maravelias, 2003).
- **Teamwork** – Self-organizing team structures, more often cross functional work teams that focus on reaching excellence as a result of having synergized teams (Jamali et al., 2006).

The relationship between these core features is that they have synergetic effects (Jamali et al., 2006). Empowerment is based on trust (Mayer et al., 1995) and trust increases commitment and collaboration, encouraging healthy team dynamics (Webber, 2002; Holton, 2001). Effective teamwork further increases trust and promotes effective communication (Drew & Coulson-Thomas, 1996; Dwivedi, 1988) while communication in turn also enhances interaction and collaboration (Holton, 2001). Flexibility is then flourished within teams and in the context of empowerment (Englehardt & Simmons, 2002).

In addition to having synergetic outcomes, these core features can be seen as the building blocks for nurturing the Learning Organization (Jamali et al., 2006). Therefore, in order to truly grasp the essence of the Learning Organization, these core features need to be understood as the integrative competencies to have the characteristics of a Learning Organization.

2.2.4 Prerequisites of the Learning Organization

The foundation for this study is based on Marsick and Watkins (1993, 1996) integrative Learning Organization Model. The basis for Marsick and Watkins' work in this model, grounds in the theory that most of the learning in organizations occur spontaneously and is organically evolving from the work itself (Watkins & O'Neil, 2013). Watkins and Marsick did an extensive review of the literature in organizational learning, learning organizations, self-authoring, self-organizing organizations, and similar related research within this topic that dates back to 50 years (Watkins & O'Neil, 2013). These theories included the ideas of

making the tacit explicit (Polanyi, 1966), experiential learning (Dewey, 1938), framing and reflection (Schön, 1983), and field theory emphasizing the social context on learning (Lewin & Lewin, 1948).

Watkins and Marsick (1996, pp. 282-283) concluded that a Learning Organization must do the following:

- Embed a learning infrastructure – not a training department, but a widespread means of creating, capturing and disseminating knowledge.
- Cultivate a learning habit in people and in the culture so that a spirit of inquiry, initiative, and experimental thinking predominates.
- Regularly audit the knowledge capital in the organization and progress toward eliminating barriers to learning.

Parallel to this, Watkins and Marsick were examining promising experiments that involved creating capacities for organizations to learn. Watkins and Marsick (1999, 1996, 1993) then completed their theory with a final model that included seven action imperatives as essential building blocks of an organizational culture that transforms.

1. Create Continuous Learning Opportunities
2. Promote Inquiry and Dialogue
3. Encourage Collaboration and Team Learning
4. Establish Systems to Create and Share Learning
5. Empower People towards a Collective Vision
6. Connect the Organization to its Environment
7. Provide Strategic Leadership for Learning

According to Watkins and Marsick (1999), these seven action imperatives or dimensions are distinct but also interrelated. They can further be divided into three levels: individual, team/group and organizational learning. Learning on one level influences learning on the other levels (Crossan et al., 1999). The first level of learning, the individual level composes of the first two dimensions: *Continuous Learning* and *Inquiry and Dialogue*. The second level of learning, team/group learning is reflected in the dimension *Collaboration and Team* Learning. The third level of learning, organizational learning consists of four dimensions: *Systems to Create and Share Learning, Empower People, Connect the Organization to its Environment,* and *Strategic Leadership*. All seven dimensions, along with a description of each and what level of learning they belong to are summarized in Table 1.

Table 1. The Seven Dimensions of the Learning Organization (Marsick & Watkins, 2003, p. 139).

Dimension	Description	Level of Learning
(1) Create continuous learning opportunities (CL):	Learning is designed into work so that people can learn on the job; opportunities are provided for ongoing education and growth.	Individual level
(2) Promote inquiry and dialogue (ID):	People gain productive reasoning skills to express their views and the capacity to listen and inquire into the views of others; the culture is changed to support questioning, feedback, and experimentation.	Individual level
(3) Encourage collaboration and team learning (CT):	Work is designed to use groups to access different modes of thinking; groups are expected to learn together and work together; collaboration is valued by the culture and rewarded.	Team/Group level
(4) Create systems to capture and share learning (SCL):	Both high- and low-technology systems to share learning are created and integrated with work; access is provided; systems are maintained.	Organizational level
(5) Empower people toward a collective vision (EMP):	People are involved in setting, owning, and implementing a joint vision; responsibility is distributed close to decision making so that people are motivated to learn toward what they are held accountable to do.	Organizational level
(6) Connect the organization to its environment (CO):	People are helped to see the effect of their work on the entire enterprise; people scan the environment and use information to adjust work practices; the organization is linked to its communities.	Organizational level
(7) Provide strategic leadership for learning (SL):	Leaders model, champion, and support learning; leadership uses learning strategically for business results.	Organizational level

In addition to the three levels of learning, the seven dimensions can further belong to one of the two components of Watkins and Marsick's model. The first component represents the people of the organization and the second component represents the structures and culture in the social construct of the organization (Yang, 2003). Watkins and Marsick (2003) argue that

the organizations need to work with the people and the groups of the organization first and then structural level refines the learning into the organization. In other words, the organization needs to have structures that facilitate, support and capture the learning in the organization (Yang, 2003). It is argued that organizations must create facilitative structures to support and capture learning for the people in order to move toward their mission (Yang, 2003). The relationship between the seven dimensions of the learning and the components is illustrated in Figure 3. Furthermore, the dimensions in the structural level are seen as mediators between the people level and organizational outcomes e.g. financial performance (Yang, 2003).

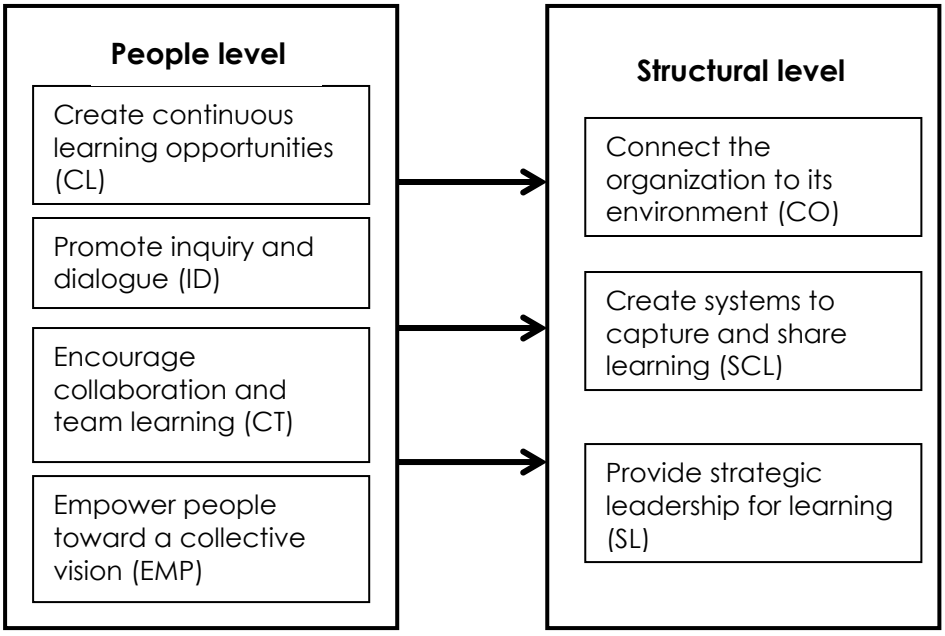

Figure 3. The dimensions in the people level affect the dimensions in the structural level (Yang, 2003).

These dimensions have furthermore been translated into a survey known as the DLOQ, the Dimensions of the Learning Organization Questionnaire (Marsick & Watkins, 2003; Watkins & Marsick, 1997). The development of the DLOQ was done since many organizations wanted a way to diagnose their current learning status and scholars wanted better measures of learning (Marsick & Watkins, 2003). In addition to have developed the DLOQ from a solid base of research and theory, significant work has been done to establish validity and reliability of the instrument (Watkins & O'Neil, 2013; Marsick & Watkins, 2003). This has enabled the DLOQ to be used in several organizational studies all around the world (Watkins & O'Neil, 2013). Since 2002, Watkins and Marsick have recorded 173 official requests to use the DLOQ in research in 38 countries. While the list only includes those who have asked for official interest of the instrument it demonstrates a wide spread interest around the world. Furthermore, the instrument has been translated into 14 languages besides English and has been used in several different contexts such as: educational institutions, governmental organizations, profit and non-profit organizations, churches and so on. (Marsick, 2013).

Earlier research has indicated that in order to identify the factors that contribute to the Learning Organization, the organization must be analyzed on the individual, team and organizational levels (Argyris & Schön, 1978; Dixon, 1992; Hedberg, 1981; Kim, 1993b; Klimecki et al., 1991; Marquardt, 1996; Simons 1995), which Watkins and Marsick's model (2003) manages to do.

2.2.5 Weaknesses in the Literature of Learning Organizations

Although the phenomenon of Learning Organizations and organizational learning is gaining more popularity among researchers it's also a topic of widespread confusion in organizations (Jyothibabu et al., 2010). It seems that there is not one single perspective in current learning theory to capture the full multiple connections and possibilities that learning creates (Antonacopoulou, 2006).

When it comes to Watkins and Marsick's (2003) model for the Learning Organization, there is still a lack of research that focuses on what factors cause or promote learning cultures (Song et al., 2013). In the same way as the theory within Learning Organizations is prescriptive, how the seven dimensions of learning is successfully practiced in terms of processes and systems is still a weakness in the theoretical field (Song et al., 2013). Furthermore, there is a desire for more in depth analysis of the relationship among the seven dimensions of the learning organization (Song et al., 2013).

2.3 Team Learning

In this section, teams, team learning, and prerequisites for team learning are defined and introduced in terms of both management theories and Learning Organization theories. This is done to understand what teams and team learning is and the role of it in Learning Organizations. Furthermore, a distinction is made between team learning and team learning capabilities. The reason for this differentiation is to better understand that there is a difference between the notion of how teams learn and whether they have the capabilities to learn. By capabilities it is referred to if they have the right prerequisites to learn. The focus of this study has been the dimension for team learning and the prerequisites derived from the main theoretical model regarding Learning Organizations. The team learning dimension and its prerequisites are therefore scrutinized in order to understand the essence of them. In addition to this, findings from earlier studies on team learning are presented. This is done to bring up the current challenges and weaknesses within the theoretic field of team learning and team learning capabilities.

2.3.1 Teams

Teams are defined as a workgroup that exist within the context of a larger organization and share responsibility for a team product or a service (Hackman, 1987). Furthermore, teams are defined as a group of individuals with a common goal (Forsyth, 2006). Forsyth explains that the individuals in the team have competences that complement each other. In contrast to this, in the Learning Organization team members are all specialists within their field but they are also generalists (Örtenblad, 2013). This means that the team members learn how to perform each other's tasks. This flexibility is necessary if one of the team members is for example busy with a customer or is away on sick leave (Örtenblad, 2013).

Team members are not only specialists and generalists. They also have different modes of thinking (Watkins & Marsick, 2003) which means that they perceive things differently (Senge, 1990). When these different modes of thinking accumulate through teamwork and collaboration, innovative ideas are created (Goh, 1998). Kaufmann and Kaufmann (2009) explain that teamwork is when the team is completing a task together and integrative instead

of moving towards different directions. Throughout many organizations, teams are becoming more diverse as a result of new organizational forms (Jackson et al., 1995). It has become more prevalent with teams consisting of employees from different functional areas, cross functional teams with the expectation of producing more creative thinking (Jackson et al., 1995).

2.3.2 Team Learning

A definition of team learning, which has been offered in the literature, views it as "a relatively permanent change in the team's collective level of knowledge and skill produced by the shared experience of the team members" (Ellis et al., 2003, p. 822). Edmondson et al. (2001) define team learning as a team-level construct that enfolds the learning activities that team members exploit to gather and process information, which allows the team to develop and perform. Senge (1990) defines team learning as the alignment and development of a team's capacity to produce the results it desires. Team learning is seen as one of the core disciplines for organizational learning and change (Senge, 1990). This is because organizations are increasingly relying on teams to carry out strategic and operational tasks (Edmondson et al., 2007). Researchers within organizational learning have elaborated on Senge's notion that teams are the fundamental unit of learning in an organization (Edmondson, 2002).

Senge (1994) described team learning as "*transforming conversational and collective thinking skills, so that groups of people can reliably develop intelligence and ability greater than the sum of individual members' talents*" (Senge et al., 1994, p. 6). Thus the Learning Organization aims to enhance the group learning of teams. There may be a preconceived notion that because many organizations have focused on group dynamics and team building, that they have practiced their team learning for years (Senge et al., 1994). However while team building is more regarding improving team members' communication skills, becoming better at performing tasks together and the ability to reach to an agreement, team learning is concerned with reaching alignment. Senge et al. argue that alignment in teams is about enhancing teams' capacity to "think and act in new synergetic ways" (Senge et al., 1994, p. 352).

Team discussion is based on an open dialogue that is characterized by a company's respect for a diversity of opinions (Senge, 1990; Watkins & Marsick, 2003). Senge (1990) argues that teams that have dialogues regularly develop a richer understanding of the uniqueness of each person's point of view. These teams experience how larger understanding can emerge from holding one's own point of view "gently". The vision of the term dialogue when it comes to team learning is the assumption of a "larger pool of meaning" accessible only to a group (Senge, 1990, p. 248). In other words team learning regards more about team members actively listening to each other than to express their own opinions.

2.3.3 Prerequisites for Team Learning

Team learning is a part in the Learning Organization that inspires more fundamental changes in the organization but also the most challenging aspect on several levels from intellectually to socially (Senge et al., 1994). Therefore, in order for teams to have the capabilities to learn, the right prerequisites need to exist. Marsick and Watkins (2003) state that those

organizations that have succeeded in team learning, have focused on actively encouraging team learning and collaboration. The work is designed to use groups to access different modes of thinking and the groups are expected to learn together and work together (Marsick and Watkins, 2003). This collaboration is seen as an important part of the corporate culture and this focus from organizations helps teams to have the capability to learn (Marsick and Watkins, 2003). According to Marsick and Watkins (2003), to achieve this focus and attain the team learning capabilities, the following prerequisites, (that can be found in the DLOQ, Appendix 2) are required (Marsick & Watkins, 2003):

- Teams/groups have the freedom to adapt their goals as needed
- Teams/groups treat members as equals, regardless of rank, culture, or other differences.
- Teams/groups focus both on the group's task as well as how well the group is working.
- Teams/groups revise their thinking as a result of group discussions or information collected.
- Teams/groups are rewarded for their achievement as a team group.
- Teams/groups are confident that the organization will act on their recommendations.

These specific prerequisites were derived through extensive research. Marsick and Watkins (2003) captured indicators that had been observed in organizations that would transform into Learning Organizations and translated them into the above mentioned items (Watkins & O'Neil, 2013).

Dimensions influencing Team Learning Capabilities

As previously mentioned, Marsick and Watkins' (2003) model for the Learning Organization consists of seven dimensions that are distinct yet interrelated. In scrutinizing the dimension for team learning, it is of interest to understand the relationship between the different dimensions in the model. Yang (2003) conducted an extensive validation study of the DLOQ framework where a nomological network was established to illustrate the relationship between the dimensions. The basis for the study was 836 survey responses from a wide range of candidates that belonged to different organizations of various sizes. The nomological validity of the DLOQ was validated using structural equation modeling (SEM) technique. The SEM technique can shortly be described as a statistical method that aims to understand the relationship between measurement items and underlying factors (Yang, 2003). The result of Yang's (2003) study, where the team learning dimension is highlighted, is displayed in Figure 4.

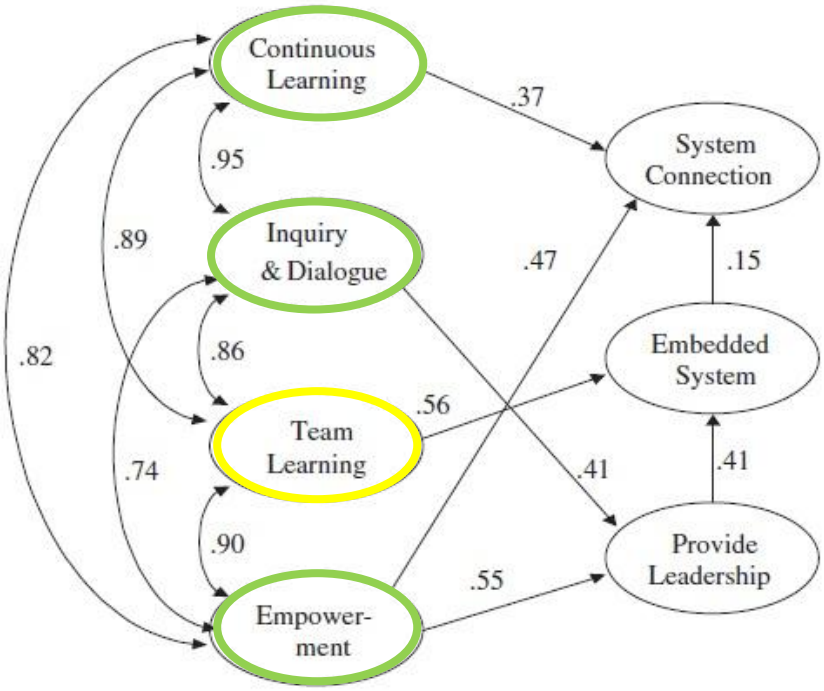

Figure 4. The nomological network showing the dimensions influencing Team Learning (Yang, 2003).

As it can be seen in Figure 4, the dimensions that had strong correlations to the team learning dimension were *Empowerment, Continuous Learning,* and *Inquiry and Dialogue*

The strongest correlation with the team learning dimension was the *Empowerment* dimension. The empowerment dimension argues that organizations need to recognize people for taking initiatives and calculated risks. Furthermore, the organization is encouraged to give people control over the resources they need to accomplish their work and be included in setting and contributing to the vision of the organization. Moreover, responsibility and decision making should not be assigned as two different roles, but rather come as close as possible and maybe even be merged. (Marsick & Watkins, 2003).

The dimension called *Continuous Learning* had the second strongest correlation to the team learning dimension. Continuous learning pinpoints that learning is designed into work so that people can learn on the job. There's an open culture where people help each other learn and openly discuss their mistakes in order to learn from them. Problems aren't seen as an impediment but rather as an opportunity to learn. Furthermore, people identify skills they need for future work tasks and they are then given time, money and other resources to support learning. (Marsick & Watkins, 2003).

Finally, the dimension called *Inquiry and Dialogue* had a strong correlation to the team learning dimension. This dimension involves a culture that supports questioning, feedback, and experimentation. This means that people gain productive reasoning skills to express their views and the capacity to listen and inquire into the views of others. To be able to question and give honest feedback to each other, trust and respect are essential. (Watkins & Marsick, 2003).

This nomological network shows that dimensions from both the individual and organizational level of learning have an impact on the capabilities for a team to learn, besides the prerequisites on the team level.

2.3.4 Challenges and Weaknesses in the literature and practices of Team Learning

Team learning is one of the most challenging aspects of the Learning Organization as it requires fundamental changes in how teams collaborate (Senge et al., 1994). The process of learning how to learn and aligning oneself with the other team members is unfamiliar territory (Senge et al., 1994). In addition to this, Edmondson (2007) claims that team/group learning, which contributes to organizational learning, is still a young theoretical field. This is because there have been conceptual disagreements about what it means for organizations to learn and methodological challenges with measuring learning at multiple organizations at the same time (Edmondson, 2007).

Moreover, as mentioned earlier, empowerment influences team learning (Yang, 2003). When individuals and teams are empowered, they are motivated to perform well since they get a feeling of autonomy and capability to perform meaningful work that can impact the organization (Chen et al., 2007). Chen et al. (2007) argue that team leaders should first empower their teams which then can lead to simultaneously enhance individual empowerment and performance. Empowerment, however, is a challenge when it comes to team learning. A case study conducted at a Norwegian company revealed that even though this company in question displayed characteristics of a Learning Organization, they were having problems in empowering the teams (Harung, 1996). Harung continues to explain that many team members do not want to take charge but prefer to be told what to do and how to act. Decisions were often delegated upwards to the managers. This case illustrates that even in healthy organizations that display features of learning capabilities, having empowered teams to encourage team learning is still a challenge.

2.4 The Role of Managers

This section introduces how managers are defined in this study by consulting both management theories as well as Learning Organization theories. How the concept of managers and leaders has been addressed appropriate to this study is defined. In addition to this, the role that managers have in the Learning Organization, the way they can encourage learning and their responsibility is clarified. More specifically, the role that managers have in encouraging team learning is brought up. Findings from earlier studies on the importance of managers' role in encouraging team learning are shed light upon as well. This is done to clarify who the manager is in the Learning Organization, what characteristics the manager is expected to have and how the manager can relate to the teams and their learning capabilities.

