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DEVELOPMENT OF GLOBAL QUALITY ORGANIZATIONS BY QUALITY MANAGEMENT PRACTICES

A CASE STUDY

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ABBREVIATIONS

BOS	Blue Ocean Strategy
CA	Competitive Advantage
CI	Continuous Improvement
CQI	Continuous Quality Improvement
DMAIC	Define, Measure, Analyze, Improve, Control
ERP	Enterprise Resource Planning software
ISO	International Organization for Standardization
LSS	Lean Six Sigma
PDCA	Plan, Do, Check, Act
QMS	Quality Management System
SMED	Single Minute Exchange of Die
TL	Team leader
TPS	Toyota Production System
QCC	Quality Control Circle
VSM	Value Stream Mapping
5S	Seiri - organization, Seiton - tidiness, Seiso - purity, Seiketsu – cleanliness, and Shitsuke - discipline

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ABSTRACT

Quality is a vital component in today's business and its continuous improvement is in the strategic interest of any organization pushing to improve their value proposition. However, quality organizations can face challenges with plateauing development in this context. This study focuses on the quality development work done in companies' quality organizations. More specifically, the study analyses the challenges of value creation and continuous improvement in quality development as a qualitative single case study.

There is limited academic evidence available on how earlier mentioned situations could be countered and resolved. Hence, the purpose of this thesis is to advance the understanding on quality development plateauing, the reasons for it, and how organizations can manage with it by conducting a case study in the case organization. A side contribution is to seek potentially supportive findings that could aid companies to improve further their quality organizations.

A literature review is presented regarding value creation, continuous improvement, as well as quality management systems. After this, an empirical study of a quality organization from the Finnish technology industry will be introduced. Information gathered from the case organization via interviews, observations, document and records analysis, as well as work experience was then compared to the findings done in the literature review section.

The results suggest that the implementation of quality management practices contribute positively into the value creation of a global quality organization. They can also help in the prevention of development stagnation. As a theoretical contribution the existing literature, an implementation model for quality development practices is presented. Finally, further study prospects and limitations of the work are introduced.

KEY WORDS: Development, Management, Organization, Quality, Strategy

1. INTRODUCTION

1.1. Motivation for the study

In modern global markets companies compete in numerous different arenas related to their actual field of business and beyond it. Organizations are challenged in arenas such as technology, governance, legislation and corporate social responsibility. At the same time, customers are demanding more value by more affordable prices and improved availability. All this should be achieved while still maintaining to deliver excellent quality and continuously improving it (Garza-Reyes, Rocha-Lona, & Kumar, 2015). Quality management can be seen as a crucial element of modern business. It is a key part in an organization's quest for competitive advantage and is hence a strategic priority (Dahlgaard-Park, 2011; Juran, Godfrey, Hoogstoel, & Schilling, 1999). Quality is linked to economic success, operational efficiency and competitive advantage (Barbara B. Flynn, Roger G. Schroeder, & Sadao Sakakibara, 1995; Porter, 1991). Kanji (Dahlgaard-Park, 2011: 496) described quality as follows:

"*Quality – is to satisfy customer's requirements continually.*"

Deming sees quality as a foreseeable amount of consistency, reliability which can be achieved at a low expense and which is fitting to the market (Boaden, 1997). In 1974 Juran (Boaden, 1997: 157) defined quality as:

"*Fitness for use in terms of design, conformance, availability, safety and field use.*"

In 1995 Juran broadened the definition in two ways: income-oriented quality (characteristics that make a given product offered appealing to potential buyers) and cost-oriented quality (referring to defects in a given product). (Boaden, 1997; Juran et al., 1999)

Companies face challenges with the quality of their offered services or products as well as quality management within their organizations. Regarding quality management, managers need to adapt to constant change within their respective organizations. With upcoming new technologies and practices, and phasing out legacy technologies and practices, organizations are in constant state of learning and adapting to new ways of doing

things. This puts a strain financially on the resources available as continuous training is required (Nowicki & Sikora, 2015). Pressure is constant to increase profitability in a viciously competitive business environment, which has shortened the from-innovation-to-product cycle, thus making time a highly scarce resource. Improving corporate quality development processes need to lead to increased performance and help the organization to achieve its strategic goals. (Lepmets, Mcbride, & Ras, 2012) Internal and external stakeholders need to be kept well informed of the developments and possible challenges that are occurring within the organization, hence communication and co-operation is paramount. Actual quality of the products or services offered must stay stable even as development and changes are occurring in the organization. (Williams, Van Der Wiele, Van Iwaarden, Bertsch, & Dale, 2006)

An essential task for corporate management is to craft an organization that is able to produce a value proposition that is enticing to customers, and continue its development so that the offering stays relevant over the course of time. (Prahalad & Hamel, 1990) In the scope of continuous improvement and quality management, the term core competencies would likely be better understood as core capabilities, as Long and Vickers-Koch's (1995: 12) mention:

"*But whereas core competence emphasizes technological and production expertise at specific points along the value chain, capabilities are more broadly based, encompassing the entire value chain.*".

The processes that an organization possesses relating to value creation and continuous improvement of quality management should then be seen as capabilities. (Galeazzo, Furlan, & Vinelli, 2017; Long & Vickers-Koch, 1995) These firm specific capabilities are resources that can be used to protect the organization's current competitive advantage. A competitive advantage is a maintainable trait that a company or an organization has, that gives it an advantage over its competitors in markets. Such resources can be classified into three categories: physical capital, human capital and organizational capital resources (Barney, 1991). Continuous improvement in quality development can be seen as a strategically important capability that is actually (one of) the company's competitive advantages (Long & Vickers-Koch, 1995; Porter, 1991; Prahalad & Hamel, 1990;

Savolainen, 1999). Porter (1991) divided competitive advantages to two different types: first one being the capability for a company to command lower prices than its competitors, and the second one being the capability for a company to differentiate and maintain premium prices, resulting into increased profitability.

There is evidence that numerous benefits can be achieved with developed quality management systems within an organization. Data indicates that organizations with well-defined and implemented quality management systems outperform their rival organizations. (Garza-Reyes et al., 2015) Such benefits include customer contentment, swelling revenues, improved quality of offerings, increased productivity and efficiency, improved teamwork and management, improved profit margins, greater return on assets as well as improved control of business practices. These can all be seen as building blocks of competitive advantage (Porter, 1991). Hence, by strategically implementing quality management systems, companies can achieve business excellence. (Garza-Reyes et al., 2015)

With a low amount of quality related non-conformities, an organization can focus on creating new business, not needing to use time and resources to handle past mistakes (loss of opportunity), hence creating more value. (Dahlgaard-Park, 2011) Complex claims need to be handled in a structured way in order to build an understanding of the reasons that have led to the claim and give tools for the quality organization to utilize in order to prevent the claim from being repeated. (Defeo & Janssen, 2001; Rodrigues, 2007) Quality has a cost to the organization in the form of having to use resources to mend occurred non-conformities, but also the costs in attempting to keep and develop existing quality in products and operations. (Juran et al., 1999; Nowicki & Sikora, 2015) In a challenging environment where there are several elements that can cause quality defects, the quality management process is in a crucial role, as it can make an impact on all of the earlier mentioned factors. (Sitkin & Sutcliffe, 1994)

This all might sound logical and one might presume that quality organizations have already been perfected in modern organizations. This is not the case however, as ways of working tend to be in a constant cycle of change while searching for optimal operational performance, and the quality work cannot always follow in real-time.

Several quality development philosophies, tools and methods emphasize continuous improvement. Philosophies such as Lean and Six Sigma among others offer different approaches on the development of quality within an organization. (Garza-Reyes et al., 2015) ISO 9001 standard lists continual improvement from the standard's perspective as an important part of quality management systems. (Finnish Standards Association SFS, 2008)

The aim of this thesis is to attempt to increase understanding on value creation and plateauing development in a quality organization via a single case study. A potential side contribution is to find ways of preventing such phenomena. Suitable theory and methods from the findings could possibly be integrated into the strategies of organizations which are developing processes to counter the earlier mentioned challenges.

While there is extensive academic study on the topic of quality improvement, there are not many studies focusing on a quality organization's development stagnation, reasons behind it and possible solutions to the state.

1.2. Research gap

There is a limited amount of literature available on the reasons of a plateauing quality development in a value creation, continuous improvement and quality management context. Many quality management practices exist, but the understanding on their relationship to empirical quality development progression and plateau prevention requires further research.

The scientific background of this thesis is drawn from an extensive sample of academic literature. The main themes are value creation, continuous improvement, quality management systems, methods and organizational structure. Methods that could be utilized in a quality organization can be drawn from multiple quality management methods, as a single or hybrid method approach (Bhuiyan & Baghel, 2005). Such include for example Lean, Six Sigma, and Lean Six Sigma. (Andersson, Eriksson, & Torstensson, 2006; Salah,

Rahim, & Carretero, 2010) Literature does not however consider the plateauing of development and the effect that the quality management practices play in preventing it. This study aims to contribute to filling this gap in research.

Different methods have similar focal points and tools but are usually composed of a different method of operating and focus. This thesis' base work studies a select sample of different methods and tools which are deemed relevant in academic literature. From the studied sample, the most suitable ones are filtered out for further introduction. The study attempts to find commonalities and best practices from value creation theory and different quality methods and filter out practices in the context of the case study. Outputs of the study could be of value for a researcher studying the effects of quality management practices as well as for an organization looking for new concepts on how to improve development work.

1.3. Research problem and theoretical contribution

The purpose of the thesis is to attempt to increase understanding in the context of value creation, CI and quality development practices by studying the case organization. As a side contribution, the thesis attempts to increase knowledge on relevant theoretical models for assisting quality organizations and their management to improve their quality strategy, quality organization structure and quality work once encountering a plateauing development phase. Hence, the interest of the study is in the reflection of value and CA creation via quality management. Therefore, the main research question is:

How quality management practices may help companies to value creation and cope with plateauing progress in a quality organization?

Also, related to the case study conducted as a part of the research for this thesis, the following shall be evaluated as a theoretical implementation exercise:

How quality management practices can be utilized to develop global quality management in the case organization?

The thesis will introduce relevant scientific studies regarding quality management theories from the context of quality improvement and organizational development.
The theoretical findings will be compared to the data gathered from the case organization and analyzed. The findings made in the analysis are then presented and discussed. Finally, possible managerial implications will be suggested along with future research possibilities.

1.4. Delimitations

This master's thesis' scope of study has delimitations. The academic study will focus on value creation, quality improvement methods under the scope of continuous improvement and related quality methods such as Lean, Six Sigma, and Lean Six Sigma. The related methods have been limited to the most often mentioned quality methods in the context of CI.

The most important delimitation regarding the case organization is in the scope of the organization. The case organization operates in the front-end part of their given organization, as a quality team dedicated to improving the quality of the functionality. Other parts of the organization or external services are excluded from this study. The term *front-end* refers to the part of the organization that consists of the teams and employees who accept orders from customers, coordinate the orders within the organization and the delivery of it.

The research is done in the context of a master's thesis; hence the study length is limited in time and the resources available for the author at the time of the study.

1.5. Structure

The structure of this thesis has been divided into five chapters, of which contents can be described as follows.

The first chapter is the introductory part. In this chapter the topic of the thesis will be presented to the reader generally along with its motivational background. A summary of the scientific background regarding academic studies on the topic is offered. The research questions and the objectives of the study are offered, while also indicating the delimitations of the study. Finally, the structure of the thesis is introduced to the reader.

In the second chapter, a review into the academic theory behind the study is provided. Relevant literature on the field of value creation, quality management systems and continuous improvement are introduced and a conclusion on the relevant academic findings is offered. Also, the methodologies of the concepts are introduced along with their histories and tools. Concepts for possible improvement methods are drawn from the findings of the literature review. The chapter is then concluded in a synthesis section with key aspects.

The third chapter is the methodological part of the study. The chapter also introduces the case study organization. In this chapter the philosophy, approach and method of the research are introduced. Data analysis and data collection are introduced. Also, the trustworthiness of the study is assessed.

Chapter four is dedicated to presenting and analyzing the actual case study part, along with an analysis on it. The discussion on the study will commence from a broader perspective and will then gradually go more into detail. Empirical findings are examined in the light of the literature review chapter. A possible link between the findings made in the methodological part and the academic studies introduced on the topic will be explored.

In the final fifth chapter, the research questions and objectives set in the first chapter are answered based on the findings done in the study. Theoretical contributions and the limitations encountered during the study are discussed and managerial suggestions to the organization offered. Finally, possible future research options are presented.

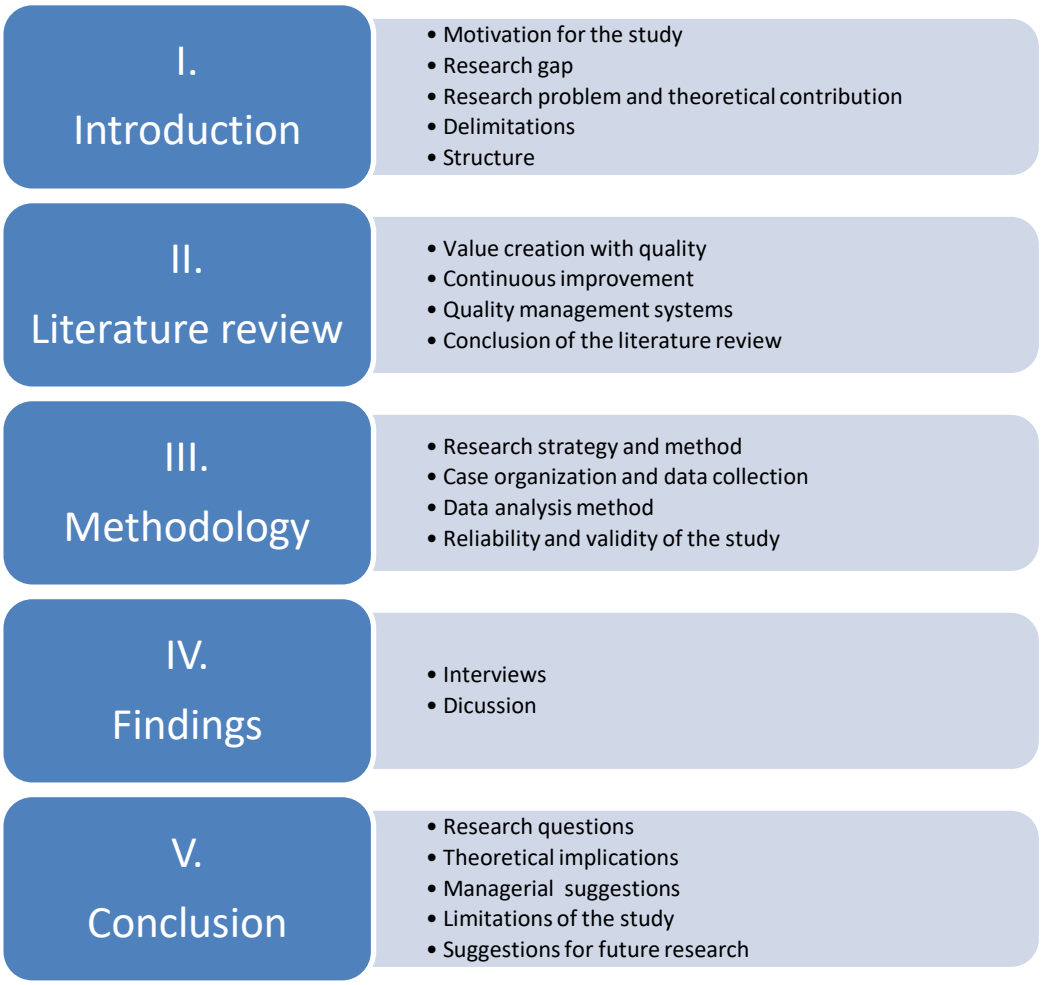

Figure 1. Structure of the thesis.

2. LITERATURE REVIEW

This chapter explores theory behind value creation, continuous improvement and different quality development methods through academic literature. These will form the framework for the study, assist the reader to understand and interpret the findings made.

First part of the chapter will introduce theory on value creation via competitive advantage which stems from an organization's resources and capabilities. The second part will present the definition, history and methods associated to continuous improvement. It will also present select leading QMS methods via their histories, tools and implementation models. Most focus will be applied to the parts that could potentially answer to the needs of a quality organization which would require aid in its efforts to move forward with continuous improvement.