2.4.1 Managers and Leaders

Whether there is a difference between management and leadership has been discussed through the years. Some authors (e.g. Bennis & Nanus, 1985; Zaleznik, 1977) argue that management and leadership cannot be merged, meaning that a single person cannot be both a manager and a leader. While the manager focuses on making the employees perform better, the leader is interested in the employees to agree on what is most important to do (Yukl, 2010). Bennis and Nanus (1985, p. 21) claim that "managers are people who do things right, and leaders are people who do the right things". However, in the empirical research, there is no support for this distinction since people won't accept to be sorted into these categories as easy as in theory (Yukl, 2010). For instance, Mintzberg (1973) describe leadership as one of the roles that managers must possess. In accordance to this, in this study a distinction between the manager and the leader has not been made. The managers are seen as those who combine management and leadership.

Senge (1996, p. 36) defines leaders and managers as people "who are genuinely committed to deep change in themselves and in their organizations". However, leadership is a term that has been defined in many ways (Drath & Palus, 1994; Schein, 1992; Jacobs & Jaques, 1990). Concluding on these existing definitions, a common view of the leader is that he/she has an influential role that refers to facilitating the execution of a shared task (Yukl, 2010).

2.4.2 The Role of Managers in the Learning Organization

It is argued that leaders and managers play an important, if not one of the most important, roles in the Learning Organization (Watkins & Marsick, 1996; Slater & Narver, 1994; 1995; Senge, 1990). Managers' role of encouraging and creating a climate for employees' learning has been shown to be a crucial aspect for continuous learning (Senge et al., 1994; Garratt, 1990). In fact, Marsick and Watkins (2003) included the seventh learning dimension, *Providing Strategic Leadership for Learning*, in their model lastly as a result of further case studies. As Senge (1990) also concluded, Watkins and Marsick (1999) also saw that leaders emerged as primary change agents and those that must transform themselves to model learning. Watkins and Marsick (1999) state that

> *"The first step towards becoming a learning organization seems to be changing leaders' roles. Even though leadership for learning is often distributed, it is also true that people cannot step out and change the way things are done unless they are supported from the top. Leaders must provide a safe space in which people can take on new behaviors and realize that it is expected that they challenge the status quo. The ideal situation is one in which leaders themselves model learning."* (p. 159)

Watkins and Marsick (1999) do not only describe that the leaders have an important role but that in many cases, organizations' success lies in that leaders are seen as role models in the Learning Organization. When leaders manage to reflect learning behavior, a climate and culture can be born (Augustsson et al., 2013). Leaders that learn from their experiences, and are able to show this, can influence the learning of others. This is illustrated as one of the success factors of a case study of a product development project (Roth & Kleiner, 1999). Roth and Kleiner noticed that the method for encouraging learning with biggest impact on employees was seeing the managers change their own behavior first. The managers acting as role models inspired the other employees to also change their behavior. At the same time, it

was found that when managers had learned and practiced the basic concepts of organizational learning, it was easier for them to act as teachers and coaches for the rest of the staff. This change in behavior, enabled the managers to become more open to other viewpoints and less authoritarian.

Roth and Kleiner's (1999) case hints on two of the three major channels that are used when it comes to leaders motivating and promoting behaviors in the context of organizational learning. The three major channels are: time devoted by managers, managers' attention, and rewards and recognition (Popper & Lipshitz, 2000).

Popper and Lipshitz (2000) mention that managers are usually busy with urgent tasks. Therefore the first channel, allocation of "manager time" for tasks often indicates to employees the priorities of what is important and what is not. Therefore, managers' participation in learning activities sends a clear signal to the employees regarding the centrality of learning in the organization. The second channel, managers' attention, has the similar effect as manager time. If managers consistently pay attention to certain subjects it sends a clear message about what is important. In the case of a company in the food processing industry, the managing director's constant interest and attention to the learning process (by for example frequently raising the subject in meetings) sent a clear message on the importance of learning in the organization. (Popper & Lipshitz, 2000). The third channel, rewards and recognitions, are seen as most common and influential in organizations to encourage desired behaviors (Popper & Lipshitz, 2000). Managers value and reward learning by including this in the process for personal evaluation and as criterias for promotion. On the contrary, managers who punish mistakes send signals that they are impatient with learning matters. (Popper & Lipshitz 2000).

Argyris and Schön (1996) argue that the biggest hindrance to organizational learning lies in the tendency for people to have an innate behavior of guarding a "positive image". Thus, people are more prone to report positive results and success stories rather than mistakes and important lessons learned from them. Therefore, Argyris and Schön (1996) argue that in order to enable organizational learning, this defective behavior needs to be minimized. In addition to this, psychological conditions that make people more accountable and willing to be transparent need to be established (Argyris & Schön, 1996). It is in this area that managers and leaders can be of influence as managers have been suggested to have the possibility of enhancing informal learning in groups by supporting learning through mistakes (Macneil, 2001; Salas et al., 2009). The method in which managers can be successful in addressing this task is through their leadership style (du Plessis et al., 1999).

Leadership style for the Learning Organization

Since managers have an essential role in promoting continuous learning, they consequently need to adopt a new leadership style. The old school leadership style of being commanding and controlling won't work in the Learning Organization (du Plessis et al., 1999). Instead, managers are encouraged to adopt a coaching and mentoring style. A way of doing this is to not only support requests for learning opportunities and training but also continually look for these opportunities (Watkins & Marsick, 2003). In addition to this, leaders and managers should keep their subordinates informed about any relevant opportunities for learning (such as workshops, programs, etc.) (Yukl, 2010). They should also make it easier for them to use these opportunities by planning time and offer training support (Yukl, 2010).

A major part of managers supporting teams and individuals of an organization is creating a psychological safety, or a safe place in which it is ok to make mistakes (Popper & Lipshitz, 2000). Leaders have a key role in providing that safe space for teams (Augustsson et al., 2013). This is further validated in Edmondson's (1996) study on various units in hospitals that clearly indicated that leadership influenced the behavior of reporting mistakes. This psychological safety is defined as a state in which people feel safe to discuss mistakes and how they feel (Lipshitz, et al., 1999). Therefore, this psychological safety is highly associated with being transparent (Popper & Lipshitz, 2000). Furthermore, these factors are associated with the trust that leaders embed in the organization. It is evident that in the Learning Organization the issue of trust in leaders and trust in the systems are central (Popper & Lipshitz, 2000). Earlier research has concluded that managers and leaders in the Learning Organization that have significantly built trust in the organization are those referred to as transformational leaders (Bass, 1985). Transformational leaders manage to inspire trust in the leader, in the groups/teams and the organization (Popper & Lipshitz, 2000).

To conclude, the leaders and managers of an organization are faced with three main responsibilities. These are prioritizing organizational learning, creating the psychological and cultural conditions that enable the collective learning, and to form the contextual factors that transfers the individual learning to organizational learning (Popper & Lipshitz, 2000).

2.4.3 Managers in Encouraging Team Learning

On the team and group level, managers play an important linking and facilitating role (du Plessis et al., 1999). The leader can influence the team members' creative and collective learning (Day et al., 2004; Mumford et al., 2002). It is of importance that managers and leaders can provide a safe and non-threatening environment for the teams in which learning can occur in the social context with minimum risk for embarrassments (Kozlowski et al., 1996).

2.4.4 Weaknesses in the Literature of Managers in the Learning Organization

Even though it is established that the leaders play an important role when it comes to promoting learning culture in an organization, few authors and researchers have offered suggestions to managers on how to transform their organization to a Learning Organization (Johnsson, 2002). One such example is recommended by Edmondson (1999) in which there is a need for future research to explore specific behaviors that leaders use to facilitate teams' psychological safety and learning.

The major lack of empirical research on organizational learning and the Learning Organization (Lipshitz & Popper, 2000; Easterby-Smith & Araujo, 1999; Miner & Mezias, 1996; Tsang, 1997) contributes to the deficiencies in literature of leadership in the Learning Organization. The existing literature on the leader's role in the Learning Organization is mainly comprised of recommendations that are usually not based on empirical evidence (Amy, 2008). This is attributed to the literature not providing solid research foundations upon which to base these recommendations.

2.5 Software Development Work

The fourth and final segment of the theoretical framework looks into the software development working methods. This is addressed in terms of the theme Learning Organizations through findings from earlier research. Firstly, the software development industry is described by its business environment followed by the nature of the work. Agile methods, a working method that is typically used in this industry, is introduced. Following, agile software development is described in detail. The agile teams and their role in the Learning Organization are in focus. Finally, the challenges that usually arise in agile methods and teams are shed light upon.

2.5.1 Nature of Work

The software development industry is one of the industries with the most rapid and complex changes in the business environment (Chouseinoglou et al., 2013). Jamali et al. (2009) furthermore explain that IT and software development companies have through recent years moved to adopt lean strategies and organic structures to enhance flexibility. Due to the high environmental volatility in this industry, this inbuilt flexibility is necessary to foster innovation. The nature of work for software development companies are increasingly project and team based, capitalizing on systematic collaboration (Jamali et al., 2009).

Work in a software development project is performed in a practical environment and the development always concerns a group of people (van Solingen et al., 2000). The learning process that takes place is, therefore, called 'group learning'. The group learning is necessary, since the individuals of a software development group share the same goals for learning and they also share the same learning processes. This aspect among software development projects is synonymous with organizational learning (van Solingen et al., 2000).

There are a number of enablers that can be used to assess the state of the organizational learning in a software development project (van Solingen et al., 2000). Most of these enablers are highly similar to previously mentioned aspects of Learning Organization, i.e. the necessity of team learning, the need for involved leadership and the constant scanning for knowledge. These are all central aspects of a Learning Organization and are, according to van Solingen et al. (2009), necessary for a software development project as well.

The importance of organizational learning in a software development project is further mentioned by Chouseinoglou et al. (2013). They argue that knowledge is one of the most important assets of a software development organization directly affecting the business success. Software development companies are in a rapidly developing industry and they need to able to obtain the correct knowledge, use it efficiently and pass it to future projects in order to keep up with the continuously increasing competition (Chouseinoglou et al., 2013).

A working method that is gaining popularity in the software development industry is the agile working methods (Rubin & Rubin, 2011; Frauke et al., 2003; Lindvall et al., 2002). The agile way of working is an alternative to traditional project management (Chin, 2004). Agile working methods has its origin in the 1990's at the time when the traditional working methods were too bureaucratic and formal (Björkholm & Brattberg, 2010). Agile focuses on the individuals and team members, interaction with customers. Agile further promotes adaptive planning, evolutionary development and delivery, and encourages rapid and flexible

response to change (Björkholm & Brattberg, 2010). In broad terms it could be seen as a method of thriving in an environment of continuous change (Gunasekaran, 2001). This is in accordance to the Learning Organization which continuously nurtures adaptions and change (Jamali et el., 2006, Senge 1990). In addition to this, agile is about minimal initial planning and the work is planned in an iterative way in accordance to the needs and requirements that evolve during the work process (Björkholm & Brattberg, 2010). The work is done in several and short intervals where the project members only implement the most essential features of the product etc. (Cervone, 2011).

Cohen et al. (2013) mention, that being agile involves more than simply following guidelines that are supposed to make a project agile. It is a frame of mind rather than a collection of practices. The search for continuous improvement is a prerequisite and a depiction of agility and it is the type of behavior that conducts to a Learning Organization (Alves et al., 2012).

A company in the software development industry includes several different functions but evidently the predominant function is the software developers. The next section, chapter 2.5.2 therefore delves through the general structure of agile software development and also covers one of the most basic methods to date (Cervone, 2011).

2.5.2 Agile Software Development

Agile software development is an umbrella term for several different methodologies such as Scrum, eXtreme Programming (XP) etc. (Hoda et al., 2012). The common characteristics of the agile methodologies are that they include iterative development and a focus on interaction, communication, and the reduction of resource-intensive intermediate artifacts (Cohen et al., 2003). This means that the customer and the development team work closely together which makes sure that the development is progressing as expected. Also, to make sure that the product meets any changed requirements, the development team delivers results in short and regular intervals, so called sprints. It can be changes in results, specifications or the team of developers; the nature of agile software development (several sprints that span over a short time) allows the team to quickly adapt themselves to the changes (Beck, 1999). One of the agile software development methods is described below.

Scrum

Scrum is the most common and used agile method for software development (Cervone, 2011). According to Rising and Janoff (2000), Scrum can deal with constantly changing requirements and it entails a development cycle of many short intervals called sprints. Each sprint consists of a backlog that contains the stories (features) that are to be implemented and deployed at the end of the sprint. One thing that is monumental for Scrum is the scrum meeting (Cervone, 2011; Rising & Janoff, 2000). Development team partakes in scrum meetings during the beginning of every work day and every developer must answer three questions:

1. What have you completed since the last scrum meeting?
2. What obstacles got in your way of completing this work?
3. What specific things do you plan to accomplish between now and the next scrum meeting?

One of the reasons to why these questions are in place is because "[..] any slip is immediately obvious to everyone" and these slips can be brought to the surface and be appropriately addressed (Rising & Janoff, 2000, p. 30). Scrum is only manageable when applied to a team not exceeding ten members (Björkholm & Brattberg, 2010). Larger sizes make it practically impossible to manage things like scrum meetings (Rising & Janoff, 2000).

Scrum is divided into two parallel processes; developing the important functions and improve the way the team works (Björkholm & Brattberg, 2010). The first process is done by first planning each sprint and decide on which functions that shall be developed during that period. The second process is done by maintaining regular retrospectives which means that the team continuously reflects on how the teamwork can improve. These suggestions on improvement are discussed during each sprint meeting (Björkholm & Brattberg, 2010). This illustrates one of the prerequisites for team learning according to Watkins and Marsick (2003): Teams and groups focus both on the group's task and on how well the group is working.

There are different roles within the scrum team; product owner, developers, and scrum master (Cervone, 2011). Björkholm and Brattberg (2010) explain that the product owner is responsible for that the development generates as much customer value as possible. He/she formulates what requirements the product has and prioritizes these. In a scrum team, there are no designated roles among the developers. The reason for this is because they have a joint responsibility towards the work task and delivery. The scrum team consists of people with different skills and competences at the same time as they have a wide knowledge. The scrum master is in a way the team leader and makes sure that the team can work structured, efficiently and undisturbed. He/she makes sure that the team follows the predetermined process and that any potential problem is visible so that it can be solved together. (Björkholm & Brattberg, 2010).

Agile Teams in the Learning Organization

The agile approach to software development emphasizes teamwork (Babb et al., 2013). According to this, well-functioning teams are a central part in every agile process (Cohn, 2010). Cohn continues by stating that good software is developed by good teams. For example, Scrum is based on a behavior that resembles a rugby team – a group of individuals that move the ball forward like an entity. In the same way, a scrum team works together which means that they succeed and fail together. In order for a team to become high-performing, it is required to foster continuous learning and improvement so that knowledge can be shared within the team (Cohn, 2010). This is in accordance to the characteristics of a Learning Organization, where teamwork is essential (Marsick & Watkins, 2003; Senge, 1990). In summary, maintaining the team as an entity and not a group of different competences is the indication of a high-performing team (Cohn, 2010).

Decision making in traditional software development lies with the project manager. However, in agile software development teams it is to facilitate empowered team decision making (McAvoy & Butler, 2009). Empowered (self-organizing) teams are one of the fundamental concepts within the agile software development (Appelo, 2011; Cervone, 2011). This has various meanings, but most often it means that there is no fixed leader within the team and this role changes depending on the needs of the specific sprint (Cervone, 2011). According to

Cohn (2010), self-organizing teams are not free from managers. These are the ones that decide *what* to produce/develop but the teams can decide on *how* to do it. This means that the self-organizing teams get responsibility and mandate over the work tasks. Moreover, the agile working methods promote static teams so that a good group dynamic is established (Björkholm & Brattberg, 2010).

2.5.3 Challenges within Software Development in the Learning Organization

Most software development companies strive to become Learning Organizations, but far too few are successful (Harrison, 2004). A recurring phenomenon is that teams adapt agile software development methods instead of engaging in full adoption, and in many cases it is the learning aspect of agile methods that get modified or even omitted (Babb et al., 2013).

2.6 Summary of Literature Review

The research questions in this study address four major areas; Learning Organizations, Team Learning, the Role of Managers and Software Development Work. The relationship between these areas is that the concept Learning Organization is seen as the overall theme and the other areas are addressed as subjects within this theme as illustrated in Figure 2.

It is clear why significant studies and literature within the theme of Learning Organizations exist. The environment in which organizations operate nowadays is characterized by continuous and disruptive change (Kotter & Cohen, 2002; Senge et al., 1994). In order to meet this challenge, companies need a method to adapt in order to survive and maintain their competitive advantage (Wilhelm, 2006). The concept Learning Organization enables a better understanding of the ways organizations change as it helps people and organizations "embrace change" (Senge et al., 1994). In terms of the Learning Organization, team learning is seen as one of the core disciplines for organizational learning and change (Senge, 1990). This is because organizations are increasingly relying on teams to carry out strategic and operational tasks (Edmondson et al., 2007). In the same way, it is argued that leaders and managers play an important, if not one of the most important, roles in the Learning Organization (Watkins & Marsick, 1996; Slater & Narver, 1994; 1995; Senge, 1990). Managers' role of encouraging and creating a climate for employees' learning has been shown to be a crucial aspect for continuous learning (Senge et al., 1994; Garratt, 1990).

However, what seems to come across as the continuous weakness in the literature regarding all of these areas is limited practical empirical research that elaborates on how companies have put this concept into practice. More specifically, the major lack of empirical research on organizational learning and the Learning Organization (Easterby-Smith & Araujo, 1999; Lipshitz & Popper, 2000; Miner & Mezias, 1996; Tsang, 1997) contributes to the deficiencies in literature of all areas within the theoretical field of Learning Organizations. This may be seen as why organizations, such as those in the software development industry that strive to become a Learning Organization (due to the nature of their business) are less successful (Harrison, 2004).

There is therefore a clear need for additional empirical data in this field, which is currently dominated by theoretical literature. Furthermore, this study aims to look at the area in which

the existing challenges within team learning, managers' role in the Learning Organization and software development work intersect to provide an empirical contribution for a better understanding of how the Learning Organization can be reached in practice.

3 Methods

This chapter describes the research methods used to conduct the study. A case study at Ericsson has been chosen as the main research method. The primary method for this case study has consisted of two complementary parts, a quantitative and a qualitative, consisting of a questionnaire and numerous interviews. In this chapter each method is defined, described and then justified by discussing the strengths and weaknesses as well as the appropriateness in the context of alternatives.

3.1 Choice of Methodological Approach

Paradigms are considered to be philosophical frameworks that guides researchers in making choices on how the scientific research should be conducted (Collis & Hussey, 2009). In this study the researchers have adopted an interpretivist paradigm since the approach has been investigating the perceptions and actions of individuals within a contextual setting. The interpretivist paradigm was suitable for this study since it proposes that reality is subjective and dependent on context (Lincoln et al., 2011). A positivist paradigm, on the other hand, would not be appropriate since it suggests that reality is objective and unchanging (Lincoln et al., 2011).

In order to investigate how managers can encourage collaboration and team learning to reach the goal of becoming a Learning Organization in a software development group, the methodological approach that was chosen was a case study. A case study is an empirical study about a present phenomenon within some real-life context when the boundaries between phenomenon and context are not clearly evident (Yin, 2003). Case studies are common methodologies associated with the interpretivist paradigm (Collis & Hussey, 2009). The case study was conducted at a subdivision called Core Networks within the business unit, BNET, at the company Ericsson. The reason to why the case study was conducted at Ericsson was because they are market leaders in their business area when it comes to the Software Development Industry. It was therefore of interest to scrutinize a market leading organization and understand whether they fell into the realms of being classified as a Learning Organization, more specifically in the team learning aspect and understand how they had managed to do so. The business unit BNET was further selected as they had initiated lean and agile initiatives in the business unit which then coincided with the area of interest of the study. To prevent that the case becomes too broad and ensure that it keeps itself to the scope, boundaries can be implemented (Yin, 2003). In this case, the boundary was set to look into one subdivision within BNET called Core Networks.

The research questions' aim was to understand and explain the current situation of the case company where the contextual condition is relevant to the phenomena to study (Yin, 2003). The main research question that has been proposed was a "how"-question which is of an explanatory nature. Therefore, a case study was the recommended methodology (Yin, 2003). Yin also proposes alternative methodologies to explanatory studies, such as histories and experiments. The research conducted at Ericsson analyzed the current situation. Therefore, the use of histories was not applicable to this research, because histories focus on past events (Yin, 2003). Moreover, the environment which was investigated was not under the researchers' control, which is a prerequisite when one is carrying out experiments (Yin, 2003). Another alternative for the research methodology is to use action research (Collis & Hussey, 2009), but action research requires longer periods of research and implementation

work, which makes it infeasible for this Master's Thesis. Considering the alternative options mentioned, it is revealed that a case study was the most feasible approach for the thesis work.

Case studies allow the possibility of combining different methods, which is a means for increasing the validity of the study (Collis & Hussey, 2009). In such way, this chosen case study design possessed a two phase method that included quantitative and qualitative data collection methods. The first phase was the quantitative method that had a deductive approach to test conceptual and theoretical inferences regarding the Learning Organization through empirical observations. This approach was seen as appropriate in order to gain an initial snapshot of the current learning culture at the organization. The second phase included the qualitative method that encompassed an inductive approach. The reason for this was to gain information from the study participants without influencing them through preconceived categories or theoretical perspectives (Hsieh & Shannon, 2005). This method was evaluated as appropriate in order to understand the results from the first phase without influencing the participants. The specific data collection methods that were utilized were questionnaires and interviews. These methods will be thoroughly discussed in the coming sections. Another method that was briefly considered was benchmarking. This was because it would give the researchers an insight to how managers in other industries nurture team learning. However, a lack of time and a belief that response rates would be low resulted in the method being discarded. The duration of the study was nineteen weeks – the duration of the Master's Thesis course.

3.2 Research Design

It is important for the research design to be well documented for the success of the study (Yin, 2003). Essential parts, such as problem formulation and research questions, were continuously revised when the reviewed literature or gained empirical data did not concur with current research questions.

During the length of the thesis work, an iterative approach was used. The researchers started the study by creating a problem formulation, the purpose and research questions that would shape the foundation of the study. The problem formulation was heavily inspired from the vision of the HR representatives at Ericsson. In addition to this, initial unstructured interviews and observations were conducted at the organization to gain a general idea of what should be studied. Using these foundations as guidelines for what kind of information was needed, the literature review was initiated. This stage of the study gave the researchers an idea of how the organization could be investigated and what kind of information was sought after during interviews. The empirical data, which was inspired by the guidelines obtained from the literature review, consisted of a questionnaire and several interviews. The empirical data would then indicate if there was an informational gap that had not been sought after by the literature review. This meant that there was a possibility for improvement in the problem formulation, purpose or research questions. After remedying any possible flaws in the foundation of the report, the researchers would iterate through the entire process again.

In short terms, the problem formulation, purpose and research questions have been modified several times throughout the study.

The writing process progressed simultaneously as the data collection and analysis. Figure 5 illustrates the research design that was adopted during the course of this study. While it is not

illustrated, the analysis of the empirical data has led to necessary modification in problem formulation, purpose and research questions.

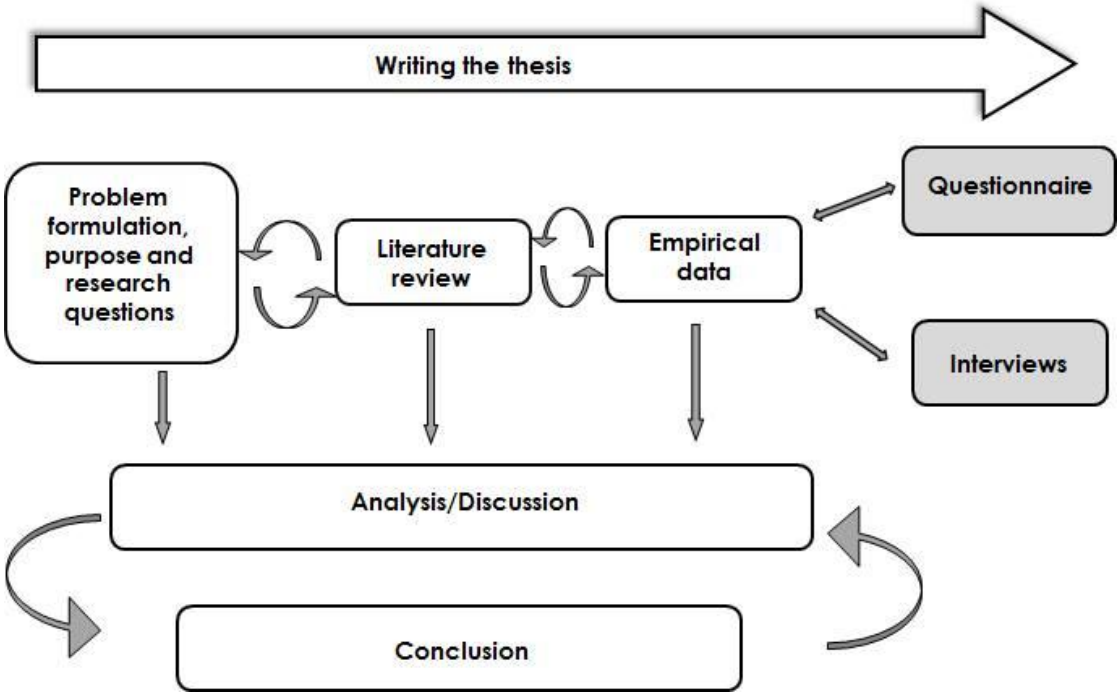

Figure 5. This illustration of the research design aims to show the iterative process behind the study.

A thorough description of each component in the research design is given in the coming paragraphs.

3.2.1 Identify and Define Problem Formulation

The process started with a pre-study of various literatures in order to formulate a preliminary problem definition and research questions. Also, an initial round of unstructured interviews was conducted to gain a primary overview and overall understanding of the current situation at Core Networks. These interviews were not part of the empirical data collection.

The interviewees were suggested by the contact person at Core Networks. What they all had in common was that they had an interest in Learning Organizations and had already some sort of insight within the field. Some of the interviewees were even active in "learning activities" present at Core Networks. The interviewees ranged from engineers to HR department representatives in order to see if opinions differed depending on the organizational functions and in such way reach a holistic view.

The interviews were held in conference rooms at Ericsson's premises. All interviews were between 40-60 minutes long and were recorded with the permission from the interviewees for later transcription. Apart from the recordings, key notes were taken. Both researchers were present during the interviews in order to avoid interviewer bias (Bell, 1995). The interviewees are presented in Table 2.

Table 2. The table summarizes the initial interviews conducted with key persons. The names of the interviewees are excluded due to anonymity but are instead presented by their position, department and organization.

Organization/Department	Position
BUGS Global Services Operations	Head of Quality
BNET Core Networks – Subunit E	Software developer
Group Function HR	Learning and Performance Consultant
BNET Core Networks – Subunit H	Organizational coach

In addition to the initial interviews, a review of internal documents found in the internal web database, including the BNET People Strategy, was conducted in order to get a description of the strategic objectives as well as to clarify the organizational culture present today.

Apart from the initial interviews and review of internal documents, several observations were made at the case company. The researchers were invited to attend a two day workshop for managers, coaches and other sorts of leaders at BNET. Approximately 70 people participated around the topic of leadership challenges in a lean and agile organization. The workshop visit was meant for the researchers to observe and take key notes of what was being discussed. The workshop was an effective way of gaining insight on different leaders' general perspective when it came to challenges of agile organizations and also specifically team learning. The workshop attendance inspired one of the research questions that are present in the study. It was also used to further understand the internal ways of work of the organization and how it functions.

Later on in the investigation, the researchers of this study were invited to attend one of the many software development teams' daily scrum meetings at Core Networks. This meeting was an informal one, having all the team members around a whiteboard. Observing the scrum meeting enabled the researchers to understand the interaction, the climate and the sense of atmosphere within team.

3.2.2 Literature Review

The literature review has been a basis for this study to better comprehend the context of the investigation as well as aid in the analysis of the findings. In the method used for data collection, reviewing literature was a continuous process throughout the study as an essential part in comprehending the empirical data collected and use it as a base in the analysis.

The literature review was conducted to provide a comprehensive overview of the existing knowledge within the area of Learning Organization, managers' role, and the way of work in software development companies. The literature review was used, not only to learn more about the subject, but also to enable the research design in an appropriate way (Collis & Hussey, 2009). By analyzing the literature that was reviewed, insights in how other researchers have advanced their studies and approaches for data analysis were provided.

The literature was collected throughout the whole course of the thesis work. The procured literature was comprised of a group of articles from journals, books, and other published

works. The literature was found on various scholarly databases. The three most used web databases were the Royal Institute of Technology's library database Primo, IEEEXplore, and Google Scholar. A small fraction of the literature was gathered from the library at Royal Institute of Technology. The initial searches was conducted using the search words "learning organization", "team learning", "managers", "leadership", "agile" and "social capital". In this process, frequently cited authors and articles relevant to this study were identified and searched for. This can be seen as a wide approach since the first stages were only to grasp what kind of literature that was sought for the thesis work. Later on, the search process was narrowed down. A thorough investigation of the frequently cited authors and researchers were made along with a scrutiny of the reference lists in their articles.

Besides contributing to the theoretical framework for the thesis the literature was also helpful in shaping the process of data gathering and how to choose the correct sample sizes for the questionnaire.

3.2.3 Questionnaire

One of the primary sources for collecting data was by distributing a questionnaire which is the quantitative part of the data collection. This was done parallel to the initial unstructured interviews. The purpose of the questionnaire was to map the current learning culture at the ten subunits of Core Networks, subunits A-J. Several tools have been developed to map the current learning culture at organizations (e.g. Tannenbaum, 1997; Watkins & Marsick, 1997). Table 3 is a collection of some of these tools and compares them in terms of scope, depth and validity.

Table 3. Comparison of different Learning Organization questionnaires (Adapted from Moilanen, 2001).

Name of the Instrument	Holistic (Scope)	Profound (Depth)	Tested (Validity)
Pedler et al. (1991, 1997): The Learning Company Questionnaire	Yes	Yes	-
Mayo and Lank (1994): The Complete Learning Organization Benchmark	Yes	Yes	-
Tannenbaum (1997): Learning Environment Survey	-	Yes	Yes
Pearn et al. (1995): The Learning Audit	-	-	-
Sarala and Sarala (1996): Recognizing Your Organization	-	Yes	-
Watkins and Marsick (1997): The Dimensions of the Learning Organization Questionnaire (DLOQ)	Yes	Yes	Yes

Since learning culture is an abstract topic, it is imperative to use valid and reliable tools to map it (Yang, 2003). The only tool in Table 3 that meets the criteria of scope, depth and validity is the Dimensions of the Learning Organization Questionnaire, DLOQ. Therefore, this was the tool chosen to diagnose the current status of the learning culture in the case company.

The DLOQ used in this study consists of the first 43 questions from the original DLOQ, which is attached in appendix 2. The last 12 questions measures the current performance compared to previous year. Since the use of the DLOQ in this study was only focused on a snapshot of the current learning culture, the last 12 questions were discarded. The questionnaire is a self-report instrument and it measures the respondent's perceptions. The respondents were asked to choose the best appropriate index on a Likert-scale that goes from 1, "almost never" to 6, "almost always". Looking at the mean results for each segment showed where the strength in the organization is and where it needs development. In addition to the mandatory 43 questions, the respondents had the opportunity to share additional thoughts and comments. This part was not mandatory. The number of comments from each subunit can be found in Table 4. All 43 questions needed to be answered in order to submit the questionnaire. This was done to eliminate the possibility of *item non-response* which can be present if participants did not complete the whole questionnaire (Collins & Hussey, 2009).

Although the respondents have filled in the whole survey of the DLOQ, the dimension that has been in focus for this investigation is CT. CT addresses collaboration and team learning and is the segment that has been scrutinized for understanding the current team learning capabilities in the organization. This doesn't mean that the other dimensions have been excluded, as all dimensions are interdependent.

The respondents were selected randomly through a list of all of the employees at Core Networks, regardless of managerial role or not. Core Networks globally consists of 5,124 employees which are further distributed over ten subunits. Of these ten, six units can be described as software developers and the rest of the units can be classified as Support Units. More on the organizational structures are elaborated in chapter 4. As per recommendation from the DLOQ, each subunit was treated as a specific population (Marsick & Watkins, 2003). Therefore, a stratified random sample was obtained (Collis & Hussey, 2009). Consequently, the employee list was filtered to identify the correct population size of each subunit. Krejcie and Morgan (1970) provided a formula in their article with an attached table where no calculations are required. The table is applicable to any population of a defined (finite) size (Hill, 1998). Confidence interval 95% and a margin of error 5% have been used. Table 4 shows the chosen sample sizes for all subunits in Core Networks.

Furthermore, before the selection of the random respondents, those 1,200 individuals who recently received a similar survey on change management last year were excluded from the sample. This exclusion was made due to the hope that it would increase the response rate since the excluded employees would maybe feel less inclined to answer a similar survey once again, in accordance with the theory of questionnaire fatigue (Collis & Hussey, 2009).

The random samples were obtained by assigning a unique number to each name in the employee list. When this was completed, a random number generator was used to extract unique and random e-mail addresses from the list.

The questionnaire was distributed through the intranet's survey tool with the help of two internal communication managers at Core Networks. The ambition was to receive a response rate of 20%. The DLOQ was accessible online on the intranet only for the selected respondents for 23 days. After only two days, the number of responses amassed to 201 respondents and more responses were continually submitted. A reminder e-mail was sent on the 20th day and a total of 111 more respondents submitted the questionnaire. The total amount of responses to this questionnaire amassed to 380 respondents which represent 20.5% response rate. This just exceeded the expected response rate. When survey methodologies are used in interpretivist studies, it is not as crucial to have a sufficiently large and unbiased sample as the research is not to generalize to the population but to gain insights from the cases in the sample (Collis & Hussey, 2009). The response rates for all subunits can be found in Table 4.

Table 4. The chosen sample sizes of all subunits, the response rates along with number of optional comments.

	Population	Sample size	Responses (N)	Response rate (%)	No of comments
Subunit A	1,071	283	73	25.8	1
Subunit B	516	220	47	20.5	2
Subunit C	679	246	38	15.4	2
Subunit D	900	269	45	16.7	6
Subunit E	1,088	284	50	17.6	5
Subunit F	205	134	29	21.6	3
Subunit G	204	133	42	31.6	2
Subunit H	22	21	10	47.6	0
Subunit I	105	83	19	22.9	2
Subunit J	334	179	27	15.1	1
Total	**5,124**	**1,852**	**380**	**20.5**	**24**

3.2.4 Interviews

Apart from the questionnaire, another primary method for collecting data for the analysis was semi-structured interviews, which was the qualitative part of the data collection. The main purpose of interviews is to understand what the interviewee thinks, does, or feels (Collis & Hussey, 2009). In this specific study, the interviews had the purpose to characterize the managers' perception about their roles in terms of team learning capabilities and team learning challenges. There are, as mentioned above, ten subunits within Core Networks. In this study, the interviewees came from three of these subunits: Subunit A, Subunit E and Subunit G. While Subunit A and E functions as software developers, Subunit G is classified as Support Unit. The reason for these choices was to understand whether the team learning capabilities would differ in different functions of a software development company. The

results from the first phase of the study, the questionnaire, thus served as a benchmark to see which units would be of interest to compare.

The semi-structured interviews with open ended questions and event questions were done to ensure that the interviewee gave answers that reflected their own thoughts rather than Ericsson's thoughts (Collis & Hussey, 2009). This enables that the interviewee can give more elaborate answers than just yes or no. Semi-structured interviews allow the researcher to add additional questions, where it is needed, to get more detailed information (Collis & Hussey, 2009). Also, it is important to note that structured interviews would impede our study, since this kind of interviews limit the answers and explanations given by the interviewees (Collis & Hussey, 2009). Alas, this was not a valid option for this study.

Due to the size of Ericsson's organization, the structure of the organizational map is very complex. This is further elaborated in chapter 4. There are several management levels within each subunit and the number of levels is dependent on what type of function (in this paper referred to as software or support) that unit has. For the Software Development Units (SW), three levels of managers were interviewed. For the Support Units, two levels of managers were interviewed. Attention to the specific levels of management was given with purpose. This way, the same information could be collected from different sources within the same subunit. The use of this type of data triangulation reduces bias in data sources (Collis & Hussey, 2009). Furthermore, the researchers made sure not to reveal any of the results from the survey until the interview was actually finished. This way, the managers could give their honest opinions without being influenced by the survey results (Collis & Hussey, 2009; Hsieh & Shannon, 2005).

To attain candidates for the interviews, the employee list was filtered to only show those managers who did not receive the questionnaire. Thereafter, the list was filtered to only show the managers with legal responsibilities such as staff liability as well as being located in Sweden. After these criteria were fulfilled, a total of 49 managers were identified at the three chosen subunits and e-mails were sent to 20 managers, as seen in Table 5. However, only 10 of the managers were able to participate in an interview. All interviewees are presented in Table 6.

Table 5. The table shows the number of managers located in Sweden that did not belong to the random sample of the questionnaire and have staff liability. Also, the number of contacted managers is given.

Organization/Department	No. of managers in Sweden	No. of contacted managers	No. of interviews
Core Networks – Subunit A (SW)	8	6	4
Core Networks – Subunit E (SW)	29	10	4
Core Networks – Subunit G (Support)	12	4	2

Table 6. The table summarizes the interviews conducted with the managers in three different subunits at Core Networks, from both Software Development Units (SW) and Support Units. The names of the interviewees are excluded due to anonymity but are instead presented by their position, department and organization.

Organization/Department	Position
Core Networks – Subunit A (SW)	Head of Subunit A
Core Networks – Subunit A (SW)	Head of a subpart of Subunit A
Core Networks – Subunit A (SW)	Line Manager
Core Networks – Subunit A (SW)	Line Manager
Core Networks – Subunit E (SW)	Head of Subunit E
Core Networks – Subunit E (SW)	Head of a subpart of Subunit E
Core Networks – Subunit E (SW)	Manager – R&D
Core Networks – Subunit E (SW)	Manager – R&D
Core Networks – Subunit G (Support)	Manager
Core Networks – Subunit G (Support)	Product Line Director

All interviews were recorded with the permissions of the interviewees and were thereafter transcribed for later analysis. The interviews all had a duration of 45-60 minutes. The language used at the interviews was either Swedish or English depending on the interviewee's preference. All except one of the interviews were held face-to-face in conference rooms in Ericsson's premises in Kista, Sweden. One of the interviews was held over a conference telephone since the interviewee was located in a different part of Sweden.

Both researchers were present during the interviews and both were taking key notes. However, one of the researchers was mainly responsible for conducting the interview and the other researcher was responsible for writing a protocol. The protocol writer of the interview also had to make sure that all areas of interest were covered by whoever was conducting the interview. The interviews were directed with the help of a set of semi-structured questions that formed a guideline. These questions can be found in Appendix 3. The guideline was used more as a check-list for the areas that was meant to be covered, rather than questions that needed to be asked.

The semi-structured interviews were the concluding part of the data collection process. This process is comprised of data from aforementioned interviews and the questionnaire. How this data was analyzed is thoroughly described in the following chapter 3.2.5.

3.2.5 Analysis Method

In this section, the process of analysis is described for the two data collection methods, i.e. questionnaire and interviews.

Questionnaire

The DLOQ was analyzed by calculating mean values for all of the seven dimensions. The first research question was to determine whether Core Networks could be classified as a Learning Organization and further if the Team Learning dimension was received a score that could be considered to be on a high level. This was done by calculating the mean score for Core Networks and for all the subunits. Since the scale for scoring was from 1 to 6, a score that exceeded the midpoint of 3.5 was considered to be above average.

When proceeding to conducting an internal evaluation of the team learning dimension, the mean scores for each subunit was compared to the overall score of Core Networks. This was in accordance with Watkins and Marsick's guidelines for using the DLOQ instrument. It is argued that the best comparison is internal since organizations vary considerably in their needs and context (Watkins & O'Neil, 2013). They suggest that averaging across multiple responses, in this study interpreted as units, it is possible to note which dimensions are above and below the overall means in the organization. Those subunits that have dimensions with mean scores higher than the Core Networks mean score provide strategic advantage, and dimensions that are lower provide strategic leverage (Watkins & O'Neil, 2013).

Even though, this is the recommended strategy from the authors of the instruments, there is earlier research where this method had not been followed through. One of the articles reviewed, written by Dahanayake and Gamlath (2013), interpreted the scores as positive if they were above a certain score. The problem with this approach was that this benchmark score was taken from a previous study (Jamali et al., 2009), where the researchers had measured the mean scores for six companies within an industry that was not the same as Dahanayake and Gamlath's study. In other words Dahanayake and Gamlath were comparing the learning culture of two different types of organizations that were not compatible. In this study great attention has been paid to how previous studies have analyzed the DLOQ scores and active choice has been made to follow through with the Watkins and Marsick recommendation. To simplify what some other studies may have failed to understand when comparing the scores to an absolute value as being good is that they are indirectly suggesting a possibility of reaching the goal of becoming a Learning Organization. However, theoretically the Learning Organization is not a destiny but a journey (Jamali et al., 2006). Therefore, it is only an internal comparison that can truly reflect areas of improvement.

Since the Team Learning dimension was in focus, mean scores for each prerequisite within that dimension were calculated. This was done to see whether there were patterns in the responses that could explain which prerequisite that was affecting the overall team learning. The aim was to use these patterns to identify the strengths and areas of improvement when it came to the Team Learning dimension of Core Networks. Watkins and Marsick also posit that the overall profile that could be understood through identifying patterns, themes and the range of variation in responses by comparing responses within the category (Watkins & O'Neil, 2013).

For a holistic view of the different units of comparison, please refer to Table 7.

Table 7. Different units of comparison.

Unit of Comparison	Calculation	Applicable when
1. Midpoint of Likert-scale	The scale for scoring range from 1 to 6 resulting in a midpoint value of 3.5	Determining whether the overall Learning Culture and Team Learning can be considered to be of an above average value. Since there is no "right" or "wrong" score the mathematical average is considered to be appropriate.
2. Core Networks Average	The mean score of all subunits together	Determining which subunits are above and below the company's average. This is done in accordance with Watkins and Marsick's recommendation for internal evaluations of organizations.
3. Mean scores for Team Learning prerequisites	Mean scores for each prerequisite within the Team Learning dimension	Identifying patterns in the responses that could explain which prerequisite that was affecting the overall team learning. The aim was to use these patterns to pinpoint the strengths and areas of improvement when it came to the Team Learning dimension of Core Networks.