2.1. Value creation with quality

Value creation is a key aspect of a company as well as in all economic exchange (Vargo, Maglio, & Archpru, 2008). Swartling and Olausson (2012) found that a major goal for CQI is the added value offered to a customer. It is also a central aspect of lean thinking, where value needs to be understood as something that is valuable for the customer of an organization. Reducing costs is an important part of value creation for an organization, but must not be equaled to it. (Hines et al., 2010) Value consists of how well a product or service can offer customers perceived value, as well as how little costs are involved in the creation of the offering. Customer perceived value can be of quality, fitness for purpose, design or another feature. Costs consist of the investments an organization must make to create the given product or service. Therefore, value is closely linked to customer requirements and reducing cost or waste as is understood in lean thinking as well, which will be introduced later on in this chapter. The relationship between value and cost is elaborated in figure 2.

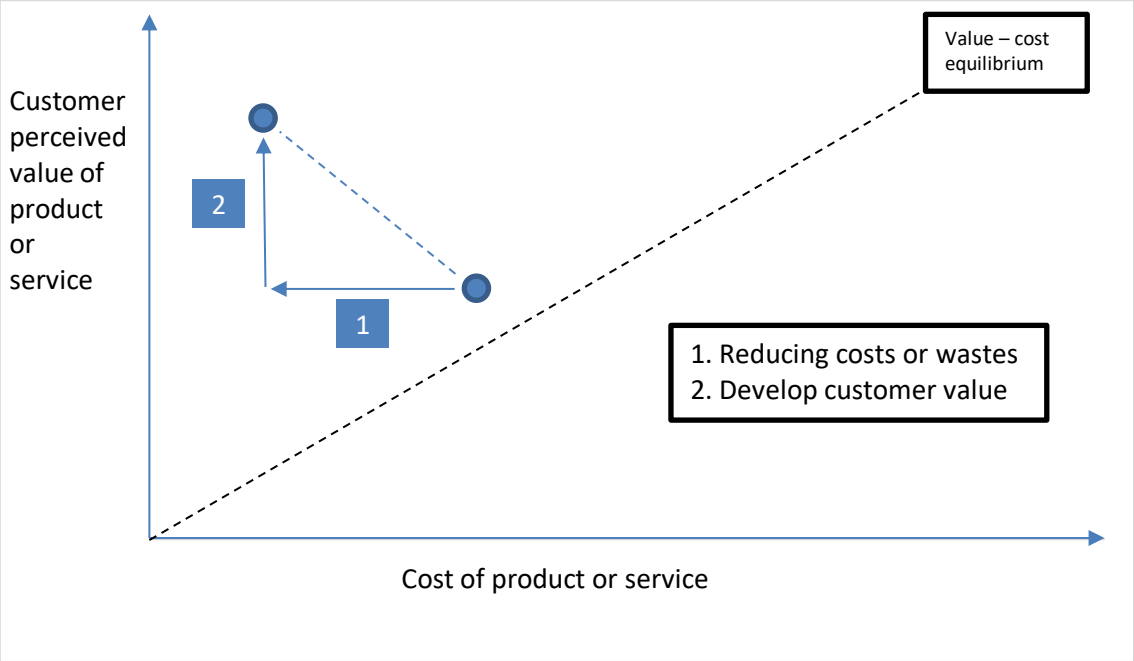

Figure 2. Value – cost relationship. Adapted from Hines *et al.* (2010).

One important aspect of QMS' is to increase the value creation of an organization utilizing them, by optimizing such aspects as customer satisfaction, costs and wastes, quality of operations, and process speed. (Bhuiyan & Baghel, 2005) All of these improvements drive the creation of CA as answering customer's requirements, or creating added value, is one of the main drivers of QMS', such as Six Sigma (Keller & Pyzdek, 2010). Quality has also been identified as one of the key aspects for companies winning orders, therefore creating CA to the supplying organization and value to its customer (Drohomeretski & Lima, 2014, p. 815).

Traditionally there has been an impression that an organization must choose between offering value *or* low cost to the customer. The value – cost trade-off has been introduced as a choice that needs to be taken. (Porter, 1980, 1985) This is not the case in more recent thinking, as argued in the Blue Ocean Strategy (Kim & Mauborgne, 2004). An organization can aim to follow BOS's concept to create CA without making the trade-off of choosing between value or cost, but to break from this and aim to offer *both*. (Kim & Mauborgne, 2004, 2005) To compete in a contested market and try to beat the competition with a choice of strategy is of competing in a Red Ocean Strategy scenario, which can be

seen as similar to the generic strategies concept by Porter (1980). Key differences of the two ocean strategies are highlighted on table 1.

Table 1. Ocean strategies comparison. Adapted from Kim and Mauborgne (2004).

Red Ocean Strategy	Blue Ocean Strategy
Compete in an existing market space.	Create an uncontested market space.
Beat the competition.	Make the competition irrelevant.
Exploit existing demand.	Create and capture new demand.
Make the value – cost trade-off.	Break the value – cost trade-off.
Align the whole system of an organization's activities with its strategic choice of differentiation *or* low cost.	Align the whole system of an organization's activities in pursuit of differentiation *and* low cost.

BOS is in contrast to the renown Three Generic Strategies concept introduced by Porter (1980). The Three Generic Strategies are described as strategies that help organizations cope with the five competitive forces within an industry. The Three Generic Strategies are as follows (Porter, 1980):

1. Overall cost leadership,
2. Differentiation,
3. Focus.

Table 2. Generic strategies. Adapted from Porter (1980).

		STRATEGIC ADVANTAGE	
		Uniqueness perceived by customer	Low cost position
STRATEGIC TARGET	Industrywide	**Differentiation**	**Overall cost leadership**
	Particular segment only	**Focus**	

Overall cost leadership strategy requires the organization to focus its efforts to cost-reductions, production efficiency and careful selection of profitable customers. (Porter, 1980, p. 35) *Differentiation* strategy is a choice where an organization decides to offer a

unique product or service within its market. The differentiation can be of unique brand recognition, technological superiority, features, or other such as quality (Porter, 1980, p. 37). *Focus* strategy is the organization selecting a niche in the market, in which it chooses to focus all its efforts. The idea being that the organization can best answer the requirements of the customers in the selected niche. The focus point an organization selects are almost unlimited: to serve only businesses, selling exclusively digital products, supporting a select brand, or offering industry topping quality in offerings (Porter, 1980, pp. 38–39). The Three Generic Strategies concept states that in order for an organization to be successful in its industry, it needs to select one of the above-mentioned strategies. According to the concept, an organization needs to commit itself holistically to the strategy in order to effectively deploy the strategy and be successful in its own market. (Porter, 1980)

The core difference to this thinking is that in BOS the absoluteness of selecting a single strategy is rejected. Evidence indicates that low costs and differentiation can be achieved at the same time. (Kim & Mauborgne, 2004) In essence, an organization that adapts a BOS mentality, will start looking at the competition in the field by creating significantly different ways of working in order to provide additional value to its customers while keeping its costs on the same level as before or even lowering them. The organization's all activities need to be lined up in order to achieve the full advantage a BOS can offer. (Kim & Mauborgne, 2004) With this, an organization can create itself new profitable oceans, in which it has barriers to imitation due to first-mover advantage, which again offers the organization CA. The principle of the value creation is indicated in figure 3.

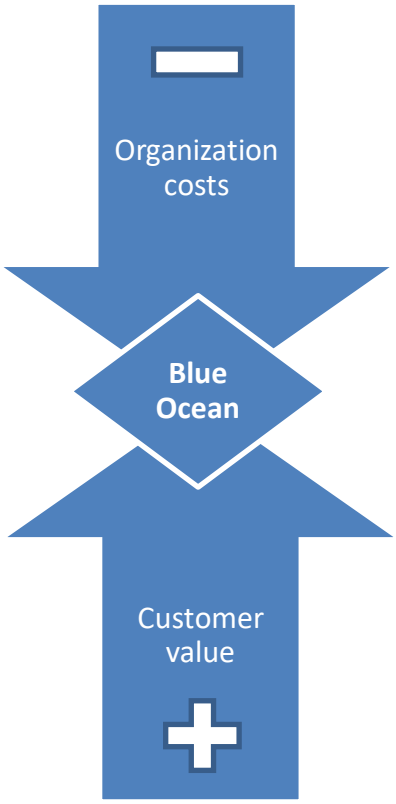

Figure 3. Value creation in Blue Ocean Strategy. Adapted from Kim and Mauborgne (2004).

A blue ocean's value added realizes through an organization's cost going down by cutting the elements which do not add value to the customers. The other side of the benefit is creating new offerings in the field of operation, such as providing exceptional levels of quality. (Kim & Mauborgne, 2004) This is essential in creating CA, as it is amplified when the organization can maximize created customer value and minimize costs to itself. (Porter, 1985)

The value – cost link is a central part of quality management thinking. As a case in point, in lean thinking, value is seen as a crucial part of the method. By removing wastes, such as bad quality, an organization can offer added value to its customers (better quality products or services) while lowering its own costs (lowered non-conformity handling costs) which results into greater value added for the organization itself. (Hines et al., 2010) Some

of the priorities which are important for an organization's competitiveness can be listed as presented in table 3.

Table 3. Competitive priorities. Adapted from Drohometski and Lima (2014).

Quality	Offerings meet customer specifications.
Reliability	Customer deadlines in deliveries and communication are met.
Flexibility	Capability to adapt to sudden changes when required.
Speed	Attempt to offer faster service on all levels to benefit the customer.
Cost	Strive to offer lower cost than competition.
Innovation	Aim to innovate in processes and offerings.

As discussed in this section, value creation is a central part of CI, quality thinking and management. To develop quality and processes in an organization is to develop value creation simultaneously, which leads to CA. The next sections will introduce CI and QMS topics in more detail.

2.2. Continuous improvement

CI is a theory of, as its name indicates, continuous improvement in the performance of production and service organizations. (Zangwill & Kantor, 1998) It can be applied as an evolutionary method, where an existing organization or process can be improved in an evolutionary manner, or as a revolutionary method when the actions taken will be more drastic, such as by implementing blue-sky innovations or latest technologies (Bhuiyan & Baghel, 2005). CI sits as a central philosophy in many quality management theories such as Lean. (Zangwill & Kantor, 1998)

2.2.1. Background

CI is a management approach that aims to raise the efficiency of the systems and procedures of an organization in order to provide additional value and reduce costs and wastes.

The actual idea of development work conducted in organizations dates back to the 19th century, when leadership in various organizations encouraged its subordinates to take part in development work conducted and offered rewards to the ones that managed to introduce beneficial improvements. (Bhuiyan & Baghel, 2005) This development lead to the increased popularity of scientific management, which included new techniques that could be utilized in improving the efficiency of an organization by implementing scientific control methods and standards to its processes (Bhuiyan & Baghel, 2005).

CI originates from two different quality improvement related historical developments, which surfaced around the 1950s. One of them was the invention of Toyota Production System production system at Toyota in Japan. Just-In-Time is a central part of TPS. It is known also as Kanban in Lean production. The invention triggered a revolution in production which is comparable to the one started by Henry Ford one generation earlier. The method was the first to utilize a well-organized and self-controlled methodology. Excellent results were achieved at Toyota, when its employees started developing their work in a systematic and regular manner. The second development was the quality movement and statistical reasoning which initiated in the 1920s by Shewhart and its continuum by W. E. Deming in the 1950s with the Plan-Do-Check-Act cycle (Zangwill & Kantor, 1998). Past inceptions had a tendency to see improvement practices through several different principles, while recent practices are more holistic and well-organized methods. They are also more inclined to target a whole organization or at least a significant portion of it. (Bhuiyan & Baghel, 2005)

CI can be applied under one method as a *single methodology* or several, as a *hybrid methodology*. (Bhuiyan & Baghel, 2005) The hybrid methodology helps the organization to overcome the limitations of a single methodology approach if it is seen as compromising, thus giving flexibility to choose from a wider array of CI tools. This can give the program further reach than a single method approach. It can also help particularly more complex organizations, such as matrix organizations with multiple stakeholders. Lean Six Sigma is likely the most recognized hybrid methodology, which combines, as its name indicates, Lean and Six Sigma methodologies. (Bhuiyan & Baghel, 2005) Other combinations can

consist of a wide array of different methods, such as Total Quality Management and Six Sigma. (Bhuiyan & Baghel, 2005)

2.2.2. Definitions

CI is not an exact term; it has a multitude of definitions. Academical literature does not provide a generally accepted, single definition for the term. A select few of these definitions are introduced, in an attempt to give the reader an understanding on the concept.

According to Deming, CI is a method which consists of development proposals which over time lead to the rise of successes and decrease the amount of failures. It has also been defined as a process that encompasses a whole organization and drives concentrated and incremental improvement as well as a system that incrementally and innovatively improves processes, products or services, therefore creating value and cutting waste (Bhuiyan & Baghel, 2005; Thalner, 2005). Swartling and Olausson's (2012: 339) paper mentions Gertsen's definition for CI:

"*An improvement process that is systematically applied, improves organizational performance, is carried out in small steps and relies at least to some extend on employee participation*"

As can be understood from these statements, CI is closely linked to value creation and hence competitive advantage, as discussed in section 2.1. earlier.

The term CI is used as a general term that is a combination of various attributes that are related to quality development methods. Such methods include Six Sigma and Lean. (Bhuiyan & Baghel, 2005; Savolainen, 1999) Some authors use the Japanese term of *kaizen* as a synonym for CI and define it merely as a doctrine for improvement. (Berger, 1997) Kaizen comes from the Japanese words' *kai* and *zen*, meaning *change* and *improvement*. A clear relationship between value creation, quality and CI has been established in academic literature (Berger, 1997; Bhuiyan & Baghel, 2005; Michela, Noori, & Jha,

1996). Likely the most refined definition for the term has been proposed by Lahy and Found (2015: 4):

"Any and all co-ordinated efforts designed to accelerate the achievement of specified organizational objectives through change, learning and innovation."

Lahy and Found (2015) argue that CI should be understood as a framework and mind-set instead of a fixed selection of tools and methods. They also recognize the value increase that the method can bring to an organization via cost savings. Learning and innovation are embedded into the method. The definition also abandons the need for CI to be organization wide. This difference can be seen as an important point, as the activities can also be implemented in a smaller context than on a whole organization level. It is worth also noting that CI is not to be seen as the goal, more as of a method to reach the goal. (Lahy & Found, 2015) In the context of this thesis, CI is closely linked to CQI.

2.2.3. Process and mechanisms

For CI to function, the organization needs to first develop the capability for it. The process requires some key elements that are the strategic and teamwork alignment, as well as problem-solving skills. These capabilities are needed to provide the organization skills that can change and adapt to new challenges. There are example cases where organizations have won awards in quality method implementation (e.g. lean) but have been unable to enhance the improvement of quality development further, due to lacking capabilities. (Galeazzo et al., 2017) With time, multiple different methodologies have emerged. Some of the most known are the following QMS': Lean, Six Sigma and Lean Six Sigma. Literature on the earlier mentioned indicates, that CI is a capability which systemically changes the skill toolbox responsible for the development of processes and products, thus furthering CA of an organization. (Galeazzo et al., 2017)

The method can take place on three levels in an organization: management, group and individual employee levels. Consequently, it is implemented differently on these levels. *Management* level implementation involves strategy crafting, *group* level implications

are narrower scope problem-solving but remain still on a general level, and on *individual employee* level more grass-roots scale problem solving and development tasks. (Bhuiyan & Baghel, 2005)

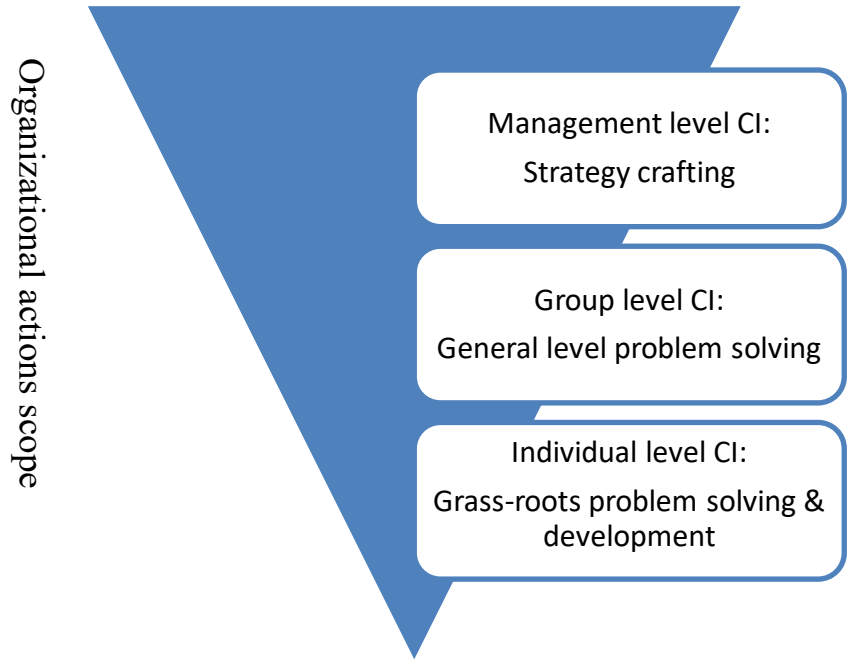

Figure 4. Continuous improvement organizational levels.