Interviews

A conventional content analysis (Hsieh & Shannon, 2005) with categories and themes derived from the interview transcripts was used to analyze the interview data. In this type of analysis, researchers avoid using preconceived categories, instead allowing the categories and themes to emerge from the data (Kondracki & Wellman, 2002). Data analysis started with reading all data independently and repeatedly to obtain a sense of the whole (Tesch, 1990) similar to reading a novel. Following this, the data was read word by word to derive codes (Morse & Field, 1995; Miles & Huberman, 1994; Morgan, 1993) by first highlighting the exact words that appeared to capture a key thought. Next, the researchers approached the transcripts independently of each other, making notes of the first impressions, thoughts, and initial analysis. As this process was repeated, the codes were labeled turning them into themes that reflected more than one key thought. Based on how these themes were related and linked, they were sorted into categories.

Certain quotes were included in the report to show how they were connected to a certain theme. The themes, and quotes surrounding them, were then matched with the existing theory and earlier findings that had emerged from the literature review in order to answer the research question.

3.3 Validity and Reliability

The limitations of a research are defined as the weaknesses or deficiencies in the research (Collis & Hussey, 2009) and will in this study be discussed in terms of reliability and validity for the literature review, the questionnaire, and the interviews.

Literature Review

Secondary sources that were used for the theoretical framework that was needed for analysis of the empirical findings were collected from legitimate and established journals in the field of Industrial Management to increase validity. Most of these theories are widely spread, accepted and have had great influence within the theoretical field of Learning Organization. Furthermore, the secondary sources were critically analyzed by evaluating the reliability and validity of the sources' research methods.

Questionnaire

The first data collection method in this study was the DLOQ. This instrument has been examined in earlier research through various forms of score validity assessment and further been evaluated with numerous variables (e.g. Ellinger et al., 2002; Yang, 2003). Both construct validity and score reliability of the DLOQ have been assessed by Yang et al. (2004) based on the theoretical foundations of the DLOQ constructs. Nomological network analysis was used to examine the results and it confirmed that the DLOQ was a reasonable measure to capture the learning organization constructs. Therefore, the validity of the questionnaire is argued to be high. Ever since then, the DLOQ has been translated and used in several research studies (Song et al., 2013).

However, it's important to note that the DLOQ is a self- report measure and thus encompasses the limitations of such surveys. Participants may not be truthful, answer in a desired way or even lack the information to answer the questions (Watkins & O'Neil, 2013). Although organizational researchers have concluded that when it comes to an abstract topic such as the Learning Organizations, it is the individual perceptions of learning cultures that can be seen as the strongest measurement (Watkins & O'Neil, 2013). Furthermore, even though the instrument is highly influential and has been used in several context (Song et al., 2013), there still may be a possibility for it to lack a dimension of the learning culture. In other words, there is a possibility that the DLOQ is not capturing the complete Learning Culture of an organization (Watkins & O'Neil, 2013) however this is an area of future research.

Reliability is concerned with the repeatability of the study's results given by the measurement tools (Yin, 2003). In this case the researchers ensured that all of the questions had to be completed in order to submit the survey and avoid the possibility of item-non response (Collis & Hussey, 2009). This, along with sending out the survey to participants who hadn't received a survey recently and eliminating questionnaire fatigue, was seen as methods to increase the reliability of the survey (Collis & Hussey, 2009).

Finally, it's argued that it is not as crucial to have a sufficiently large and unbiased sample in a survey that falls under interpretivist study as the aim is not generalize a population but to

gain insight in the case sample (Collis & Hussey, 2009). Therefore, it could be argued that the 20.5% response rate of the survey is sufficient for the results to be considered valid and reliable. However to further ensure this, the internal communication managers of Core Networks were addressed and involved in distributing the survey. It was also concluded by the internal communication managers that 20.5% response rate was an acceptable response rate as they themselves received this when sending out other surveys internally in the organization. However, there is undoubtedly a desire to have a larger response rate to further increase validity and reliability.

Interviews

Interpretive studies tend to produce findings with high validity since the focus is to gain rich and detailed explanations about a specific phenomenon and those involved (Collis & Hussey, 2009). Much of the qualitative data has been based on the perceptions of the interviewees. The nature of the enquiry in the semi-structured interviews could lead to an increase in validity since it has a bigger chance of holding the correct reflection of the participants' perceptions.

Furthermore, by using data triangulation, the use of multiple sources from the same subunits, increases the validity of the results. However, there is a risk that the representation of reality can be contingent on which subjects that have been chosen for the interviews. This issue is addressed by reciting the interviewees in the analysis in order to give an accurate view of the context.

Studies with a qualitative approach tend to have low reliability since interpretations and observations are highly dependent on how the researcher explain and understand the reality (Collis & Hussey, 2009). To increase the reliability of the interviews, the researchers of this study have given a thorough description of the data collection methodology and have also published the interview guidelines in Appendix 3. All interviews were both recorded and transcribed to enable the material to be analyzed several times. Also, notes were continuously taken during the interviews to avoid skewed results. Furthermore, by collecting the same data from different managers in the same subunit, i.e. data triangulation, increases the reliability (Collis & Hussey, 2009). The interviews' reliability and validity were further asserted with the help of investigator triangulation (Collis & Hussey, 2009) which involves using more than one investigator in the data collecting and analysis process. This is a way to reduce interviewer bias and reduces the risk of skewed and unreliable results.

A factor that was addressed for the conduction of the interviews was the interview effect, which is that the respondents will try to reply what he or she thinks is the "right" answer according to the company or the researcher (Bell, 1995). To therefore ask open ended questions in the interviews was an attempt to minimize this. Furthermore, the researchers made sure not to reveal any of the results from the survey until the interview was actually finished. This way, the managers could give their honest opinions without being influenced by the survey results (Collis & Hussey, 2009).

Lastly, there was a time frame of nineteen weeks for this thesis, which had implications on the sample size for interviews i.e. 10 semi-structured interviews. This might have affected the reliability and validity of the findings. By having a small sample size, there is a possibility that these respondents' opinions do not coincide with the majority of the managers at Core

Networks. However, the main themes that emerged from the interviews were further confirmed by other sources.

The method of analysis for the interviews was a conventional content analysis where categories and themes derived from the interview transcripts was used to analyze the interview data (Hsieh & Shannon, 2005). A challenge of this type of analysis is to fail to completely understand the context and therefore miss to identify the key categories (Hsieh & Shannon, 2005). Thus there is a risk that the researchers failed to accurately represent the data from the interviews and thus affecting the reliability of the results. As a method to alleviate this possibility the researchers conducted the content analysis independently first and then concluded on the results.

3.4 Ethical Aspects

The study was conducted at Ericsson and one of the conditions that had to be fulfilled, if the study was to be authorized by Ericsson, was to sign a nondisclosure agreement (NDA). The NDA is a legal contract between the researchers and Ericsson. It was agreed that sensitive information, such as employee lists would not be disclosed to a third party. It was also essential that the subunits' acquired scores, from the DLOQ, would not be directly linked to them. This is why all subunits have been given notations such as "Subunit A" or "Subunit B". Only the researchers and the supervisors at Ericsson AB are aware of the mapping between letter notation and actual subunit.

The respondents from the DLOQ were completely anonymous and it is impossible to track the respondents to any specific answer. Furthermore, the non-disclosure of the interviewees' names was also an important aspect for the researchers. Only the researchers are aware of what a specific manager has said. Third parties will not be able to track an answer back to a certain manager.

4 Ericsson

In order to provide an understanding of the organization, chapter 4 is dedicated to give an overview of the company, specifically the subdivision Core Networks. Findings from the observations provide an insight on how far some of the subunits have come in the lean and agile transformation.

4.1 Background Information of the Company

Ericsson is a Swedish multinational provider of communications technology and services founded in 1876. They are market leaders within mobile networks as well as within core networks, microwave transport among other areas. Currently they have around 114,000 employees distributed among approximately 130 countries. However, they serve customers in 180 countries. The organizational chart can be seen in Figure 6.

There are four business units that offer products and services. One of them, Business Unit Networks (BNET), which is in focus for this study, focuses on networks for mobile and fixed line public telephone networks. The products are highly complex due the fact that the business environment has rapid changes in demands. This makes the nature of work in this Business Unit highly iterative as changes occur often. There are a number of subdivisions within BNET and one of these is Core Networks which is presented in the following paragraph and can be seen in Figure 7.

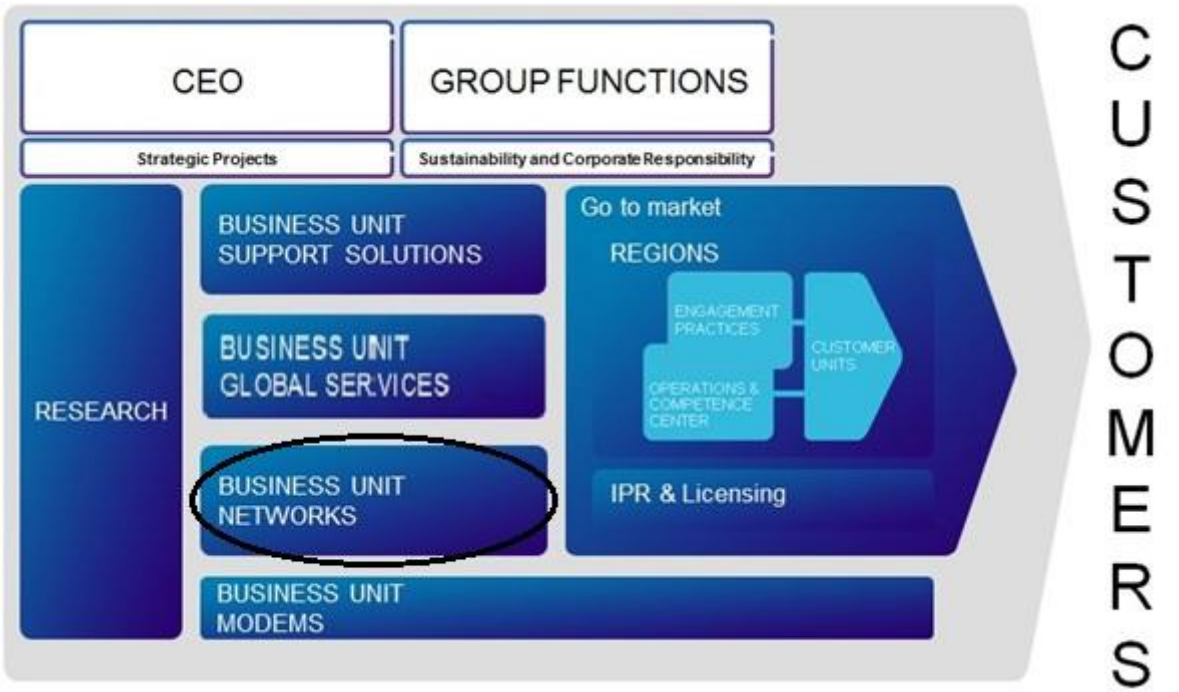

Figure 6. Organizational chart of Ericsson with BNET circled (Ericsson, *BNET People Strategy,* internal document, 2013).

4.1.1 Core Networks

The subdivision Core Networks is comprised of 5,124 employees among 11 countries in Europe, North America and Asia. Core Networks has ten subunits. Not all of these are working with software development. To make it clearer, the researchers have decided to categorize these subunits into two different ones based on their functions. The first category is the "Software Development (SW) Units" and the second category is classified as "Support Units". In this report, the subunits are named by letter such as "Subunit A" or "Subunit B" due to preservation of anonymity. The Software Development Units contain six of the subunits, namely Subunit A, B, C, D, E, and F. The Support Units consist of the remaining four subunits, called Subunit G, H, I and J. The majority of the Support Units function as support for the six Software Development Units. An illustration of the organization that this study has targeted can be seen in Figure 7.

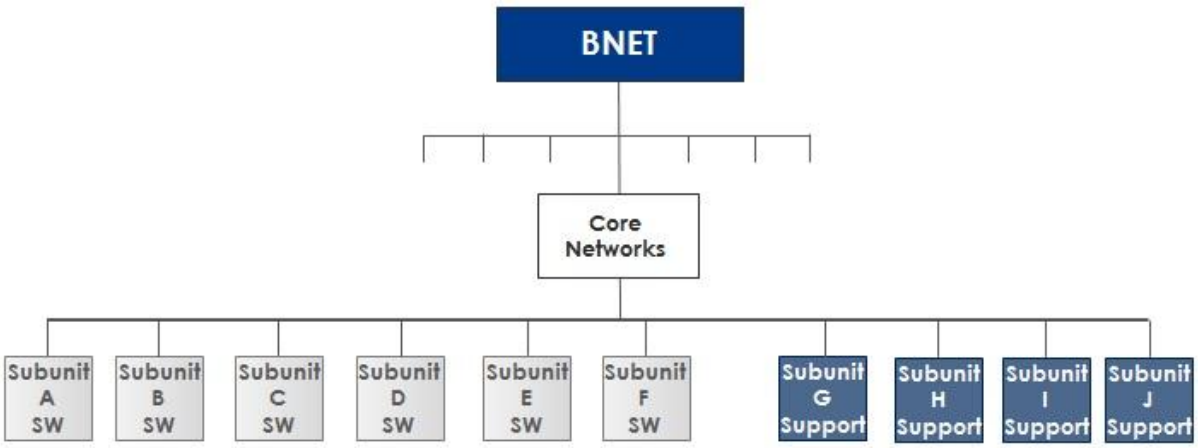

Figure 7. Illustration of the ten subunits within Core Networks indicating that there are two categories, namely Software Development Units and Support Units.

The ten subunits vary in size and work tasks. The unit sizes can be found in Table 4.

Core Networks is currently going through a transition to become more lean and agile in their operations. Factors that have been highlighted as a part of this transitions is the emphasis on continuous learning in the work life. Furthermore, it was concluded in the observations that there was a clear focus on the teams and teamwork, specifically in the software development teams. As a result, most of the teams in the Software Development Units work in scrum teams. In the pre-study phase, the HR-representatives also explained that the organization has put a lot of emphasis on teamwork as teams were seen as essential units for the development of their products.

It was also observed that although the aim was to have teams that were located geographically close, this was not always the case. Some teams were scattered on different sites where most communication is maintained through high and low level technical systems and tools, such as videoconferences and intranets. Those teams that were present in Stockholm, where this study took place, usually sit close to each other in open landscapes and in some teams the direct line managers sit among the team in the same office space.

Even though the lean and agile transformation is a strategy implemented from the executive management, some units have come further in that transformation. For instance, Subunit A

started the lean and agile transformation in 2009. Subunit E, on the other hand, went through an organizational change in terms of structures in March 2014 as an attempt to become more lean and agile.

5 Results

This chapter presents the results from the evaluation of the current state of the team learning capabilities at Core Networks. The results from the questionnaire are presented and discussed along with the findings from the interviews.

The results of this study comprises of two main parts, the quantitative data from the questionnaire and the qualitative data from the interviews. The results are presented in such way that reflects the process of the research method. Thus the results of the quantitative method come first followed by the results of the qualitative method. This chapter concludes with a summary.

5.1 Results from the Questionnaire

This section of the results presents the quantitative results, i.e. the results from the DLOQ in order to illustrate the current status of the learning culture in the organization. This section of the results begins with an overall mapping of the learning culture at Core Networks. It is followed by an internal evaluation where each of the subunits' results as compared to the whole organization's mean values. This internal evaluation inspired the choice for the three specific subunits that were further scrutinized. Thus, it follows with an internal evaluation of the team learning prerequisites for the three specific subunits, indicating strengths and areas of improvement.

The respondents were asked to choose the best appropriate index on a Likert-scale that goes from 1, "almost never" to 6, "almost always". These scores were averaged for each dimension and each subunit. These mean scores represent at what level the current learning culture is for that specific dimension. Given the midpoint of the Likert-scale of 3.5, any score that exceeds this can be considered as above average. In the same way any score that falls below 3.5 can be considered as below average.

5.1.1 Learning Culture at Core Networks

When considering the mean scores for Core Networks for respective dimension, all but one is mostly above the midpoint of 3.5. The only dimension for Core Networks that received a score that was close to the midpoint was the *Create systems to capture and share learning* (SCL) dimension which scored 3.56. The dimension that scored the highest for Core Networks was *Promote Inquiry and Dialogue* (ID) which scored 4.26. This is presented in Figure 8. These figures indicate that when it comes to Core Networks as an entity, the employees of the organization perceive them to have a learning culture that is above average.

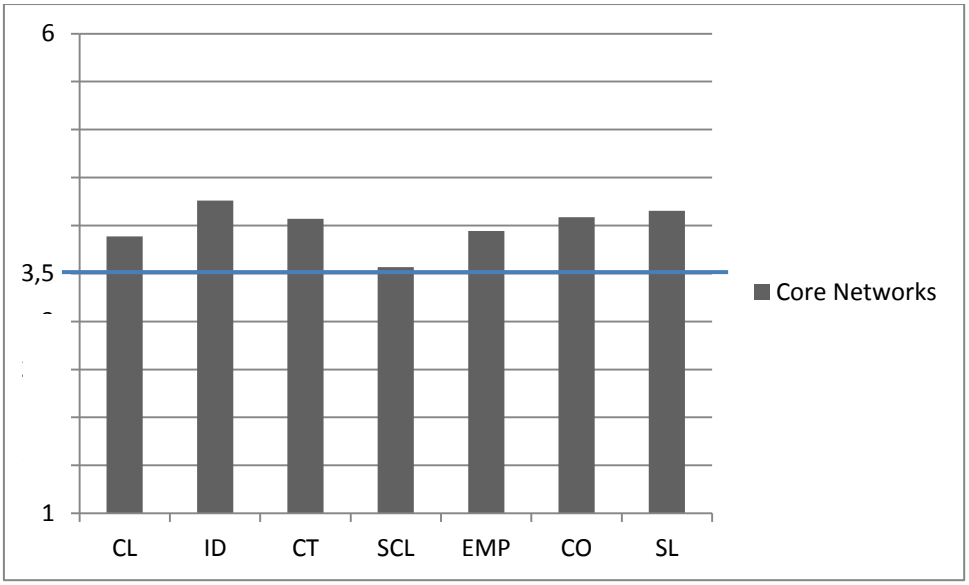

Figure 8. The mean scores for Core Networks indicating that all dimensions are above the midpoint suggesting that Core Networks has a learning culture.

While the results show some variation depending on the subunit, it seems clear that the weakest dimension is the SCL dimension. All of the subunits had the SCL dimension as its weakest point. Furthermore, 6 out of 10 of the subunits received scores below the midpoint of the scale for the SCL dimension as seen in Figure 9.

Besides the SCL dimension when it came to the Software Development Units, Subunit A-F, all other dimensions scored above the midpoint of 3.5. This suggests that in general the employees of the Software Development Units consider themselves to have a good learning culture in the organization. It is still however of interest that the SCL dimension, which includes high- and low-level technological systems is the one that was a weakness for the software developers who are in the business of technology.

When considering the Support Units, Subunit G-J, Subunit H was the only one to score below 3.5 for all dimensions. In addition to this, Subunit G and I also scored below the midpoint of the scale for the SCL dimension. This is also demonstrated in Figure 9.

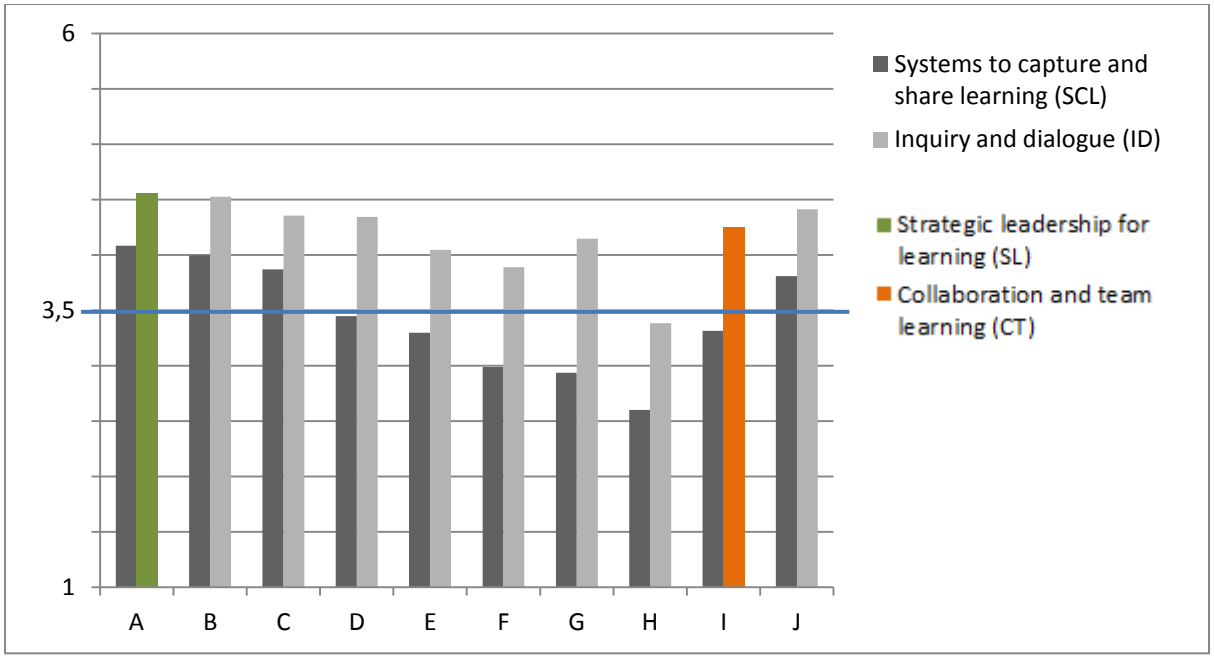

Figure 9. The range between the highest and the lowest scoring dimension for the subunits, indicating that they all had SCL in common as its weakest point. A majority of the subunits fell below the midpoint for the SCL dimension. Also, Subunit H was the only subunit that completely fell below the midpoint for all dimensions.