Organizational learning is one of the cornerstones of CI, as in order for improvement to happen, the organization needs to be able to learn from its past actions and be able to improve on them. One theoretical construct for a framework on organizational learning is compressed to three decision areas: purpose, process and people. (Galeazzo et al., 2017) The method can also be seen as a course, which is an evolutionary process that makes it possible for an organization to reach ever higher levels of performance while CI work ripens through organizational learning. (Swartling & Olausson, 2011) Organizational learning is a core part of the organization implementing it, as it involves the organization from top to bottom. However, it should be noted that CI is not limited to the methods or tools mentioned in this thesis but can include various initiatives that can be under various operations such as production processes, task design, work conditions and stakeholder relationships.

2.2.4. Antecedents

CI was originally developed in product focused organizations, where it was utilized in processes which were either recurring or related to standardized products. (Bhuiyan & Baghel, 2005) Improvement tasks were integrated into the everyday work of the organization based on the design of a given product or process. CI needed to adopt to the recurrence level of the task. Bhuiyan and Baghel (2005) offer a classification for the tasks that elaborate the differences between tasks: Basic tasks (with two dimensions, individual and group tasks) and improvement tasks (with two dimensions as well, parallel and integrated). *Basic tasks* are defined based on the process or product set-up in question. *Basic group tasks* are likely to be applied to low standardization context, while *basic individual tasks* more in places with higher standardization. Also, the human resources utilized under these different classes differ, where an individual task is more likely to be assigned to a trained specialist, whereas group tasks would be handled by normal employees attempting to develop tasks in their own work context. *Improvement tasks* classification to parallel and integrated come down to the actual way the improvement work is combined to the work, hence *parallel tasks* run aside normal work while *integrated tasks* are joined to the normal work (Bhuiyan & Baghel, 2005; Swartling & Olausson, 2011). Berger (1997) classified five organizational models based on the previously mentioned:

1. Quality control circles
2. Wide-focus CI
3. Organic CI
4. Expert task force CI
5. Individual CI

Quality control circles are generally formed of employees who are working in the same function and are tasked with improvement of the function. The QCC's develop improvement ideas within their framework, test the ideas (e.g. by utilizing the PDCA method) and implement them if feasible. However, decision authority usually in major changes lies in the hands of management. QCC's are a permanent structure, which aids in the CI work. *Wide-focus CI* combines organic CI teams with expert task forces, with the exception that it also employs operational workers from the actual work function. Goal is to combine

the benefits of specialist knowledge to the operational realities of the function for a temporary development project. *Organic CI* happens when a group has the capability to initiate, plan, execute and evaluate improvement tasks within the group's scope of work. Difference to other models presented here, is that the changes are not irreversible, they are not conducted by dedicated specialists, the improvements do not require changes outside the scope, and no external authorization is required for the improvements. *Expert task force CI* relies on impermanent teams from related organizational functions which are to take on development tasks for a limited time. Expert task forces can handle a wide array of extensive and demanding CI projects. The downside for this model is that it has little permanent worker representation and can then lose in gaining a lasting effect with its efforts. *Individual CI* is where improvement ideas are generated by individual employees and gathered in a way that is seen suitable. The ideas are then to be rolled out via expert teams. This level of development work can only be actual CI if implemented in an exceptional manner. (Berger, 1997; Juran et al., 1999)

2.2.5. Effects

CI can aid in focusing an organization from the lowest ranks to top management into reducing waste, improving the quality of the products or services and operations that an organization engages in, therefore creating more value. Organizations have started developing their own CI methods that are tailored to their given needs. This hybrid methodology approach gives organizations a possibility for "cherry picking" the most suitable tools and techniques. (Bhuiyan & Baghel, 2005)

CI has been noted to contribute to an enhanced understanding of organizational strategy and mission, which improves the performance of an organization. (Michela et al., 1996) While the concept and methods of CI have kept on evolving throughout the times, the endgame has remained unchanged – the quest for further improvement and value.

2.3. Quality management systems

In this chapter, three different QMS' are introduced, for the reader to gain general understanding on the tools and methods that these QMS' offer for CQI. The following methods are a select sample of QMS' that are widely and commonly used in quality development projects, as well as widely studied in the academic world (Andersson et al., 2006; Salah et al., 2010).

QMS' have originally been based on the idea of detecting faults in quality and have since developed first to focus more on upstream processes. The systems aimed to lessen waste and the need for excessive quality inspections. Different tools were used to tackle the before mentioned challenges by analyzing errors and looking for process improvements that would lead to better outputs and lesser variation. (Williams et al., 2006)

More modern approaches focus to a wider range of actions and to a more holistic view on quality. This evolution is due to increased competition, technological advancements, shorter product cycles and the need to focus more on soft actions, such as intra- and extra-organizational cooperation. (Williams et al., 2006)

For an organization looking to implement a QMS, finding the correct option requires research and deciding what the organization wants to achieve. This process is different for every scenario, as qualities, situations, and resources are unlikely to be the same across organizations. One way to handle this is to utilize a framework of necessary steps for the implementation. Garza-Reyes *et al.* (2015) suggest a five step conceptual framework for implementing a QMS:

1. QMS and organizational process study,
2. Strategic planning,
3. Choosing a QMS along with models, methods and tools,
4. QMS implementation,
5. Evaluation of the implemented QMS and organizational processes.

Each step has processes under it where related matters are analyzed and assessed in order to give the organization the information it needs to decide on the best choice of QMS and how to implement it.

2.3.1. Brief history of select QMS methods

Lean

Lean is based on the Toyota Production System, which was popularized after WWII in Toyota Motor Company. Eiji Toyoda was short on capital and resources, which lead him to push for elimination of all waste in Toyota's operations. Waste was described as something that was not absolutely necessary to the creation of the final product. European car manufacturers later adopted TPS in order to try to match their manufacturing processes to the likes of the Japanese, but rebranded it Just-In-Time method. (Pepper & Spedding, 2010) TPS grew to development tools such as the Just-In-Time method, the Kanban method of pull, valuing the workforce and extensive worker problem-solving as well as automated mistake proofing. (Hines et al., 2010) Lean offers a wider scope than TPS as it combines components of product development, supplier management, customer management, and the policy focusing process for the whole enterprise. (Pepper & Spedding, 2010)

Lean is centrally linked to its five principles: Value, Value Stream, Flow, Pull, and Perfection (Womack & Jones, 2003)**.** These principles will be elaborated in the next section of this thesis.

Six Sigma

Introduced by Motorola in the USA back in 1987 as a quality development tool for processes and started quickly gaining popularity. The goal of it is to minimize quality defects to a very low level, namely 3.4 problems-per-million opportunities. The name comes from this statistical measure of defect rate within a system. Crucial components for success are

commitment of top management, supportive infrastructure, training and statistical instruments. (Drohomeretski & Lima, 2014; Juran et al., 1999)

Six Sigma trusts proven quality development tools and deploys them via a group of trained specialists graded with Six Sigma belts. Work is applied under the DMAIC model. DMAIC is an abbreviation of the steps that it consists of: Define, Measure, Analyze opportunities, Improve performance, and Control performance. The model is central to Six Sigma. (Bhuiyan & Baghel, 2005; Drohomeretski & Lima, 2014; Juran et al., 1999)

Lean Six Sigma

A hybrid methodology which combines the two earlier mentioned methodologies to provide organizations utilizing it further benefits than could be reached by implementing a single method. LSS increases shareholder value via a superior improvement rate in quality, client satisfaction, cost, process speed and invested capital. (Bhuiyan & Baghel, 2005)

The hybrid methodology aids to realize further reaching improvements in development efforts than what Lean, and Six Sigma could offer if used separately.

2.3.2. Definitions

Lean

Lean thinking is built around five principles: Value, Value Stream Mapping, Flow, Pull, Perfection. In image 5. the principles are demonstrated.

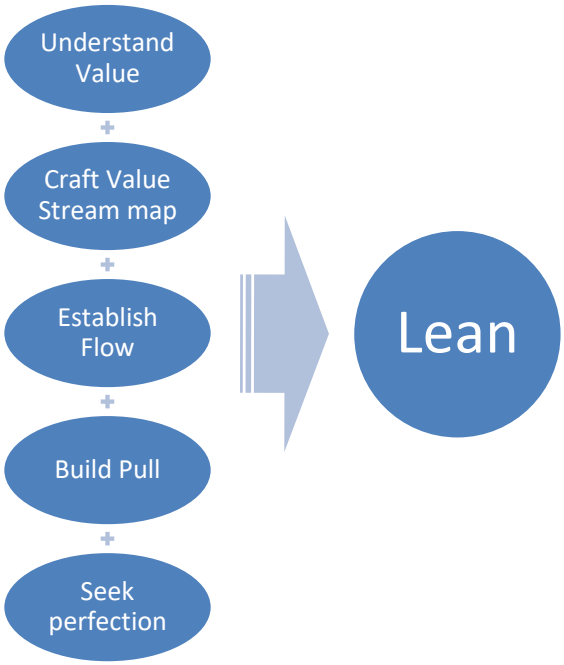

Figure 5. Lean principles. Adapted from Drohomeretski & Lima (2014).

A central point of lean thinking is emphasis on *value*. Value creation is commonly mistaken for merely cost reduction, but this does not grasp the whole reach of lean. Lean has evolved to take into account value adding, such as features that the customers see as value adding, as well as removing processes that do not add value. This means that the method has changed its focus from merely identifying wastes on shop-floor level to recognizing what brings value to the customer, hence the end-result determines the process. (Hines et al., 2010; Womack & Jones, 2003) Value is something that the organization must create to the customer, thus the end customer is the ultimate defining entity of value. (Womack & Jones, 2003)

Once value has been defined, the *value stream* needs to be identified and mapped for the product or service offered. A value stream includes all the actions taken to take a product or service through three levels of management tasks: problem solving, information management, and physical transformation. *Problem solving* task mean taking the product from idea to production via design. *Information management* refers to the supply chain of accepting an order for a product and delivering it as planned. *Physical transformation* meaning the physical creation of the product from resources to the actual delivered end-

product. The whole value stream map needs to be identified in order to make it possible to spot all the wastes in the given process and eliminate them. (Womack & Jones, 2003) Lean focuses on the process of decreasing waste in processes. Seven forms of waste (Pepper & Spedding, 2010; Womack & Jones, 2003) have been recognized: over-production, defects, unnecessary inventory, inappropriate processing, excessive transportation, waiting, and unnecessary motion.

After these steps, the next phase in lean thinking is to create *flow* in the remaining steps of the process. Flow can be defined as the flow of value creating activities. This process can require a complete rethink of how the work has been organized previously, while attempting to create flow. (Womack & Jones, 2003)

Once flow has been established, the organization needs to build *pull*. Meaning that the products offered are not made without indication from a customer. Therefore, the product is pulled from the customer's side as there is a need for the value created by the organization. This eliminates overproduction before demand has arisen. (Womack & Jones, 2003)

Final principle of *perfection* is to seek CI in the steps already taken in order to achieve the highest possible level of efficiency for the company. Development cannot stop in the organization once lean thinking has been established but must be fostered as stagnation will eventually lead to the expiration of the value proposition. CI thinking needs to be embedded to the culture of the organization. Customers' needs are in constant change, so organizations must continue to re-invent themselves and redefine the previously defined parameters of processes. (Womack & Jones, 2003)

Six Sigma

The method aims to develop an organization's processes in a controlled and methodical manner. (Pepper & Spedding, 2010) The method brings structure to the development efforts of an organization by introducing a more meticulous version of Deming' PDCA cycle with DMAIC. (Juran et al., 1999; Pepper & Spedding, 2010)

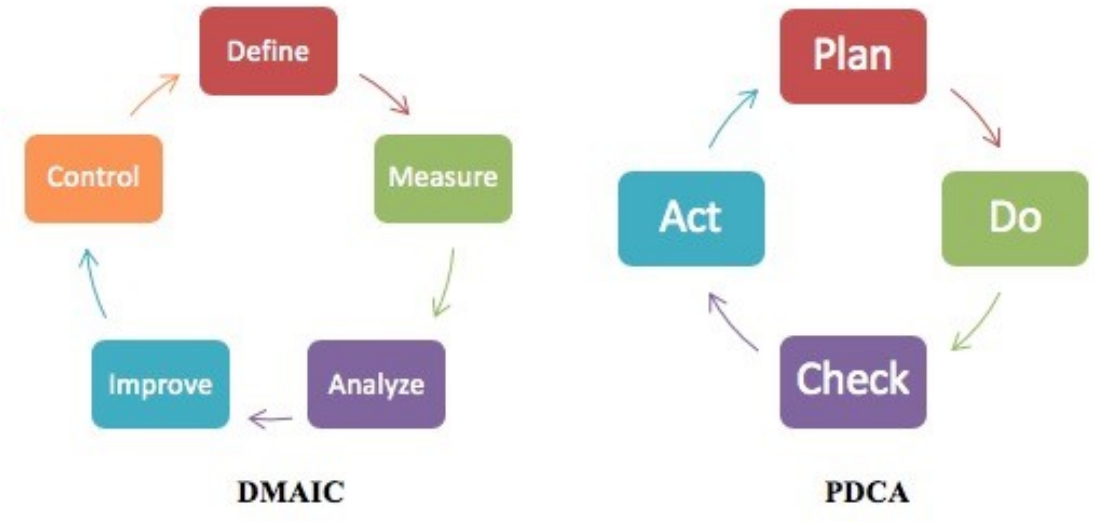

Figure 6. Illustration of DMAIC and PDCA.

Different steps of DMAIC have specific tools that should be utilized in order for the process to be measured, analyzed and improved, so that the process can be brought under control. (Drohomeretski & Lima, 2014; Pepper & Spedding, 2010) DMAIC's phases can use the following tools (Drohomeretski & Lima, 2014):

- Define – Pareto analysis and Project charter
- Measure – Descriptive statistics and Process capability
- Analyze – Detailed process map and Fish-bone diagram
- Improve – Experimentation and New process
- Control – Statistical process control

In order to gain full advantage of the DMAIC cycle, key personnel need to be trained properly on how to utilize the method. (Juran et al., 1999) Also, management commitment to the process cannot be underlined enough in order to harness the full potential of the development work. Six Sigma should be understood as a philosophy and scientific approach for process development. It has been mentioned that Six Sigma needs to be seen as a CI management philosophy for it to gain a required levels of adaption. (Pepper &

Spedding, 2010) Six Sigma has been criticized of failing to integrate the cultural aspect of CI, which limits its reach. (Pepper & Spedding, 2010)

Lean Six Sigma

LSS is a problem solving method, business strategy and a methodology (Juran et al., 1999), which drives process performance, yielding benefits in customer satisfaction and organizational output. (Drohomeretski & Lima, 2014) There is no stiff bracket of measures how the two QMS' should be utilized as one methodology, but they are mutually supporting methodologies when combined. An organization wishing to get the benefits of both methods should make sure that they are truly implemented in conjunction, as there is a risk of creating two competing organizational cultures per method if this is aspect is not taken into account. Value creation and eliminating waste sits in the core of the method. (Pepper & Spedding, 2010)

2.3.3. Process and mechanisms

Lean

Lean consists of different management methods which are utilized to develop the operations of an organization. This section introduces a non-exhaustive listing of different tools, in order to provide the reader an understanding of lean tools.

When starting implementation, the first phase should be to define the value that is sought after. Next step is to find the value stream(s). Recognition of value-adding and non-value adding actions by crafting a VSM (Drohomeretski & Lima, 2014; Pepper & Spedding, 2010; Womack & Jones, 2003). It is a tool that is used to provide a qualitative analysis on the actions. VSM tracks and traces possible wastes within a value stream. (Womack & Jones, 2003) It can also be utilized to determine the scope for a project by identifying the current state and help ripen the idea of the desired post-project state. This state can be used as a roadmap for development strategies, such as parallel working and flexibility through multi-skilled employees, causing little to no expenses (Pepper & Spedding,

2010). VSM can be applied as a "paper-and-pencil" process or with specialized software. Software makes it possible to create dynamic VSMs. VSM is also required to be applied before starting to move forwards with other tools, such as Single Minute Exchange of Die, five whys, 5S, and Kaizen.