When it comes to the team learning aspect specifically, all of the Software Development Units (A-F) have scores that exceed the midpoint of the scale. The scores range from 3.65 to 4.33. However, for the Support Units (G-J) the scores range from 3.20 to 4.25. There is only one subunit that scored below 3.5 which is Subunit H as can be seen in Figure 10. Apart from Subunit H, the overall conclusion is that the employees of Core Networks perceive that their capabilities for team learning are good across its subunits.

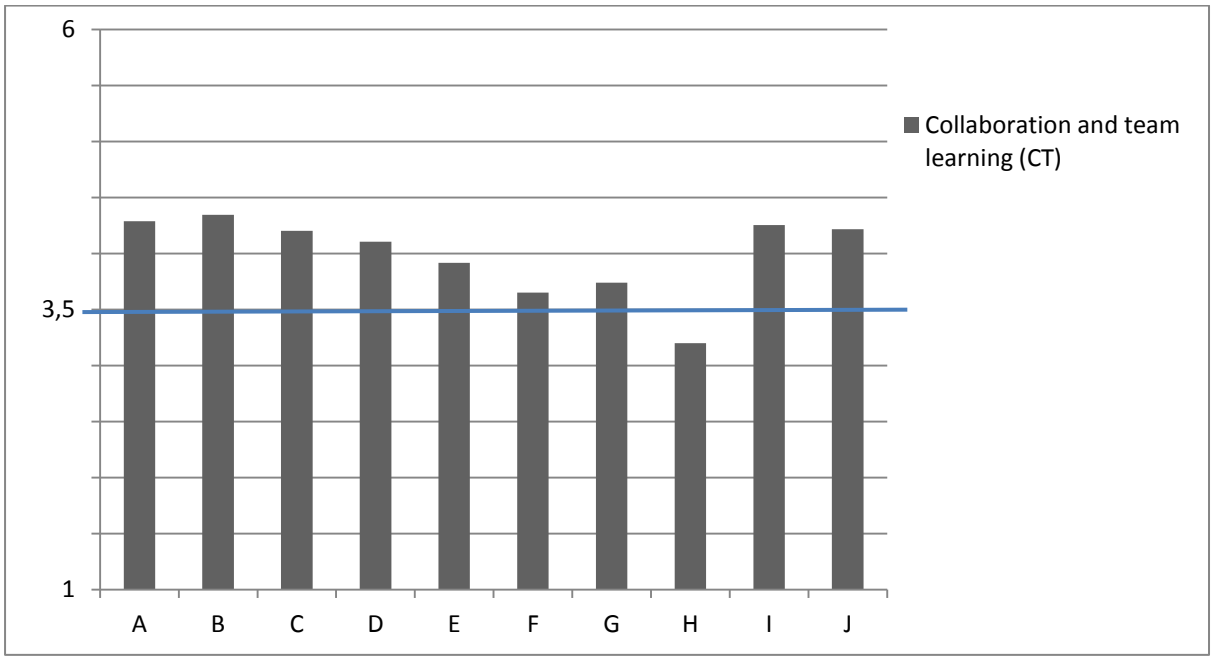

Figure 10. The team learning capabilities for all but one subunit is above the midpoint.

To summarize when looking at Core Networks, the employees' perception of their organization is that the learning culture is above the midpoint of the scale. Furthermore, in terms of the team learning aspect, all but one subunit scored the team learning aspect in a range from 3.65 to 4.33. This suggests that Core Networks in general has an above average team learning culture. A more detailed table with all the mean scores for the subunits and its seven dimensions can be found in Appendix 4.

5.1.2 Team Learning – Internal Evaluation

As stated earlier, the team learning dimension (CT) has mean scores above the midpoint of the Likert-scale of 3.5 except for one subunit, namely Subunit H which is in the Support Units. Overall, Core Networks has a good score in the team learning aspect of a score of 4.07.

Although to understand the current strengths and areas of improvement for the team learning aspect, Watkins and Marsick (2003) propose that an internal evaluation should be conducted. In that retrospect, Table 8 is an internal evaluation of the team learning dimension where the aim was to better comprehend which subunits have lower scores and which has higher scores in relation to each other.

The scores for team learning in each subunit are compared to the score of Core Networks, i.e. the average score for Subunit A-J. In this comparison, four subunits fall below the score of Core Networks. These are, Subunit E and F from the Software Development Units, and Subunit G and Subunit H from the Support Units. These can be seen in Table 8. It is important to note that the subunits that are marked are not indicating that they are bad in anyway, but should be seen as strategic leverages. In the same way, the subunits that are not marked at all can be seen as strategic advantages for Core Networks.

Table 8. Internal evaluation of the Team Learning dimension indicating which subunits fall below the mean score of Core Networks.

		Software Development Units						**Support Units**			
Team or Group level of learning	**Core Networks (Average A-J)**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
Encourage collaboration and team learning (CT)	4.07	4.29	4.33	4.20	4.10	3.92	3.65	3.74	3.20	4.25	4.21

This internal evaluation contributed to which three subunits to scrutinize which was a delimitation as mentioned in chapter 1.4. Two of the subunits chosen were those that received a lower score than the mean value from Core Networks and the third subunit that received a higher score than the mean score from Core Networks. The chosen Subunits were A, E, and G. Subunit A and Subunit E represent two sides of the Software Development Units with one

strong team learning and one with lower team learning. Subunit G represents the Support Units since it has a different context than the Software Development Units.

5.1.3 Team Learning Prerequisites – Strengths and Areas of Improvement

As mentioned in chapter 2.3.3 Team Learning Prerequisites, there are six prerequisites that need to be fulfilled in order to encourage the capabilities for team learning. The prerequisites are classified by the questions 14-19 in the DLOQ as seen below as well as in Appendix 2.

Q14: *In my organization, teams/groups have the freedom to adapt their goals as needed.*
Q15: *In my organization, teams/groups treat members as equals, regardless of rank, culture, or other differences.*
Q16: *In my organization, teams/groups focus both on the group's task and on how well the group is working.*
Q17: *In my organization, teams/groups revise their thinking as a result of group discussions or information collected.*
Q18: *In my organization, teams/groups are rewarded for their achievements as a team/group.*
Q19: *In my organization, teams/groups are confident that the organization will act on their recommendations.*

As Watkins and Marsick posit to understand the overall profile of the team learning capabilities, patterns, themes and the range of variation in responses must be identified. In order to therefore understand the strengths and weaknesses of team learning dimension at Core Networks (Watkins & O'Neil, 2013), comparing the responses to these prerequisites is of interest.

Strengths and Areas of Improvement at Core Networks

To see if the organization has managed to fulfill the prerequisites for team learning or not, it is of interest to identify which questions received the lowest and the highest mean scores. Two of the lowest and two of the highest are identified. Overall, Core Networks scored between 3.52 and 4.88 for the six questions as can be seen in Table 9.

Two of the questions that received the lowest scores at Core Networks are:

Q18: *In my organization, teams/groups are rewarded for their achievements as a team/group.*
Q19: *In my organization, teams/groups are confident that the organization will act on their recommendations.*

Question 18 and 19 can be seen as strategic leverages, areas of improvement, as they were the lowest mean scores for the entire Core Networks.

Two of the questions that received the highest scores at Core Networks are:

Q15: *In my organization, teams/groups treat members as equals, regardless of rank, culture, or other differences.*
Q17: *In my organization, teams/groups revise their thinking as a result of group discussions or information collected.*

Question 15 and 17 can be seen as strategic advantages, strengths, as they were the highest mean scores for the entire Core Networks.

These strengths and areas of improvement have been identified for Core Networks in general. However, when evaluating the three subunits that are in focus, Subunit A, E, and G, another question is highlighted. Interestingly enough, question 16 is brought up both as a strength and as an area of improvement. Two of the subunits from the Software Development Unit, Subunit A and E, showed that this question was one of their strengths while Subunit G indicated that this was its area of improvement, see Table 9.

Table 9. Team learning prerequisites, indicating strengths and areas of improvement for Core Networks and also indicating that question 16 is both a strength and area of improvement.

CT: Question no	Question	Core Networks, (Average A-J)	Subunit A	Subunit E	Subunit G	
14	In my organization, teams/groups have the freedom to adapt their goals as needed.	3.95	4.19	3.98	3.93	
15	In my organization, teams/groups treat members as equals, regardless of rank, culture, or other differences.	4.88	5.15	4.88	4.74	**Strength**
16	In my organization, teams/groups focus both on the group's task and on how well the group is working.	4.16	4.51	4.02	3.43	**Strength/ Area of improvement**
17	In my organization, teams/groups revise their thinking as a result of group discussions or information collected.	4.29	4.45	3.92	4.19	**Strength**
18	In my organization, teams/groups are rewarded for their achievements as a team/group.	3.52	3.62	3.44	2.69	**Area of improvement**
19	In my organization, teams/groups are confident that the organization will act on their recommendations.	3.62	3.81	3.26	3.45	**Area of improvement**

Strengths and Areas of Improvement – an Internal Evaluation

An alternative way of seeing the strengths and areas of improvement at Core Networks is by comparing the subunits' mean scores to the mean scores of Core Networks This indicates which subunits that have an overall higher mean score and lower mean score than the entire Core Networks. It is revealed that Subunit E falls below the mean score for Core Networks for 4 questions, while Subunit G falls below for all 6 questions. Only Subunit A has higher scores than the mean score of Core Networks. This indicates that the subunits that can be seen as having a high learning culture for Core Networks is Subunit A and the subunit that can be seen as having an area of improvement in increasing the team learning culture for Core Networks is Subunit G. The subunit that is in need for actively increasing the learning culture is highlighted in Table 10. It is however important to note that the dimensions and subunits that are highlighted are not indicating that they are bad in anyway, but should be seen as strategic leverages.

Table 10. Team learning prerequisites, highlighting the subunit that is in need for actively increasing the team learning culture.

CT: Question no	Question	Core Networks, (Average A-J)	Subunit A	Subunit E	Subunit G
14	In my organization, teams/groups have the freedom to adapt their goals as needed.	3.95	4.19	3.98	3.93
15	In my organization, teams/groups treat members as equals, regardless of rank, culture, or other differences.	4.88	5.15	4.88	4.74
16	In my organization, teams/groups focus both on the group's task and on how well the group is working.	4.16	4.51	4.02	3.43
17	In my organization, teams/groups revise their thinking as a result of group discussions or information collected.	4.29	4.45	3.92	4.19
18	In my organization, teams/groups are rewarded for their achievements as a team/group.	3.52	3.62	3.44	2.69
19	In my organization, teams/groups are confident that the organization will act on their recommendations.	3.62	3.81	3.26	3.45

When answering the questionnaire, the respondents also had the opportunity to express any additional thoughts. A total of 24 comments were obtained but only two of these were about team learning. The following is a quote from a respondent that is regarding the team learning dimension.

> *"The closest team members are supportive [..]"*

This is an example of a comment that clearly indicates that the atmosphere within the teams is satisfactory.

In the same way another quote that was given attention to was regarding the fear of making mistakes.

> *"Almost everything we do is high attention projects where failure is not an option, hence the willingness to try out (learn) new things will be down- prioritized."*

This quote illustrates that the nature of the industry also has an impact on individual's and team's willingness to try out new things as there is a sense of fear of failure.

5.2 Results from the Interviews

In this section the results from the qualitative method, which are the interviews with the managers from the three specific subunits, A, E and G are presented. The reason for why these specific units were chosen was based on the results in Table 8. As it could be seen, Subunit A and E although both being Software Development Units had a difference in scoring when it came to the learning culture. Subunit A seems to have stronger learning culture than subunit E. It was therefore of interest to find out more on why the reason for this difference could be in terms of the managers' role. Furthermore, Subunit G was chosen to investigate the challenges for team learning in a subunit that had a different function than the software developers.

The results presented here are based on the inductive content analysis of the interview data comprised from ten transcribed interviews divided into two categories; the managers' perception of their role in relation to encouraging team learning and challenges the teams are facing. The review of the interview transcripts resulted in the discovery of different themes within these two categories. The common factor for these themes is that they have occurrences across all of the ten interviews. The researchers were interested in finding the common perception among the managers. The first category, the managers' perception of their role in relation to encouraging team learning, is presented through various themes. Following this, the second category, team learning challenges that were brought up by managers, are also presented in a thematic manner. When applicable, quotes from the managers were selected and presented to highlight or argue for the derived themes.

In general, all ten managers of the three subunits highlighted the importance of teams and considered them as being the fundamental unit of the organization. Furthermore, the managers mentioned that they had intentionally been outspoken about this to the teams to signal to the teams that they understand how valuable the teams are to the organization.

In addition to this, it was noted that even though managers from different levels were interviewed, their opinions converged when it came to every specific subunit. That is to say that the perceptions and challenges seem to be unanimous within each subunit despite the management level the interviewee had.

5.2.1 Managers' Role

When asked about the manager's role towards team learning, several aspects were brought up. A few patterns were discovered across the ten interviews. The interviewees' answers can be grouped into five themes:

- Time for Learning
- Role Model
- Encouraging Empowerment
- Coaching Leadership Style
- Making Mistakes

These five themes mentioned above are described in detail respectively. In addition to this, quotes from the interviews that compliments each team is also presented.

Time for Learning

All of the managers agreed on the fact that time for learning had to be allocated in the job and that it was okay for the employees to spend time on learning. It was considered that allocating time for learning was essential in order to work better.

> *"Where do we see a potential for improvement?, where is it possible to do something in a better way? Where would we be able to gain time if we worked in a different way? Then take some time to find the new approach."* – Subunit G

There was however a difference in opinion between two subunits on who was responsible for allocating this time balance. Whilst the manager of Subunit A felt that this should be steered by the management a manager from subunit E argued that more responsibility should be placed on the individuals and the management acts as a supporting role.

> *"We need to balance time with learning. You need to be given an opportunity to learn but still deliver to the customers and this balance should be defined on a case to case basis, this balance should be steered by management."* – Subunit A

> *"We have to work on making people feel they have time to develop themselves. But on the other hand, they are allowed to do their own time estimates and they do their own planning. So actually there should be time. It's a priority of their own. Perhaps I need to support them more in making them feel that they can take time to learn."*
> – Subunit E

Role Models

The managers that were interviewed considered it important for them to be role models in order to encourage team learning.

> *"Managers can't demand people to be more learning, they can inspire and be role models."* – Subunit A

> *"As a manager, my role is to be a role model, I think of this in my way of working"* – Subunit E

They described themselves as having the responsibility to look at themselves and consider what signal they were sending out. Furthermore they were concerned about how they could inspire people to learn and do things themselves.

> *"Managers are the role models that can create systems and frameworks and inspire people by being a certain way and then other people will imitate this and this is how culture is born."* – Subunit A

One of the managers described that being a role model is something that should come as natural to a manager. In fact, the motivation for managers should be to have an interest in supporting people and being part of their development and in order to do this, managers must consider themselves as role models to inspire this behavior.

> *"I think it's important that managers are people who are not interested in shining but more interested in people's development"* – Subunit G

Encouraging Empowerment

The managers describe that it is important to note that the tasks the teams get are derived from customer needs and therefore these can't and shouldn't be changed. Empowerment in teams is considering allowing the teams to decide how the tasks should be completed. In this aspect managers try to liberate the teams and allow them to work the way they want according to their circumstances. For example, a manager described that he has started pushing back when receiving trivial questions.

> *"I've started to push back [..]. When I get a question, I ask the question back: 'what do you think you should do? Can you motivate it? Well then go ahead' [..]*."
> – Subunit A

The managers feel that it is their responsibility to give the teams the prerequisites to be self-organizing and not to overload them. They try to promote empowerment as much as possible by being open, transparent and appreciative to build the teams' self-confidence.

> *"Empowerment is important, we try to promote it and get the teams to make as many decisions as possible."* – Subunit A

Coaching Leadership Style

The managers recognized that their people are their most important asset and that they have responsibility to support the teams in learning by having a coaching leadership style. The managers described to do this by challenging the teams on how they do things in order to do them better.

> *"My leadership style is that I challenge the status quo and I challenge my people to learn and do things better."* – Subunit G

Being present in the teams is also a way for the managers to see what's happening so that it becomes easier for them to understand how they can support and coach the teams. When managers are out in the teams, they try to ask questions instead of command. They also believe that being transparent and present allows them to gain trust from the teams.

> "*I believe that presence among the teams is what's important [..] To be present and see what they are doing. To be there at the right time and support them, to offer help without them actively asking for help. [Leaders] should be easy accessible."*
> – Subunit E

Furthermore the managers see that they need to set guidelines and frameworks so that the teams feel more freedom within the framework as well as put up expectations for the teams. Furthermore the managers take on the responsibility of understanding of how the teams function together and what tools they need to become better.

> *"It's the line manager's responsibility to see how a team is functioning together. [..] Also, it's the line manager's responsibility to increase team learning. One needs to understand if teams feel that they lack tools to create a situation that prevents them to learn, then it's the line manager who shall give them that. But at the same time, it is the employee himself who shall be responsible for his own learning."* – Subunit E

Making Mistakes

> *"People need to dare to try new things, and know that it's ok to do mistakes."*
> – Subunit A

A shared opinion among the managers is that learning involves making mistakes. Though managers point out that these mistakes shouldn't be frowned upon but almost be seen as an investment in learning how to not do things. Therefore, the managers express that they try to create a climate where it is okay to fail by being transparent with their own mistakes.

> *"We should be open and transparent with mistakes [..]. I make sure to do that myself"* – Subunit G

The key, however, when dealing with mistakes is to make sure that employees do take a learning from it.

> *"It's okay to fail once, just make sure that you are not failing twice the same way."*
> – Subunit A

Summary of managers' perception regarding their role

Table 11. Summary of results of managers' perception regarding their role in relation to Team Learning

Managers perception regarding their role in relation to Team Learning	
Theme	**Description of Theme**
Time for Learning	Managers have a responsibility in ensuring that teams know they can allocate time for their work.
Role Model	Managers believe that they can act as role models and inspire teams to learn
Encouraging Empowerment	Managers should allow the teams to decide themselves *how* the tasks should be completed. They should promote empowerment as much as possible
Coaching Leadership Style	It's the managers' responsibility to challenge the status quo and support the teams by taking on a coaching leadership style by setting guidelines and frameworks.
Making Mistakes	Managers try to create a climate where it's ok to fail by being transparent with their own mistakes.

5.2.2 Challenges for Team Learning

Four specific themes emerged from the interviews regarding the manager's perception on the team learning challenges. In addition to this some other interesting points that also had an effect in the Team Learning came up. The themes derived from the interviews are:

- Workload
- Team Mobility
- Empowerment
- Technology
- Other

Workload

The managers expressed that an overload of work was negatively affecting the team learning capabilities.

> *"We need to become more people in our organization not only to alleviate the workload but also to increase the team spirit and teamwork. Today I feel like the teams are acting as fire fighters [..] it's burning everywhere and they are running around trying to put down the fire"* – Subunit A

"[..] if you fully load a team with tasks, they won't have any artistic freedom or have time to think of the small details that facilitate their daily work." – Subunit E

"We have very tight schedules and customers waiting for functionality and then we have to change and plan the learning. And that's not easy to do, it's really hard. We have tight schedules and customers. You have to plan the time." – Subunit G

Not only are the teams overloaded but the managers as well. Since the managers have too many administrative tasks it seems like they don't have time to be present with the team,

"The line managers keep a relatively good track of the teams. However, our line managers are overloaded with many tasks that aren't directly related to the teams [..]. There is too much administrative work for a manager [..] These things take much time from the line managers which make them less present for the teams."
– Subunit E

Team Mobility

When it came to the theme of team mobility the managers brought up the issue of weather teams should change often or not. Here, there was a difference in opinion. Some managers expressed that there was a lack of rotation in teams and that this affected team learning because there weren't anyone who could come with new perspectives.

"Rotation must come from each individual's and corporate's needs. I would like to see more rotation but it must be the right persons rotating" – Subunit G

On the contrary some managers experienced too much mobility and expressed that this caused disturbances in productivity. These managers expressed that static teams had a better chance of encouraging team learning than dynamic teams.

"We preach mobility, but sometimes too much dynamics can lead to too many disturbances" – Subunit A

"Not many teams are static. It might go against the theory of long-living teams, in order to get a team learning. As soon as you remove a person from the team you will have a surge in productivity, because now you have to go through all of the phases of getting to know each member of the team – the team dynamics [..] Ideally, the team should pick their own members that they want to work with. [..] But then teams change constantly, rarely steady state. I think you need to stay on the team, if we're talking about learning organization, but our world does not allow it." – Subunit E

Empowerment

As previously mentioned the managers expressed that empowerment is one of the core themes that they were working with and saw it as important to promote team learning. However this was also one of the biggest challenges when it came to team learning capabilities. Some teams still have trouble with decision making and self-organizing. The

managers however express that they have a good foundation now but there is still a way to go.

> *"It's a change for the individual, all of a sudden you are not a child anymore, you need to make your own decision, but given that I still get too trivial questions I think we have a way to go [..]."* – Subunit A

Another aspect was that the younger employees don't really know how far outside their team they can make decisions. The managers see this as a challenge for the teams when they are hindered to work freely if they don't know what they are allowed to do or not to do.

> *"To not know what you are allowed and not allowed to do. And if you don't know what you can do, someone else comes in and says 'this is wrong. How long has it been like this?' 'We have had these problems for a long time.' 'Why haven't you done anything about it?' 'We are not allowed to do so.' 'Who told you that you were not allowed?' 'It has always been like this'. This is the part that we want to change."* – Subunit E

> *"[..] needs to introduce a mindset where everyone are included and get to decide [..] Many of the youngers expect assignments to be given to them by the older team members. We need more of this mentality where everyone gets to control and decide. This mentality has not been deeply rooted yet."* – Subunit E

Technology

As Ericsson is a global company and there are teams, units and employees scattered across different sites. This was something that managers also brought up as a challenge and that the existing technological solution weren't sufficient for completely covering the interaction.

> *"To be honest, I think there are limitations to the technology we are using today. The tools are good for certain things but we do not have the tools that cover the end to end interaction [..] at the same time there is great value in face to face communication, that's why we are trying to make the teams sit together"*
> – Subunit G

Other

Besides these common themes there were other important concerns that were brought up as challenges as well that were considered as of importance. There was one manager for instance who mentioned that although they are aware that they need to create a safe environment where it is okay for the teams to make mistakes it is still a challenge since there is a tradition at Ericsson to handle mistakes differently:

> *"[..] there is a traditional mentality that we are after chasing bad guys, and then we lecture them if they've made mistakes, but this causes unmotivated and scared people, we miss the trust part here. Therefore sometimes I feel that the bigger threat to Ericsson is themselves [..]."* – Subunit A

Another interesting point that was brought up was the challenges of goal setting when it comes to lean and agile methods. The goal setting becomes too shortened and therefore the big picture gets lost which the managers also believe affects the team learning capabilities.

When managers were asked regarding rewards for team learning they did not express that there were any explicit rewards for learning activities. Instead they mentioned how they would recognize a well performing team.

> *"[..] We had a well performing team and we lifted them up and used them as reference in the organization, this generated positive energy and it became like an internal competition [..] nobody wanted to be the lagging team"* – Subunit G

Summary of managers' perception regarding the challenge of Team Learning

Table 12. Summary of results of managers' perception regarding the challenges of Team Learning.

Managers' perception regarding the challenges of Team Learning	
Theme	**Description of Theme**
Workload	Teams are overloaded with tight schedules giving no room for learning
Team Mobility	Some managers express that the lack of rotation in teams is not providing with new perspectives whilst others believe that too dynamic teams causes too much disturbance in team learning.
Empowerment	Teams don't know what they can and can't do which makes them afraid of making decisions.
Technology	There are limitations in the technology used today to aid to communication within the teams which inhibits team learning
Other	There is not a sense of a fail safe environment making teams afraid of making decisions. No explicit rewards for learning activities, but instead recognition is provided.

5.3 Summary of Results

In general the employees of Core Networks consider them to have a learning culture that is above average in the organization when considering the midpoint of the Likert-scale. All of the ten subunits except one ranks as having an above average learning culture. Consequently when considering the team learning dimension all but one subunit ranked it as above average suggesting that in general the organization has a good team learning culture.

The strengths for the team learning dimension in the organization is associated with a culture where individuals treat each other as equals and are willing to listen to each other opinions. The areas of improvement for team learning is associated with not being rewarded as a team for learning as well as a lack of confidence that the organization will follow through with the

recommendations of the teams. The team learning prerequisites where there was a difference between the Software Development Units and the Support Units was that the software developers focused both on the group's task and how well they worked as a group, while the subunit from the Support Units didn't do this as much.

The managers of the organizations mainly brought up five themes when trying to associate their role to a team learning capabilities. These were allocating time for learning in work, being a role model for learning, encouraging empowerment in teams, taking on the responsibility of being a coach for learning and creating an environment where it is ok to make mistakes. The managers perceived that the current team learning challenges were the teams having an over workload, too much or too little team mobility, lack of empowerment, insufficient technological tools that could aid the communication and that there was not a sense of a fail safe environment.

6 Analysis and Discussion

In this chapter, the empirical findings are analyzed and discussed through the theories found in literature. The aim is to get a better understanding of the empirical findings and localize the reasons for the strengths as well as areas of improvement.

The purpose of the analysis is to serve as a basis for concluding on the research questions, thus the composition of this chapter will coincide with the sequence of the research sub-questions. Overall the analysis chapter aims to understand the reasons and causes for the specific result in an attempt to illustrate how organizations and managers should or should not act to encourage team learning. This is done by trying to identify correlations and patterns between the results of this study and earlier research findings.

The first section is an analysis based on the results from the questionnaire only. In the same way the following section is the interview analysis. The third and final section is an analysis that incorporates both the results from the questionnaire and the interview.

6.1 Status of Teams' Capabilities for Learning

In this section the current status of the team learning capabilities is addressed. This is done by considering the results from the DLOQ and reflecting on them with the aid of the literature and earlier findings. In this segment the focus is on describing the learning culture based on Watkins and Marsick's (2003) research for the DLOQ. The findings in the team learning aspect are scrutinized through different angles in order to provide different perspectives of current team learning status. Findings from earlier studies are addressed in order to reflect on whether there are any common traits.

6.1.1 Core Networks – a Learning Organization

It is impossible to state an exact value for any organization and say that this value means that the organization is a Learning Organization. When comparing the scores to an absolute value as being *good*, it is indirectly suggesting a possibility of reaching the goal of becoming a Learning Organization. However, theoretically the Learning Organization is not a destiny but a journey (Jamali et al., 2006). On the other hand, it may be fair to argue that if a scoring is above the midpoint of the Likert-scale of 3.5, it is an indication that the employees of the organization perceive their organization as having a learning culture. Thus, the researchers of this study concluded on comparing the mean scores for each subunit to the midpoint of the scale.

In that sense, it can be understood from the results in Figure 8 and Figure 9, that since all of the mean scores for Core Networks is above the midpoint of the scale as well as all of the mean scores for all but one subunit were above the midpoint of the scale, the organization could be argued to have a learning culture that is above average. Only one subunit fell below the midpoint. Consequently the teams' learning capabilities of the organization is also above the midpoint.

The fact that the overall mean scores are higher than the midpoint of the Likert-scale is not surprising. When interpreting these scores in terms of the software development sector and

nature of the industry, it is one that is characterized by rapid and complex changes in the environment (Chouseinoglou et al., 2013). Therefore companies acting in this industry have to embed the necessary precautions of handling changes strategically in the way that they conduct their operations. In other words, preparing oneself for the continuous changes is not only essential but a matter of survival in this industry (Wilhelm, 2006; Revans, 1982). Furthermore, it has been established that IT and software companies have through recent years moved to adopt lean strategies and organic structures to enhance flexibility (Jamali et al., 2009). In the same way, it was found that Core Networks is in a transformation process of becoming lean and agile throughout the organization. As the literature states, the agile methods encourage rapid and flexible response to change and further focus on the individuals and teams (Björkholm & Brattberg, 2010). Furthermore, agile working methods embrace teamwork and incorporate learning in the job (Babb et al., 2013). This may also help account for the above average scores in the team level dimension for Core Networks.

Most of all, it is important to recognize that Ericsson is the world leader in communication and has managed to maintain that position by withstanding the turbulence and the constant changing environment. Their approach has been continuous transformation and adaptation to meet the changing needs. The fact that they have been able to continuously transform themselves qualifies them as meeting the criterias for becoming a Learning Organization (Pedler et al., 1997; Watkins & Marsick, 1994). Therefore, it is almost evident that a market leader should inhibit the characteristics of a Learning Organization. At the same time though, due to the increased complexity in the business environment it is crucial that Ericsson finds ways to improve and become an even better Learning Organization.

6.1.2 Internal Evaluation – Core Networks

To localize the strengths and areas of improvement when it comes to the team learning dimension of Core Networks, patterns, themes and the range of variation in responses were identified in accordance with Watkins and Marsick's recommendation (Watkins & O'Neil, 2013).

First of all, in the validation study conducted by Yang (2003) where a nomological network was established to illustrate the relationship between the dimensions, is utilized. In Yang's (2003) study, it was suggested that the dimensions that had the strongest influence on team learning were, in descending order of correlation, *Empowerment*; *Continuous Learning*; and *Inquiry and Dialogue*. Therefore, the mean scores for these dimensions are presented in Table 13 in order to understand how they may have influenced the team learning dimension.

Table 13. This table compares, in descending order of correlation, the scores between the correlating dimensions to the Team Learning dimension.

Dimension	Core Networks (Average A-J)
Team or Group level	
Encourage collaboration and team learning (CT)	4.07
Organizational level	
Empower people towards a collective vision (EMP)	3.94
Individual level	
Create continuous learning opportunities (CL)	3.89
Promote inquiry and dialogue (ID)	4.26

From Table 13, it is seen that the empowerment dimension is above the midpoint of the scale. However, since the empowerment dimension has a mean score that is lower compared to the team learning score, and is the one that has the greatest correlation to the team learning dimension, it could have a negative effect on the team learning score. In other words, a lack of empowerment could have had a negative effect on the team learning aspect. According to Watkins and Marsick's framework the empowerment dimension is regarding the organization's ability to recognize people for taking initiatives and encouraging them to take control (Marsick & Watkins, 2003). A lack of empowerment would therefore suggest that teams are hesitant to take initiatives and thus may affect the team learning aspect. Interestingly, having challenges with empowered teams are a common trait found in previous case studies as well (Harung, 1996).

The assumption that it is the lack of empowerment that is affecting the team learning dimension negatively, could further be validated by the result in Table 9 where the prerequisite regarding *teams/groups feeling confident that the organization will act on their recommendations* was identified as an area of improvement. Here, an assumption could be made that there is a hesitation among teams on whether their decision making is considered to be of value for the organization. The fact that this hesitation may exist is contradicting to the characteristics of a Learning Organization as initiatives and calculated risks should be recognized (Marsick & Watkins, 2003).

In a similar way the *Continuous Learning* dimension has been identified as having the second strongest correlation to the team learning dimension (Yang, 2003). This dimension is related to having the opportunity to learn on the job and discuss mistakes openly. Since this dimension also received a lower score compared to the team learning, it could be suggested that there is an area of improvement in the organization to create a psychological safety, or a safe place in which it is ok to make mistakes (Popper & Lipshitz). The tendency of being afraid to make mistakes in an organization is a common trait that is associated with people having an innate behavior of guarding a "positive image" (Argyris & Schön, 1996). This notion could also further be illustrated by one of the comments that emerged from the DLOQ. The respondent suggested that since all the projects were "high attention" projects people were reluctant to try out new ways since there is a fear of failure.

Finally, the third dimension that had a strong correlation to team learning was the dimension *Promote Inquiry and Dialogue*. This dimension regards having a culture that supports questioning, feedback and experimentation where people trust and respect each other. Since the score of this dimension was above the score for team learning it could be suggested that

organizational culture of openness contributes in a positive manner to the team learning. This could further be validated by the results present in Table 9 where the prerequisites regarding an open organizational culture were identified as the strongest prerequisite within the team learning dimension. The specific prerequisites were:

Teams/groups treat members as equals, regardless of rank, culture, or other differences.

Teams/groups revise their thinking as a result of group discussions or information collected.

Once again the reason for why these prerequisites were ranked as strongest could be since there is a clear sense of support and respect among the people in the organization. When conducting the survey the respondents further had the opportunity to share additional thoughts in the comments section and one of the comments was that *"the closest team members are supportive"* and that there is an openness among the team members. The fact that these prerequisites are considered to be strengths could also be a reflection of the organizational culture in Sweden. Even though Ericsson has a global presence, it is a Swedish company and Swedish organizational culture is often characterized by equality, consensus, conflict-avoidance and teamwork (Wieland, 2011; Gustavsson, 1995).

Another prerequisite that was ranked as having an area of improvement was

Team/groups are rewarded for their achievements as a team/group

In addition to having a low mean score compared to the other prerequisites, the idea of having rewards for learning was not brought up in any of the additional comments from the survey either. This could indicate that there is a culture in the organization that might not think of learning being associated with rewards. The idea of rewards may be seen as something explicit that is associated with only performance results. In organizations, rewards and recognitions are seen as the most common and influential channels to encourage desired behaviors (Popper & Lipshitz, 2000), thus an absence of rewards for learning in the organization may signal to teams and individuals that learning in teams is not considered to be of importance.

6.1.3 Internal Evaluation – the Subunits

Although it is interesting to look at Core Networks in general as an organization, it is important to remember that Core Networks consists of several subunits. Therefore, when it comes to the internal evaluation of the subunits, this should be done with regards to the mean scores of Core Networks. This is also in accordance with Watkins and Marsick's argument that the best comparison is internal since organizations vary considerably in their needs and context (Watkins & O'Neil, 2013). Table 9 is such an evaluation where all subunits are compared to the overall means of Core Networks in terms of the Learning Capabilities. Here it could be seen that all but two software development teams had mean scores in team learning that were below the organizational mean value. This was applicable for two of the Support Units as well. This internal evaluation is of interest to display and promote that organizations can learn from each other. Furthermore, it is of interest to see that two of the Software Development Units, although being outspoken about working in scrum teams still scored a result below the organizational mean value. Moreover, it is also of interest to see when it comes to the Support Units, half of them had scores above the organizational mean

value, suggesting that there is a possibility for a team that doesn't directly work in scrum teams to still have a good learning culture. To further delve into the reason for why these scores were attained, a more elaborate evaluation was made in Table 10where the comparison was made for each prerequisite of team learning.

It is interesting to note that two organizations that both have the function of software development could have such different scoring when it came to the team learning culture, i.e. Subunit A and Subunit E. One possible reason for this could be that Subunit A had come further in the lean and agile transformation as they had been active with it since 2009. Furthermore, Subunit E received the questionnaire at the same time as they were transiting to a new type of organizational structure as a part of the lean and agile transformation. This ambiguous state could have had an effect on the responses. Furthermore, it is important to note that Subunit G, a Support Unit, was also below the mean value of Core Networks. This sheds light upon the challenges of translating agile methods to organizations that are not classically working with software development.

Finally, another interesting aspect that was brought up is that in Table 9, where an internal evaluation is made between the chosen units on all prerequisites, was the emergence of another highlighted prerequisite.

The prerequisite was:

Teams/groups focus both on the group's task and how well the group is working.

This prerequisite was considered to be a strength in the Software Development Units while it was indicated as an area of improvement for the Support Units. The Software Development units are outspoken in the terms that they work in scrum teams and an important aspect of scrum teams is that they maintain regular retrospectives which means that they continuously reflect on how the teamwork can improve (Björkholm & Brattberg, 2010). Thus the fact that this prerequisite was scored as a strength in the Software Development Units could be a reflection on that the teams have been successful in implementing this process in the way they work. In contrast, the fact that the Support Unit G had this prerequisite as an area of improvement, suggests that they may have failed to consider reflection of the way they work as an important aspect of working in agile methods. This is a recurring phenomenon as when teams adapt agile methods, instead of engaging in full adaptation, they omit or modify the learning aspect (Babb et al., 2013).

6.1.4 Summary of Analysis

As it is contradicting to state a value as *good* or *bad* when it comes to learning culture, this study aims to describe the overall learning culture as above or below average with regards to the midpoint of the Likert-scale. When it comes to the current team learning culture, Core Networks overall is rated as above average by the employees. This could be attributed to the strategic implementation of lean and agile initiatives in the organization since lean and agile methods emphasize teamwork (e.g. Babb et al., 2013; Björkholm & Bratteberg, 2010). In general for Core Networks the areas of strengths are related to the organizational culture that is characterized as a flat organization with openness and feedback. These characteristic of the organization could be derived from the fact that Ericsson is a Swedish organization that usually display these norms (Wieland, 2011; Gustavsson, 1995). The areas of improvement

for Core Networks is that there is a need for increased empowerment in teams which is a common challenge when it comes to organizations that even display healthy characteristics of being a Learning Organization (Harung, 1996). The reason for this could be that employees are afraid of making mistakes, which there is a possibility for when trying to do new things, since all projects in the organization are "high attention" projects. Another improvement area was that there is no presence of rewards and recognitions for learning in the organization. As rewards and recognitions are common ways of influencing desired behavior in an organization, an absence of this may signal to the teams that team learning is not considered to be a desired behavior in the organization.

An interesting aspect that arises when comparing the Software Development Units with the Support Units was that one of the prerequisite for team learning was ranked as strength or weakness depending on the function of the unit. While the Software Development Units had a strength on the prerequisite for team learning regarding reflecting in the way they worked, this was a weakness in the Support Units. The possible reason for this could be the successful implementation of having continuous retrospectives in the software development teams, which is a part of the Scrum method (Björkholm & Bratteberg, 2010). In contrast, the Support Units may have fallen into the common trap of omitting the learning aspect when adopting agile ways of working (Babb et al., 2013), as agile methods may have been harder to translate for their work.

6.2 Managers' Relation to Team Learning Capabilities

This section is an analysis of the managers' role when it comes to team learning. The results from the interviews, on how they perceive their role in relation to the team learning capabilities is analyzed and reflected in terms of existing theories on how a manager should be in a Learning Organization. Earlier findings are addressed as well to illustrate common traits and differences.

Previous research has indicated that leadership is one of the most important traits in building a culture of learning (Senge, 1990; Slater & Narver, 1994, 1995; Watkins & Marsick, 1996). It has been of interest to look into how managers of Core Networks perceive their role in relation to team learning and encouraging team learning capabilities. As seen from the results in chapter 5.2.1 there were some common themes that emerged in the interviews.

It was interesting to note that all of the managers, despite the level of management, the type of function on their subunit, or the overall learning culture at the subunit still converged on these five specific themes. The reason for this could be the mere fact that these themes are in line with not only the theoretical field of Learning Organizations, but also in terms of agile methods. Since the organization Core Networks is in the transition of incorporating Lean and Agile philosophies, it seems evident that the managers have been continuously exposed to all of the managerial principles and responsibilities within this field.

The five specific themes that emerged from the interviews are analyzed below.

6.2.1 Time for Learning

The managers were clear on stating that they felt that time for learning had to be planned in the daily work (Marsick & Watkins, 2003; Pedler et al., 1997; Watkins & Marsick, 1994). However, there was a difference in opinions regarding the responsibility for this time balance. The managers for Subunit A expressed that this time balance is something that needs to be steered by the management. This opinion coincides with the theory within Learning Organization; that learning is integrated along with work in the company's strategies (Marsick & Watkins, 2003; Pedler et al., 1997; Watkins & Marsick, 1994) and that time for learning should be planned by the leaders (Yukl, 2010). The managers at Subunit E however, placed more responsibility on the individuals for taking time to learn and that the managers' role was to support them in these choices.

A reason for this difference in opinion could be because Subunit A is more mature in terms of adapting the lean and agile method. They have also, through time and experience, seen that time management issues need to be steered by the management in order to come across as being an integral part of the subunit's strategy. Accordingly, literature states that two of the major channels used for leaders in motivation and promoting behaviors in the context of organizational learning, is time devoted by managers and managers' attention (Popper & Lipshitz, 2000). When managers spend time and attention to certain subjects it sends a clear message about what is important in the company (Popper & Lipshitz, 2000) and thus it is an effective way of encouraging team learning.

Subunit E, who may not have attained this mindset yet, puts more responsibility on the individuals. This might be a possible reason for why Subunit E does not consider it to be the management's responsibility to allocate time for learning.

This difference in opinion can also be reflected on from the DLOQ results. Subunit A have higher mean scores for all dimensions than Subunit E as seen in Figure 9. This could indicate that the mindset of steering time by the management has a better effect on the learning culture than putting the responsibility on the individuals.