SMED is a series of techniques, aimed at making sub ten-minute changes to the production set up in a value stream. Further concept from this is the One-touch setup, where the change time should be sub one minute. The goal should be to not have to make changes to the production methods, but if required, they should be swift in order to maintain flow. (Womack & Jones, 2003) *Five whys* refer to a practice, where "why" is asked five times when studying the root cause for an error in a process. The tool helps to get to the actual root cause by making the problem solver dive deep into the issue. (Womack & Jones, 2003) *5S* comes from Japanese and indicates five steps to a tidy and manageable work area: Seiri - organization, Seiton - tidiness, Seiso - purity, Seiketsu - cleanliness, and Shitsuke - discipline. (Womack & Jones, 2003) It is seen as a vital tool for successful lean deployment. (Drohomeretski & Lima, 2014; Pepper & Spedding, 2010)

Kaizen is related to the last principle of lean, perfection. It refers to CI, by persistently removing wastes and seeking ever increasing value. Another term related to Kaizen is Kaikaku (also known as breakthrough Kaizen and flow Kaizen). The term refers to a drastic improvement of a process, where a great leap in efficiency is achieved by creating a completely renewed process. (Womack & Jones, 2003)

Six Sigma

Targets to reduce variation by focusing on continuous and revolutionary improvements. (Andersson et al., 2006; Juran et al., 1999) Implementation is a process as with other QMS methods. Näslund (2008, p. 272) describes the implementation phases in eight characteristics:

1. Understanding of project expectations from workforce level,
2. Leadership of top management,
3. Meticulous implementation of DMAIC,
4. Swift deployment of the project (3 - 6 months),

5. Well-defined target for the results to be reached,
6. Providing infrastructure to implement improvements,
7. Focus on the consumer and the process,
8. Attention on the statistical approach to improvement.

Implementation organizations contain specialists with different levels of expertise in the method and roles. Belt ranks are indicated by different colors, and above them are champions and executives. White belt being the lowest level, followed by yellow, green, black, and master black belt as the top level of the belt hierarchy. Green belts are usually workers in a Six Sigma group beside their own job, being led by black belts who are committed to Six Sigma full-time. Champions direct master black belts, who direct black and green belts. Master black belts and champions handle Six Sigma actions on an organizational level, as guided by executives' initiatives. Executive level is responsible for the strategic lead, resources and cultural transformation required for the implementation. (Juran et al., 1999; Keller & Pyzdek, 2010)

In the implementation phase, different tools are utilized. The Six Sigma toolbox has design, statistical, project, lean, customer, quality control, and management tools (Andersson et al., 2006). Some of the tools are: Pareto analysis, Process Mapping: Value Stream Mapping; flow chart, failure mode and effect analysis, quality function deployment, histogram, control chart, checklists, scatter diagram, cause and effect diagram. (Juran et al., 1999; Keller & Pyzdek, 2010; Mehrjerdi, 2011)

Flow charts are graphical methods utilized to display the flow of a process with symbols, and are used in the Measure stage of DMAIC. (Juran et al., 1999) Failure mode and effect analysis is a bottom-up approach for reliability research, which is like Pareto analysis in a way that it aims to direct resources to solving most yielding prospects. (Juran et al., 1999) Quality function deployment is a customer-driven product planning method which utilizes matrices (called "house of quality") to display the planning process. (Juran et al., 1999) Histograms indicate the frequency of values or groups of values when studying the cumulative value of a given date unit. (Juran et al., 1999) Cause and effect diagram (also

known as fishbone diagram and Ishikawa diagram) is utilized in organizing and presenting graphically available knowledge of a specific quality problem. (Keller & Pyzdek, 2010) Scatter diagrams are utilized in assessing different cause and effect relationships by plotting variables against each other. (Juran et al., 1999) Checklists track the processes and determine their implementation readiness. (Juran et al., 1999) Pareto analysis is based on the statistic that a small number of processes are the cause of a large number of problems. The principle aids the organization to prioritize their actions on the processes that yield the greatest results. (Keller & Pyzdek, 2010: 125) Flowchart is a visual tool which documents the flow of a process. They can be used in the Measure stage of DMAIC to display the process as it is and revisited in the Analyze stage to identify unnecessary complexities. (Keller & Pyzdek, 2010: 198)

Lean Six Sigma

Several common tools amongst Lean and Six Sigma have been identified in academic studies (Pepper & Spedding, 2010; Salah et al., 2010) as indicated on figure 7.

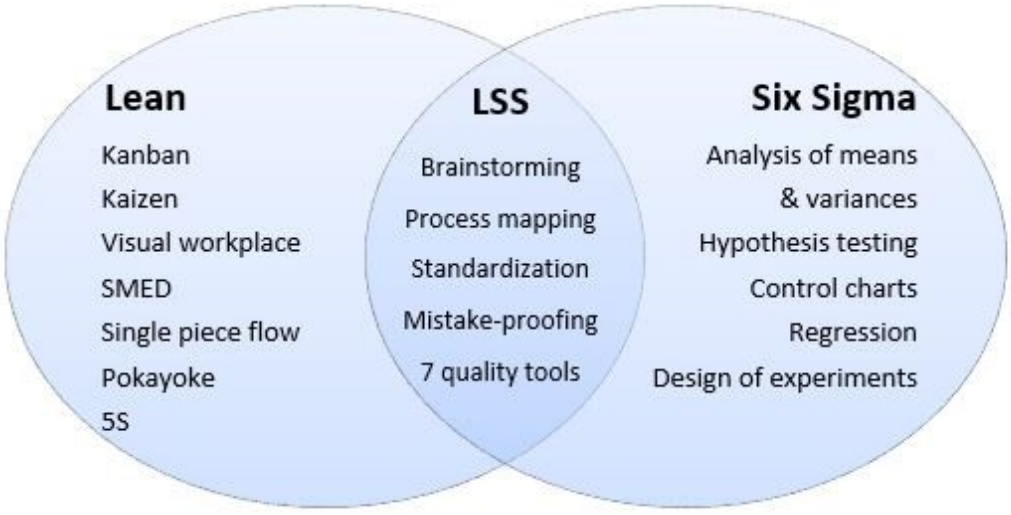

Figure 7. Lean, Six Sigma and LSS common tools. Adapted from Drohomeretski & Lima (2014).

Tools such as brainstorming, process mapping, standardization, mistake proofing and the seven quality tools are amongst the tools that are linked to Lean Six Sigma, but it must be noted that all the tools linked to Lean and Six Sigma are available for use as well. There is evidence, that once LSS is implemented, it can yield greater results than what Lean or Six Sigma could generate if applied as a single method (Drohomeretski & Lima, 2014). *Brainstorming* refers to the development organization in having brainstorms to expand the list of ideas they have for development. In *process mapping,* a process is analyzed and visualized as a logical flow of work. VSM is one variation of process mapping. *Standardization* is the action of organizing work into uniform and disciplined steps. In *mistake-proofing,* an organization focuses on developing its processes so, that making an error that could reach the customer is unlikely. The *seven quality tools* are quality tools that may aid an organization in development work. The tools are check sheet, graphs, histograms, Pareto charts, cause-and-effect diagrams, scatter diagrams, and control charts. (Keller & Pyzdek, 2010; Neyestani, 2017)

An example of an implication for LSS is when lean's scope of increasing production, improving quality and lessening waste is not sufficient, but requires for example statistical control which could be introduced with Six Sigma. On the other hand, if Six Sigma is to be implemented as a single methodology, it cannot answer to the requirements of process speed improvement or lessening working capital.