6.2.2 Role Model

When the managers were asked about their own leadership and how they relate to team learning capabilities, one of the aspects that was brought up was being a role model. The fact that the managers themselves state that they can't demand people to be more learning but to inspire them and being role models is something that corresponds with the literature. In a Learning Organization, the manager can't really command and control people's learning activities (du Plessis et al., 2009). Furthermore, the managers recognized themselves being role models as having a great impact on creating and building a climate and culture that supports learning, which is also brought up in the theory as well as earlier case studies (Marsick & Watkins 1999; Roth & Kleiner 1999). The reason for why the managers perceive themselves as role models could be accounted for the organizational culture at Core Networks. Here it is expected that managers should be characterized by individuals who have an interest for being a part of people's development, as one of the managers expressed in the interviews. Furthermore, the managers recognizing themselves as being role models also coincides with Popper and Lipshitz's (2000) argument that when managers pay attention and

devotes time to certain tasks, it sends a signal to the employees on what aspects are seen as important for the organization.

6.2.3 Encouraging Empowerment

Managers expressed that empowerment is one of the core themes that they were working with and saw it as an important aspect in promoting team learning. The literature also state that empowerment could be seen as a core feature of the Learning Organization and more specifically that empowerment encouraged healthy team dynamics (Yang 2003; Webber, 2002; Holton 2001). Therefore, Learning Organization theories suggest that leaders need to empower others to help carry out the organization's vision (Watkins & Marsick, 2003). Furthermore, empowerment is built on trust (Mayer et al., 1995) which means that in order to succeed in empowering the teams, managers need to build a trust between themselves and the teams. The managers expressed that they did this by attempting to be appreciative, transparent and open in order to build the teams' self-confidence.

It is however important to recognize that various dilemmas can arise when addressing the term "empowerment". In Watkins and Marsick's (2003) framework, empowerment is associated with recognizing people for taking initiatives and encouraging people to take control over the resources that they need to accomplish their work (Marsick & Watkins, 2003). Questions regarding where the border line for teams' empowerment and managers' mandate is, may seem vague. To illustrate with an example, the fact that Subunit A lets management allocate the individuals' time for learning activities, might falter when it comes to empowerment. The behavior described in Subunit A's time management seems to enforce the learning activities upon the team members. On the contrary, the fact that Subunit E expressed that individuals themselves should allocate the time needed for learning, while managers should support their decisions, may reflect a trust in teams and thus indicate that Subunit E is empowering their teams. In the case of time management, though, earlier findings have suggested that it should be steered by management (Yukl, 2010) but this type of recommendation may not always be the case.

6.2.4 Coaching Leadership Style

The managers recognized that their people are their most important asset and that they have the responsibility to support the teams in learning. This aspect is also reflected in the literature, since it says that the teams are the fundamental units of learning in an organization (Edmondson, 2002). Furthermore, the managers describe that their role is to support, coach and mentor and as well challenge the status quo which is in line with how earlier research suggest that managers need to be in order to encourage team learning (Augustsson et al., 2013).

One aspect the managers exemplified on how to support and coach teams, is to be present among the teams for them to easier understand the needs. Whilst managers are out in the teams, they try to ask questions instead of command which is also a method suggested by earlier research (du Plessis et al., 2009).

6.2.5 Making Mistakes

The managers agree that learning involves making mistakes and they are supportive of it. As Argyris & Schön (1996) argue, the biggest hindrance to organizational learning lies in the tendency for people to be afraid to make mistakes and therefore earlier studies have confirmed that managers should support learning through mistakes (Macneil, 2001; Salas et al., 2009). The way to do this is elaborated in the literature as creating a psychological safety or a safe place in which it is ok to make mistakes (Popper & Lipshitz, 2000).

Edmondson (2003) mentions that it is common that team members will not speak or act in a certain way because of numerous reasons (e.g. fear of humiliation or an individual conviction that their input is not needed). In an organization like Ericsson that has many "high attention" projects, there is a chance that the employees won't see failure and mistakes as an option. This mindset would probably down-prioritize the willingness to try out new things and learn from that experience. Thus, it is important for managers to encourage a non-threatening environment for the teams in which learning can occur with experiments and minimum risk for embarrassment (Edmondson, 2003; Kozlowski et al., 1996). The managers in Core Networks describe that they are keen on communicating their full support to the teams regarding failures.

6.2.6 Summary of Analysis

As managers have been expressed as one of the most crucial roles in the Learning Organization, it was of interest to explore how they perceive their role in relation to the team learning capabilities. This resulted in the emergence of five common themes from all of the managers that were interviewed; *Time for Learning*, *Role Model*, *Encouraging Empowerment*, *Coaching Leadership Style*, *Making Mistakes*. All of these themes could be related to existing literature as well as findings from earlier research. The managers were also able to give examples on how they exhibited characteristics of each theme in real life. The reason for why the managers were successful in identifying these themes could be because these themes are not only in line with the theoretical field of Learning Organizations but also in terms of agile methods. Thus, it could be argued that as a result of this current Lean and Agile transformation at Core Networks, the managers have been exposed to all of the managerial principles and responsibilities.

The only theme where a difference in opinion was identified was in Time for Learning. Subunit A argued that the responsibility for allocating time to learn was in the management team, which coincides with earlier findings in this topic. Subunit E on the other hand argues that managers should support the learning desires in teams but that the responsibility is placed on the individual. This difference in opinion was attributed to how mature respective organization was in the Lean and Agile transformation.

6.3 Similarities and Differences with Managers' View and Current Status

This final section is an analysis that incorporates both the results from the questionnaire in terms of team learning challenges as well as the results from the interviews regarding managers' perception of the team learning challenges. The purpose of this analysis is to see to what extent the managers' perception of their role to team learning capabilities affects their ability to recognize the team learning challenges. Findings from earlier research and studies are addressed as well, in order to reflect on the possible reasons for similarities and differences. Shedding light upon the differences in perception can further guide in areas that are in need of further investigation.

Since this section is interested in comparing the managers' perception of the team learning challenges, the data that is of interest are the subunits that correspond to the specific manager. Therefore, the data collected from the interviews and DLOQ of the Software Development Units (Subunit A and E) is presented first. This is followed by the Support Units (Subunit G) and its corresponding data. The areas of improvement have been determined by comparing the prerequisite within each subunit and highlighted those two prerequisites that received the lowest mean scores.

The team learning challenges that were brought up in the DLOQ indicated that there were two areas of improvement at the Software Development Units. These are illustrated in Table 14. For the Support Units, there were two other prerequisites that were highlighted as areas of improvement as can be seen in Table 15.

Table 14. Challenges in Team Learning capabilities according to the DLOQ for the Software Development Units.

		Software Development Units		
CT: Question no	**Question**	**Subunit A**	**Subunit E**	
18	In my organization, teams/groups are rewarded for their achievements as a team/group.	3.62	3.44	**Area of improvement**
19	In my organization, teams/groups are confident that the organization will act on their recommendations.	3.81	3.26	**Area of improvement**

Table 15. Challenges in Team Learning capabilities according to the DLOQ for the Support Units.

		Support Units	
CT: Question no	**Question**	**Subunit G**	
16	In my organization, teams/groups focus both on the group's task and on how well the group is working.	3.43	**Area of improvement**
18	In my organization, teams/groups are rewarded for their achievements as a team/group.	2.69	**Area of improvement**

6.3.1 Similarities between Managers' Perception and Current Status

All the managers expressed that an overload of work assignments was negatively affecting the teams' learning capabilities. When considering Table 15, this could be the reason for why question 16 was ranked as an area of improvement for the Support Unit G. It could be possible that the teams are so focused on getting all their tasks done that they do not have time to reflect on how they work as a group. Here is therefore a similarity between the managers' perceptions of challenges and the team learning challenges. A way to deal with this could be to steer the allocation of time to learn by the management side. As it is today, managers understand that learning needs to be incorporated in the time that employees work. However, there is a difference in opinion on who is responsible for allocating this time. Since theory and earlier research suggest that management should do this (Yukl, 2010; Popper & Lipshitz, 2000), this could be a way of handling this challenge.

Another challenge that was brought up by all the managers was the empowerment challenge. It was expressed that teams are not aware of what they can and can't do which makes them afraid of making any decisions. This could be related to the current status of challenges where teams are not confident that the organizations will act on their recommendations, i.e. question 19 as seen in Table 14 for the Software Development Units. Here it can be noted that although question 19 isn't ranked as the lowest prerequisite for the Support Unit G in Table 15, recapping from Table 9 displays that the scoring of that prerequisite is very close to those that are presented in Table 15. Thus, it could be perceived that question 19 is a challenge for Support Unit G as well. This is the second similarity that can be found of what the managers express as a challenge for teams as well as the team learning challenges that emerged from the DLOQ.

Empowerment is associated with trust and transparency (Mayer et al., 1995). Even though the managers expressed that they try to be transparent in their roles and trust the teams, there is a possibility of improvement here. Consulting Watkins and Marsick's framework, one way to increase empowerment in teams could be to involve everyone in setting a common vision and to also give responsibility along with decision making mandate for teams.

Furthermore, an interesting discussion is whether the use of the term "empowerment" needs to be clarified more in specific when it comes to managers promoting it in team learning. Empowerment is seen as a core feature in the Learning Organization (Jamali et al., 2006) and the managers describe this as being a core theme that they work with, yet there is a challenge of encouraging empowerment both at these specific subunits, Core Networks, and as well as other organizations (Harung, 1996). A part of the challenge could be in lack of clarification in defining where the border line should be drawn in terms of teams' empowerment and the managers' mandate.

Another challenge that the managers brought up was regarding having an environment where it is okay to make mistakes. The lack of confidence in teams, as suggested by the score in question 19, could be related to this. This hints that managers have areas of improvement when it comes to being appreciative, showing trust and being transparent with teams. A possible way managers can approach this is being more transparent with their own mistakes as they are considered role models and this type of behavior can set the culture in the teams.

6.3.2 Differences between managers' perception and Current Status

Question 16, although being a similarity between the managers' perception of challenges and the current challenges for team learning in Subunit G, was not considered as an area of improvement for the Software Development Units as it is absent in Table 14. This could be because the Software Development Units have been successful in implementing the retrospectives in the scrum teams (Björkholm & Brattberg, 2010). It is however interesting that workload was still addressed as a challenge for these units, as well by the managers. This indicates that the workload within the Software Development Units does not seem to affect the team learning per se. On the other hand, heavy workload might affect other dimensions than team learning that has not been in focus for this study. As seen in Table 21 in Appendix 4, dimensions with low scores in comparison to the team learning dimension, are SCL (Systems to capture and share learning) and CO (Connect the organization to its environment). The specific prerequisites, i.e. the questions for these dimensions are found in Appendix 2. For instance, a heavy workload could affect these two dimensions in the way that teams don't have time to update their databases or find it hard to balance work and family.

Question 18 was an area of improvement that was applicable for all subunits and brought up in the survey. This question was regarding that teams and groups were not rewarded for their achievements. The topic 'rewards' wasn't even brought up as a challenge among the managers. However, when asked about this, the managers in the interviews mentioned that well performing teams would be acknowledged in the organization and used as a reference to other teams. This could be seen as a type of implicit reward, since teams get recognition for their work. The reason for this low score could therefore be because these types of recognitions are not seen as rewards or that teams simply aren't aware that they have the possibility of being recognized for their good work. Furthermore, as mentioned in earlier research, a way to reward teams for learning could be to incorporate the learning aspect in promotion and evaluation of employees (Popper & Lipshitz, 2000). This is therefore an area of improvement in where both managers and teams need to change mindset when it comes to looking at rewards for learning in teams.

A challenge that was brought up by the managers, but could not be seen in the DLOQ survey, was team mobility. Opinions were much divided in the benefits of rotating the members of the team. Some managers claimed that team rotation is important to introduce new thinking and perspectives to the team, while others claimed that team rotation will lead to initial declines in productivity and inhibit the team learning. However, a Learning Organization does embrace change (Senge, 1990), but the dynamics of the team does not need to be disrupted for change to be embraced. In other words, if team rotation occurs or not occurs, it is not something that should affect the learning capabilities in the Learning Organization. If there are good team learning capabilities in place, both long lasting teams and short lived teams should be able to adapt themselves to changes. The difference in opinions could be explained by the functions of the subunits. Subunit A and E, both Software Development Units, experienced too much mobility and expressed that this caused disturbances in productivity. These managers expressed that static teams had a better chance of encouraging team learning than dynamic teams. This could be explained with that they have adopted the agile way of working and this promotes static teams so that a good group dynamic is established (Björkholm & Brattberg, 2010). Subunit G, however, falls under the support function, and they do not work in the same way as the developers. Instead they want to see more rotation so that different modes of thinking accumulate into something greater (Goh, 1998). In general team mobility is an important aspect that needs to be considered as it could be related to one of the core features of the Learning Organization i.e. flexibility (Jamali et al., 2006)

Another challenge that was not present in the DLOQ survey, but was brought up by the managers was the role of technology. In the DLOQ there is a dimension, SCL that addresses technological systems to share and create learning. In this case, however, managers were discussing the role of technology for communication within the teams. Ericsson is a global company which means that there are teams that are scattered on different sites. In order to address this gap, there are technological tools such as online platforms and video conferences etc. However, managers argue that whilst these tools are good for certain tasks they do not cover the end to end interaction. Therefore, they argue that this was a challenge for team learning. Watkins and Marsick's framework doesn't directly address the role of technology for communication among team members and therefore this could be an interesting area for future research.

6.3.3 Summary of Analysis

In Table 16, the similarities between the managers' perception and the current status is summarized along with possible ways to meet these challenges.

Table 16. Similarities between the current status and managers' perception of Team Learning challenges along with possible ways to meet these challenges.

Current Challenges in Team Learning Capabilities according to the DLOQ	Managers' perception of challenges in Team Learning Capabilities	Possible way to meet these challenges	Applicable for
Q. 16 In my organization, teams/groups focus both on the group's task and on how well the group is working.	**Workload** Teams are overloaded with tight schedules giving no room for learning.	Management could steer the time balance so learning becomes institutionalized in the daily work	Support Units
Q. 19 In my organization, teams/groups are confident that the organization will act on their recommendations.	**Empowerment** Teams don't know what they can and can't do which makes them afraid of making decisions.	Management can integrate responsibility with decision making mandate and involve everyone when setting goals and visions.	Software Development Units and Support Units
Q. 19 In my organization, teams/groups are confident that the organization will act on their recommendations.	**Other** There is not a sense of a fail safe environment making teams afraid of making decisions.	Management can aim to be more transparent with mistakes as they are considered role models. They can also work with showing trust to teams	Software Development Units and Support Units

The challenges that arose from both the DLOQ and the interviews but did not have a relation are still interesting to address. These are therefore presented in Table 17.

Table 17. Differences between the current status and managers' perception of Team Learning challenges along with possible ways to meet these challenges.

Current Challenges in Team Learning Capabilities according to the DLOQ	Managers' perception of challenges in Team Learning Capabilities	Possible way to meet these challenges
Q. 18 In my organization, teams/groups are rewarded for their achievements as a team/group.		Need for mind-shift
	Team Mobility Some managers express that the lack of rotation in teams is not providing with new perspectives whilst others believe that too dynamic teams causes too much disturbance in team learning.	Further investigation is required
	Technology There are limitations in the technology used today to aid to communication within the teams which inhibits team learning	Future Research

Out of the five major challenges that were brought up by the managers, three of these could be matched to the challenges that were raised in the current status mapping. There was only one challenge that wasn't mentioned by the managers that could be seen in the DLOQ and this was regarding the rewards for team learning. Rewards for team learning as discussed earlier could be something that people do not think of directly as it may be controversial to reward "learning". Hence addressing this requires a change in mind shift.

Furthermore, the additional challenges that were addressed by the managers, although not directly related to DLOQ are still of interest. Team mobility and technology could be related to the core features of a Learning Organization; flexibility and communication, and are therefore of interest for the study of the Learning Organizations. Moreover, these challenges may be something that is very specific for the software development industry which is also intriguing in terms of new empirical findings.

In summary, it could be reflected that since the managers' perception of their role was very well correlated to the theoretical traits of the manager in the Learning Organization, they had good oversight of the teams and their challenges.

7 Conclusions

The concluding chapter presents a summary of the findings from the study. The research questions are answered followed by some concluding remarks including the implications on sustainability. Also a discussion on the limitations of this study and proposed future studies is given.

The purpose of this thesis was to investigate how managers could act to create conditions for employees of a software development company in order to strive to become a Learning Organization. The main research question that was proposed to fulfill the purpose was: *How can managers encourage collaboration and team learning in order to become a Learning Organization in a software development company?* Three sub-questions were derived from the main one and were answered by conducting a case study at the subdivision Core Networks at Ericsson BNET. How managers can encourage collaboration and team learning in a software development company can be answered with the help of the three research sub-questions:

RQ1: What is the current status of teams' capabilities for learning in the software development company including strengths and areas of improvement?

The current status for teams' capabilities for learning, according to the DLOQ, has scores between 3.52 to 4.88. This indicates that the numbers are above the midpoint of the Likert-scale which is 3.5 where the maximum is 6. It is therefore concluded that the employees perceive the software development company as having an "above average" team learning culture.

The strengths for team learning at the software development company are that teams and groups

- treat members as equals regardless of rank.
- revise their thinking as a result of group discussion or information collected.

The areas of improvement for team learning at the software development company are that teams and groups need to

- be rewarded for their achievements.
- become more confident in that the organization will act on their recommendations.

Furthermore, a differentiation occurs when a comparison is made between the Software Development Units and the Support Units within the software development company. The following prerequisite is seen as strength for the Software Development Units but as an area of improvement for the Support Units:

- Team groups focus on both the group's task and how well the group is working.

RQ2: To what extent does the managers' perception of their role to team learning capabilities in the case company, coincide with the traits of the managers' role in a learning organization?

The managers understand that they have an important role when it comes to influencing teams' learning capabilities. The key themes that the managers addressed when it came to their roles were:

- Time for Learning – Managers have a responsibility in ensuring that teams know they can allocate time for their work.
- Role Model – Managers believe that they can act as role models and inspire teams to learn
- Encouraging Empowerment – Managers should allow the teams to decide themselves how the tasks should be completed. They should promote empowerment as much as possible
- Coaching Leadership Style – It's the managers' responsibility to challenge the status quo and support the teams by taking on a coaching leadership style by setting guidelines and frameworks.
- Making Mistakes – Managers try to create a climate where it is ok to fail by being transparent with their own mistakes.

All of these themes could be related to existing literature as well as findings from earlier research regarding the managers' role in a Learning Organization. This successful matching was accounted to the close relationship between agile theories and the Learning Organization theories. It was assumed that as a result of the Lean and Agile transition at the software development company, the managers may have been continuously exposed to these themes.

RQ3: In the software development company, how well does the managers' view of team learning challenges relate to the current status of teams' capabilities for learning?

Of the five major challenges that were brought up by the managers, three of them could be found in the current status mapping. Table 18 displays the current team learning challenges that were similar to challenges expressed by the managers.

Table 18. Similarities between the current status and managers' perception of Team Learning challenges.

Current Challenges in Team Learning Capabilities according to the DLOQ	Managers' perception of challenges in Team Learning Capabilities
Q. 16 In my organization, teams/groups focus both on the group's task and on how well the group is working.	**Workload** Teams are overloaded with tight schedules giving no room for learning.
Q. 19 In my organization, teams/groups are confident that the organization will act on their recommendations.	**Empowerment** Teams don't know what they can and can't do which makes them afraid of making decisions.
Q. 19 In my organization, teams/groups are confident that the organization will act on their recommendations.	**Other** There is not a sense of a fail safe environment making teams afraid of making decisions.

There were however also challenges that did not coincide with the prerequisites found in the DLOQ but were still of interest due to the fact that they addressed challenges that have core features of the Learning Organization but may be specific for the software development industry. Table 19 displays the challenges that were raised in the DLOQ and from the interviews with the managers but couldn't directly be related.

Table 19. Differences between the current status and managers' perception of Team Learning challenges.

Current Challenges in Team Learning Capabilities according to the DLOQ	Managers' perception of challenges in Team Learning Capabilities
Q. 18 In my organization, teams/groups are rewarded for their achievements as a team/group.	
	Team Mobility Some managers express that the lack of rotation in teams is not providing with new perspectives whilst others believe that too dynamic teams causes too much disturbance in team learning.
	Technology There are limitations in the technology used today to aid to communication within the teams which inhibits team learning

To conclude, it seems that since the managers' perception of their role was very well correlated to the theoretical traits of the manager in the Learning Organization, they had good oversight of the teams and their challenges.

7.1 Main Research Question

The results from the three sub-questions indicate that the case company display promising characteristics when it comes to having team learning capabilities that coincide within the DLOQ framework of being a Learning Organization. Furthermore, the analysis indicated that the managers displayed traits that can be found in the literature for Learning Organizations and that they are aware of the majority of the team learning challenges. This is translated to managers having an adequate oversight on the teams and their team learning challenges.

This study has therefore illustrated an empirical example of how managers of a company that have team learning capabilities have acted to create such conditions which has been a knowledge gap in the theory. To therefore answer the main research question, the characteristics of these managers are explained as well as areas of improvement for them. The main research question was:

How can managers encourage collaboration and team learning in order to become a Learning Organization in a software development company?

Managers should realize that their position puts them as role models in the organization, which means that they have the opportunity to inspire teams and further foster a learning culture. Therefore, they need to consider how they act and what signals they are sending out to the teams. One example of this could be to be transparent with the mistakes they themselves make. When managers are open with their mistakes, the teams may feel comfortable to be open with mistakes as well thus creating a "fail safe" environment. Being comfortable with making mistakes is a crucial aspect when it comes to fostering learning.

Managers' role in the Learning Organization is to support, coach and mentor teams as well as challenge the status quo. When embracing the role of being a coach, the managers' duty becomes to understand the needs of the teams as well as allowing the teams to take action themselves. A specific way of doing this could be to be present among team members, such as sitting among them in an open office landscape, to easier understand the needs of teams, as well as whilst out in teams ask questions instead of command. When questioning the teams, the managers are challenging the status quo by forcing them to think further on how they can do things better. This makes the teams explore and learn new methods.

Managers should also try to include everyone in setting the vision and goals in order to empower teams. Furthermore managers should allow people who are responsible for certain tasks to also have the mandate to make decisions for those tasks and thus foster empowerment. Here, the managers' role is to create the framework in which teams can feel comfortable to make decisions in. In addition to creating trust among teams and managers, this will also make teams accountable for their work which becomes a motivation for teams to learn new ways.

A recurring challenge when it comes to learning in organizations is time management and allocating time for learning. Managers should use their position to steer time for learning by the management team in order to institutionalize learning so that it becomes an integral part of the daily work.

Finally, managers should reward learning in teams for their achievements. Rewarding learning may seem abstract, which calls for a need of change in mindset when it comes to both managers and teams. Not only should *results* be rewarded but *learning* could be rewarded as well. An example of rewarding learning could be when teams may have failed to complete a task but could draw important lessons from that failure and share it among the organization. Another example is reflecting on learning when considering evaluation and promotion of teams.

To simplify, the proposed recommendations for managers to encourage team learning have been translated into a model displayed in Figure 11. This model has been constructed with combining both earlier theoretical findings as well as the empirical findings from this study. While the overall theme for each recommendation is mainly derived from the theory the specific recommendations that follow are based on the findings of this study. It is important to note that in order for managers to encourage team learning, all of these recommendations are equally important and need to occur simultaneously.

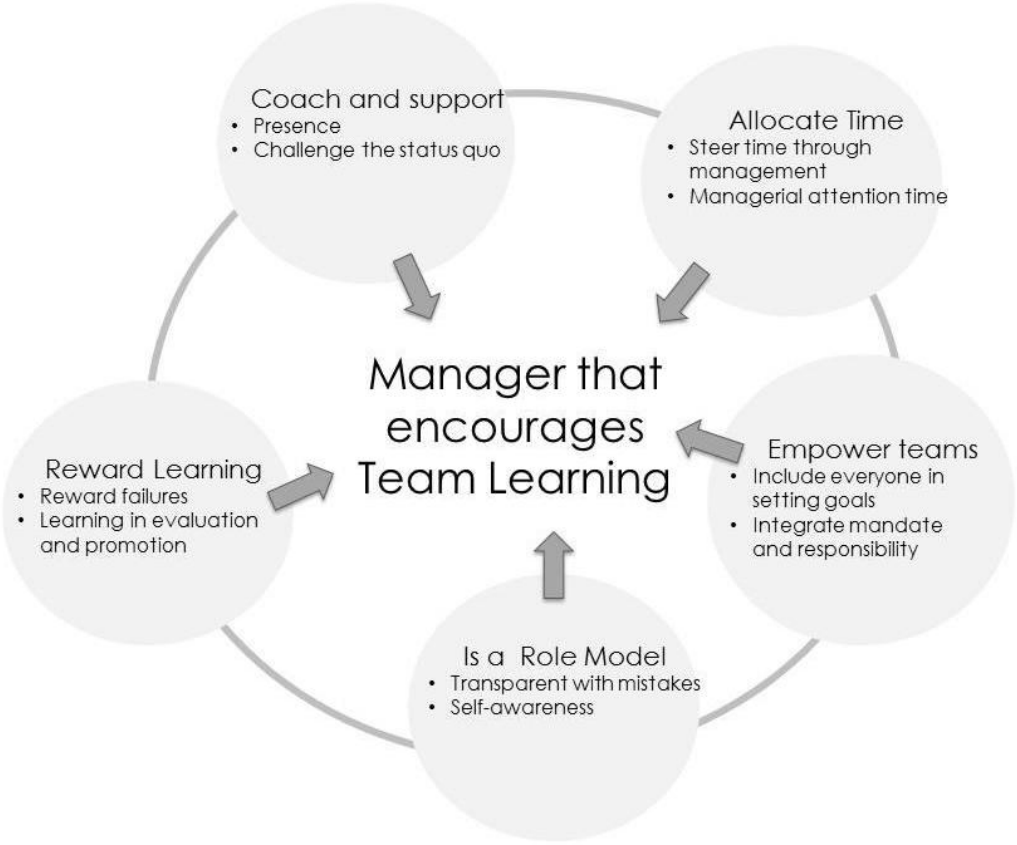

Figure 11. Guidelines for managers to encourage team learning, illustrating that all five themes need to occur simultaneously.

7.2 Concluding Remarks

In this investigation the researchers have been interested in gaining a managerial perspective on the team learning capabilities. The study had been conducted at a world leading software development company, Ericsson. Ericsson is one of the world's biggest companies with a vast amount of business areas spread all over the world and has a diverse number of employees. In addition to this, Ericsson is acting in a fast moving industry where rapid changes lead to a complex business environment. Trying to reach the goal of becoming a Learning Organization is therefore not seen as a short term solution but a long term sustainable solution to maintain their current position as market leaders.

Striving to become a Learning Organization is a huge and complex task due to all of the different dimensions that influence the culture at every specific sites and even units. To take all of this complexity into consideration in the analysis has been impossible. This investigation has therefore taken a high level approach and illustrated an example, by conducting a case study on one subdivision of how one could go about in the starting phase of trying to enhance the learning culture at the company. The result of this study is a prognosis of the current situation and can guide the company to some of the issues that need to be further looked deeper into.

Furthermore, the result of this study has managed to shed light upon a good case of how managers of organizations with team learning capabilities can act and what their areas of improvements are which is a contribution to existing knowledge gap today. The reason for

why the software development company had good team learning capabilities was attributed to the nature of their work as well as the business environment. The software development industry is one that undergoes rapid changes and the company decided to take on agile working methods as a way to become more responsive to it. Therefore, the company seems to have integrated Learning Organization practices as a way to address the demand of innovation and critical challenges with change.

7.2.1 Implications on Sustainability

Discussions regarding sustainability have become a central part of management since it addresses how it creates value to all of the stakeholders of an organization and further affects performance of businesses (Jamali, 2006). In accordance with that, it is of interest to discuss the implication of the results of this study as well as the choices of method for the research with respect to sustainable development. The most accepted used definition for sustainable development comes from Brundtland Report (1987) where it is defined as "the development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs." This definition contributed to the emergence of the most commonly used interpretation of sustainability; the triple bottom line where three aspects of equal importance have been identified. These are Economic, Social, and Environmental (Epstein 2008; Cooper & Vargas, 2004; Elkington, 1999). A discussion of the sustainability implications with respect to all of these three areas is presented below.

Economic Sustainability

The economic aspect of sustainability is associated with companies' competitiveness and long term profitability (Jamali, 2006). The purpose of this study was to ultimately provide insights for organization that could help them in the process of becoming a Learning Organization. The primary reason for becoming a Learning Organization is to have a sustainable competitive advantage by being able to adapt to changes in the business environment as well striving towards business excellence. These are both directly related to improving business performance of companies. Thus the result from this thesis has a positive effect on the economic sustainability of an organization.

Social Sustainability

The social aspect of sustainability is most commonly referred to as range of issues such as ethics and labor conditions. When considering the methods of this study, careful precautions were taken to preserve the anonymity of the respondents whether it was for the survey or the interview in with respect to ethical aspect of the integrity of the participants. In addition to this, the Learning Organization values the individuals of an organization through its systems and processes by actively supporting the current and future generations of employees. Thus, the results of this study encourage healthy relationships within teams by investing in learning opportunities. In other words, the results of this study through theme of Learning Organization manage to encourage healthy labor conditions in organizations.

Environmental Sustainability

The environmental aspect refers to organization's impact on living and non-living systems (Jamali, 2006). This regards more than just following governmental regulations but also about assessing business products, processes and services so that it considers the impact on the planet's resources (Jamali, 2006). Although the result of this study doesn't have a direct impact in the environmental sustainability, the effect may show itself through future attention towards more emphasis on environmental sustainability factors. This is because in the end, organizations need to find ways to operate in such ways that preserves the planet's resources and becoming a Learning Organization may speed up the process.

7.3 Limitations and Future Studies

The investigation for this study was conducted at one of the subdivisions within one Business Unit at Ericsson. The culture in this specific unit can assumedly be very specific and therefore have an effect on the generalizability of the findings in terms of Ericsson as a whole. In addition to this, some of the subunits were going through structural organizational changes and these have not been addressed to its fullest. A possible method to alleviate this concern could be to do a more extensive study where other subdivisions and even other Business Units are scrutinized and further incorporate the factor of organizational changes. In the same nature, an important limitation of this study has been the fact that only 10 interviews were conducted. Even though the themes that emerged from the interviews were validated by other sources, it would be of interest to interview more managers and further validate the findings. Furthermore, the nature of the topic at hand, Learning Organization is abstract and concerns organizational culture – a topic that is highly case specific. Therefore, it could be of interest to conduct a similar study at a comparable firm in the software development industry to see if the findings are generalizable on the industrial level.

This study focuses on the managerial perspective; the observations made in regards to the managers' experiences have been investigated. A significant addition to the paper would be an investigation on how team members experience the leadership and the team learning challenges. The researchers are aware that how managers experience their leadership and what the team learning challenges are can differ from the team members' own views. To get a fair and comprehensive answer, both of these areas need to be investigated.

During the analysis process, the researchers noticed that a challenge that was brought up by the managers was the role of technology. This could however not be seen in the DLOQ. There is a dimension, SCL, that addresses technological systems to share and create learning. In the interviews, managers were discussing the role of technology for communication in the teams. Ericsson is a global company which means that there are teams that are scattered on different sites. In order to address this gap, there are technological tools such as video conferences etc. However, managers argue that whilst these tools are good for certain tasks, they do not cover the end to end interaction. The DLOQ doesn't directly address the role of technology for communication among team members although this is a present reality. Future research in this area can therefore be of interest.

In addition to this, interesting empirical findings for the software development industry that inhibit the core features of the Learning Organization was found as challenges. These were challenges with team mobility, that is concerned with the organizations flexibility and

challenges with communication through technological tools. It is of interest that even the world leader of communication technology has possibilities for improvements in utilizing technological tools and therefore this topic could be of interest for future investigations. There is also an interest in investigating the role of team mobility in agile teams as this seems to bring about discussion with various opinions.

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Appendix 1: Definitions of Learning Organization and organizational learning

Table 20. Definitions of Learning Organization and organizational learning.

Researcher/Author	Year	Definition
Argyris and Schön	1978	Organizational learning is process consisting of detecting and correcting errors.
Armstrong and Foley	2003	A learning organization has appropriate cultural facets (visions, values, assumptions and behaviors) that support a learning environment; processes that foster people's learning and development by identifying their learning needs and facilitating learning; and structural facets that enable learning activities to be supported and implemented in the workplace.
Crossan et al.	1995	Learning is a process of change in cognition and behavior, and it does not necessarily follow that those changes will directly enhance performance"
Fiol and Lyles	1985	Organizational learning means the process of improving actions through better knowledge and understanding.
Garvin **Garvin et al.**	1993, 2008	A learning organization is an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights.
Gephart et al.	1996	A learning organization is an organization in which learning processes are analyzed, monitored, developed, managed and aligned with improvement and innovation goals.
Huber	1991	An entity learns if, through its processing of information, the range of its potential behaviors is changed.
Kim	1993a	Organizational learning is defined as increasing an organization's capacity to take effective action.
Levitt and March	1988	Organizations are seen as learning by encoding inferences from history into routines that guide behavior.
Marquardt	1996	A systematically define learning organization is an organization which learns powerfully and collectively and is continually transforming itself to better collect, manage, and use knowledge for corporate success. It empowers people within and outside the company to learn as they work.
Marquardt	1996	Organizational learning refers to how organizational learning occurs, the skills and processes of building and utilizing knowledge.

Moilanen	2005	A learning organization is a consciously managed organization with learning as a vital component in its values, visions and goals as well as in its everyday operations and their assessment.
Pedler et al.	1997	A learning Company is an organization that facilitates the learning of all its members and continually transforms itself in order to meet its strategic goals.
Senge	1990	[A learning organization is an] organization where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to learn together.
Watkins and Marsick	1992	Learning organizations are characterized by total employee involvement in a process of collaboratively conducted, collectively accountable change directed towards shared values or principles.

Appendix 2: Questionnaire (DLOQ)

The following shows the questionnaire that was sent to the respondents:

The following questionnaire will allow you to think and reflect about how your organization supports learning on an individual, team and organizational level. Keep in mind that your scores represent your own views and all answers are **anonymous**. For each item in the questionnaire determine the extent to whether something is true to your organization. If it rarely occurs score it as (1) and if it always occurs score it as (6). You are allowed to go back to a question and change your answer at any time. The questionnaire should take from 10-15 min to complete. All questions are mandatory. There are no right or wrong answers. We are only interested in learning about your perception. The results of this questionnaire will aid as a starting point to determine how Ericsson can embrace a learning culture to improve performance.

Individual Level

CL – Create continuous learning opportunities

1. In my organization, people openly discuss mistakes in order to learn from them.
2. In my organization, people identify skills they need for future work tasks.
3. In my organization, people help each other learn.
4. In my organization, people can get money and other resources to support their learning.
5. In my organization, people are given time to support learning.
6. In my organization, people view problems in their work as an opportunity to learn.
7. In my organization, people are rewarded for learning.

ID – Promote inquiry and dialogue

8. In my organization, people give open and honest feedback to each other.
9. In my organization, people listen to others' views before speaking.
10. In my organization, people are encouraged to ask "why" regardless of rank.
11. In my organization, whenever people state their view, they also ask what others think.
12. In my organization, people treat each other with respect.
13. In my organization, people spend time building trust with each other.

Team or Group Level

CT – Encourage collaboration and team learning

14. In my organization, teams/groups have the freedom to adapt their goals as needed.
15. In my organization, teams/groups treat members as equals, regardless of rank, culture, or other differences.
16. In my organization, teams/groups focus both on the group's task and on how well the group is working.
17. In my organization, teams/groups revise their thinking as a result of group discussions or information collected.
18. In my organization, teams/groups are rewarded for their achievements as a team/group.

19. In my organization, teams/groups are confident that the organization will act on their recommendations.

Organizational Level

SCL – Create systems to capture and share learning

20. My organization uses two-way communication on a regular basis, such as suggestion systems, electronic bulletin boards, or town hall/open meetings.
21. My organization enables people to get needed information at any time quickly and easily.
22. My organization maintains an up-to-date data base of employee skills.
23. My organization creates systems to measure gaps between current and expected performance.
24. My organization makes its lessons learned available to all employees.
25. My organization measures the results of the time and resources spent on training.

EMP – Empower people towards a collective vision

26. My organization recognizes people for taking initiative.
27. My organization gives people choices in their work assignments.
28. My organization invites people to contribute to the organization's vision.
29. My organization gives people control over the resources they need to accomplish their work.
30. My organization supports employees who take calculated risks.
31. My organization builds alignment of visions across different levels and work groups.

CO – Connect the organization to its environment

32. My organization helps employees balance work and family.
33. My organization encourages people to think from a global perspective.
34. My organization encourages everyone to bring the customers' views into the decision making process.
35. My organization considers the impact of decisions on employee morale.
36. My organization works together with the outside community to meet mutual needs.
37. My organization encourages people to get answers from across the organization when solving problems.

SL – Provide strategic leadership for learning

38. In my organization, leaders generally support requests for learning opportunities and training.
39. In my organization, leaders share up to date information with employees about competitors, industry trends, and organizational directions.
40. In my organization, leaders empower others to help carry out the organization's vision.
41. In my organization, leaders mentor and coach those they lead.
42. In my organization, leaders continually look for opportunities to learn.
43. In my organization, leaders ensure that the organization's actions are consistent with its values.

Additional Information

44. In which country are you located?

[Space to write]

45. Do you have a managerial role?
    Yes/No
46. Years of experience at Ericsson?
    [Space to write]
47. In which area do you work?
    Subunit A, B, C, D, E, F, G, H, I or J
48. Final Comments (optional)
    [Space to write]

Appendix 3: Interview Questions

The semi-structured interviews followed a predefined set of questions presented in this appendix. The majority of the interviews were conducted in Swedish and therefore the questions below are in Swedish.

Samla all formell information om respondenterna.

- Formell tjänst:
- År på tjänst:
- Ansvarsområden:
- Arbete innan:

Frågor gällande lärande och lärande organisation

1. Vad innebär en lärande organisation för dig och ditt jobb?
2. Upplever du att din enhet är en lärande organisation?
    a. Förklara hur du tänker
3. Vi ser på lärandet i en organisation i tre nivåer. Individ-, team- och organisationsnivå. På vilken nivå anser du att din enhet fungerar mest som en lärande organisation/minst som en lärande organisation?
    a. Förklara hur du tänker

Frågor gällande team

4. Hur definierar du ett framgångsrikt team?
    a. Hur skapar man då de här framgångsrika teamen enligt dig? (Om respondenten har svårt, be den tänka kring ett team som han/hon har ansett vara framgångsrikt, utgå ifrån det. Försök att få respondenten att definiera några parametrar)
5. Hur skapar man sammanhållning i team? (Be respondenten tänka på ett tillfälle då han/hon sett bra sammanhållning)?
    a. Berätta om hur *du* skapar sammanhållning i team? Har du något konkret exempel?
6. Vad är de *viktigaste* verktygen för att stötta ett team?

Frågor gällande teamlärande

7. Hur uppfattar/upplever/beskriver du teamlärande?
8. Hur definierar du ett framgångsrikt teamlärande? Beskriv gärna ett exempel, en situation eller skeende där lärande/teamlärande har varit framgångsrikt alternativt saknat/varit mindre framgångsrikt.
9. Vilka parametrar/faktorer krävs för ett framgångsrikt teamlärande?
10. Hur stödjer du teamlärande (vad blir din roll etc.)?

Appendix 4: Result table for the DLOQ

Table 21. Mean values and standard deviations for the seven dimensions of learning at Core Networks and each subunit.

	CL	ID	CT	SCL	EMP	CO	SL
Core Networks, N= 380							
Mean value	3,88797	4,260965	4,070614	3,564912	3,942544	4,087719	4,154386
Std deviation	1,416156	1,174492	1,326417	1,406809	1,288126	1,362775	1,285771
Subunit A, N=73							
Mean value	4,103718	4,422374	4,287671	4,082192	4,26484	4,541096	4,563927
Std deviation	1,348567	1,112505	1,237989	1,233626	1,139351	1,116508	1,113378
Subunit B, N=47							
Mean value	4,234043	4,524823	4,343972	3,996454	4,131206	4,219858	4,35461
Std deviation	1,417421	1,138655	1,314624	1,305609	1,279659	1,437139	1,315848
Subunit C, N=38							
Mean value	3,887218	4,355263	4,201754	3,868421	3,973684	4,061404	4,153509
Std deviation	1,469972	1,126813	1,217926	1,304098	1,201765	1,322693	1,190319
Subunit D, N=45							
Mean value	3,847619	4,344444	4,103704	3,448148	3,959259	4,225926	4,185185
Std deviation	1,43953	1,239029	1,397151	1,430904	1,358646	1,315081	1,271274
Subunit E, N=50							
Mean value	3,66	4,046667	3,916667	3,296667	3,64	3,80	3,873333
Std deviation	1,365288	1,181443	1,352462	1,419638	1,37235	1,416576	1,355266
Subunit F, N=29							
Mean value	3,669951	3,890805	3,649425	2,988506	3,494253	3,511494	3,747126
Std deviation	1,291416	1,093664	1,19637	1,334247	1,298052	1,396687	1,292203
Subunit G, N=42							
Mean value	3,554422	4,146825	3,738095	2,936508	3,730159	3,861111	3,940476
Std deviation	1,467078	1,159694	1,420838	1,392902	1,296103	1,420032	1,405889
Subunit H, N=10							
Mean value	3,085714	3,383333	3,20	2,60	3,116667	3,133333	3,083333
Std deviation	1,557989	1,36657	1,337845	1,553563	1,316025	1,455168	1,453128
Subunit I, N=19							
Mean value	4,180451	4,22807	4,254386	3,315789	4,070175	4,157895	4,131579
Std deviation	1,295883	1,18273	1,150694	1,278244	1,217275	1,23789	1,101191
Subunit J, N=27							
Mean value	4,037037	4,41358	4,216049	3,808642	4,259259	4,246914	4,351852
Std deviation	1,326371	1,061144	1,298442	1,26851	1,10085	1,241426	1,006021

Appendix 5: Official Permission to use the DLOQ

The Dimensions of a Learning Organization Questionnaire [the DLOQ] is copyrighted and may be used in research pending permission of the authors. No adaptations or translations may be used without the express permission of the authors.

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