2.3.4. Effects

Lean

The method offers an organization means to contribute to cost savings, value creation, and CA. Some of the benefits that an organization can expect as an outcome of lean are reduced work times per process, improved capacity, faster cycle times, and superior customer satisfaction. The developments are especially visible in three areas: operational, administrative and strategic. *Operational developments* include reduced lead time, and better productivity. *Administrative developments* include less mistakes in order pro-

cessing, and better customer service methods. *Strategic developments* include for example reduced costs and hence help create additional value to an organization's output. (Andersson et al., 2006)

Six Sigma

The method has been seen to bring positive elements to CI methodology. Management commitment as well as open knowledge sharing within an organization implementing development procedures can be seen as indispensable. (Pepper & Spedding, 2010) Six Sigma offers an organization economic benefits (cost savings and value creation) by giving focus to development with sequential and disciplined steps while building a foundation for future success, hence competitive advantage. It includes different levels of professionals (belts, champions, and executives) who act as agents of change within the organization on its endeavor towards data-driven further CI. (Pepper & Spedding, 2010)

Six Sigma programs have been successful in providing positive financial impacts. Examples of successes include such companies as Volvo, where a Six Sigma program contributed 55 million euros to the company's bottom line between the years 2000 and 2002. Ericsson Networks witnessed an evolution in their understanding of Six Sigma, as it was originally conceived as a methodology for problem solving, but conception has widened to them seeing it as a business excellence model, which helps the organization reach its business goals. Ericsson Networks estimates that its different level Six Sigma projects have generated combined savings of 200 - 300 million euros between the years 1997 and 2003. (Andersson et al., 2006)

Lean Six Sigma

By utilizing a hybrid methodology, benefits can be achieved when comparing the implementation of Lean and Six Sigma separately, even though further study on the topic is required. Both methods have the same goal, as to achieve quality improvements in different operations within an organization, be it customer service, processes, employee commitment or similar. (Pepper & Spedding, 2010)

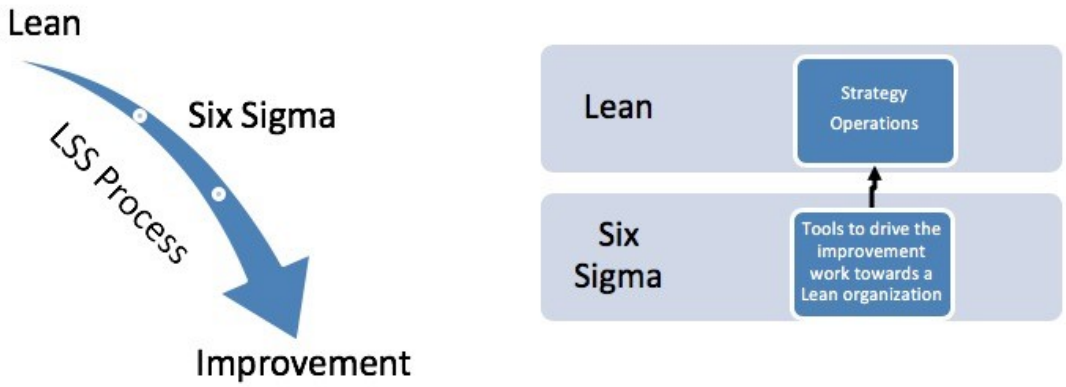

Figure 8. LSS process. Adapted from Pepper & Spedding (2010).

One way to see LSS is as illustrated by Pepper and Spedding (2010), where lean thinking is first introduced to an organization to reduce clutter and the process will be taken to a deeper level with Six Sigma tools, hence furthering both methodologies.

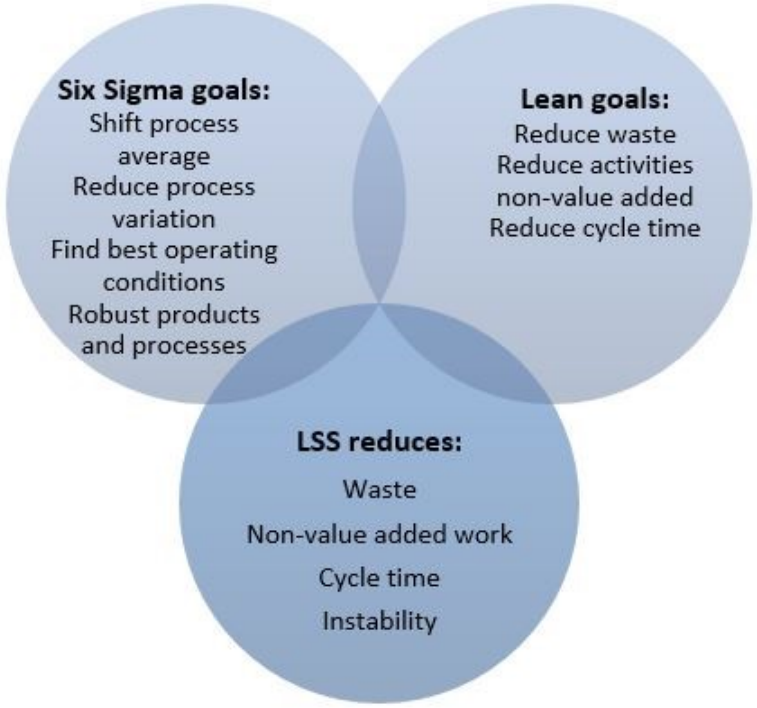

Figure 9. Relationship between Lean, Six Sigma, and LSS. Adapted from Drohometski & Lima (2014).

2.4. Conclusion of the literature review

This section provides the reader a conclusion on what has been examined in the chapter. Table 4 summarizes the methods introduced in this chapter.

Table 4. Summary of methods.

Method	Strengths	Weaknesses	Contribution to value and CA
Continuous Improvement	• Flexible approach • Prospective benefits	• No clear definition • Demanding process	• Wide ranging contribution
Lean	• Develop flow in production • Minimized waste	• Possible costs of large process changes	• Increase productivity with faster processes and minimum waste
Six Sigma	• Aim to maximize consistency • Customer focused	• Outcomes might be hard to quantify • Possible over-doing measures to reach Six Sigma	• Fulfill customer requirements
Lean Six Sigma	• Combines the strengths of Lean and Six Sigma	• Defining the mix between the methods	• Extensive development method for quality and processes

As presented in the literature review chapter, value creation with quality, CI, and QMS' are somewhat interlinked and likely coexist together. In the chapter, central theory on value creation (such as Blue Ocean Strategy), CI, and QMS' were introduced along with academic literature on their definitions and qualities. This theoretical background provides the framework and lens for the case study phase of this study that will be presented in this thesis' fourth chapter, which includes the main findings.

It can be remarked that extensive study exists on the topic, as has been demonstrated in the literature review chapter. As also can be established, there is little evidence in the domain on how to tackle the issue of development stagnation, therefore it is to be noted

that a research gap exists on the topic of plateauing development within quality management. Thus, the challenge is to find relevant methods that can help an organization move forward on the path to better quality operations.

The focus is on the theoretical context to be able to answer the research questions, (1.) *How quality management practices may help companies to value creation and cope with plateauing progress in a quality organization* and (2.) *How quality management practices can be utilized to develop global quality management in the case organization.* Figure 10. illustrates the framework in relation to the research questions, indicated with their respective numbers on the figure.

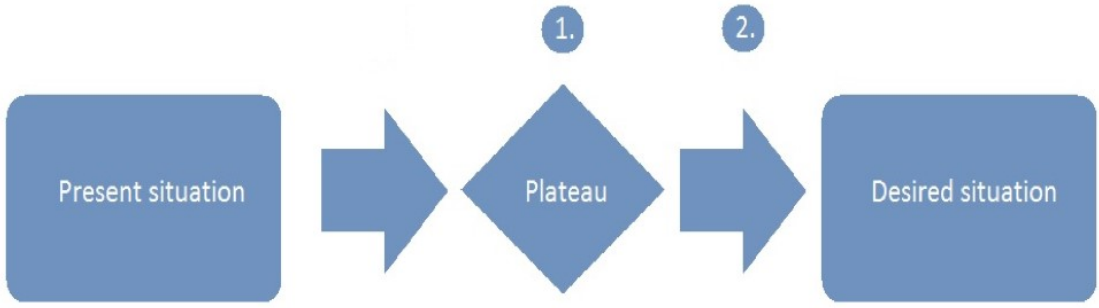

Figure 10. Illustration of the theoretical framework.

Several lessons can be learned from academic research: the role of value creation and cost reductions in the process of CA formation, management's support and commitment into the quality work, the value of a trained workforce applying the development process, the resources that are available for the work, utilization of CI and QMS theories and methods, and other. These contribute to the quality of the output of an organization and it is case dependent which of the parts of the puzzle require more attention to move further on the path of CI. A central point behind all of these actions is the idea of creating additional value to the organization. This is achieved by lessening its wastes (such as poor quality), optimizing its costs to a low as possible level, finding ways to implement the resources of the organization in a productive as possible manner (Blue Ocean Strategy), and with the CI of these actions, finding CA.

3. METHODOLOGY

The research methodology of this master's thesis is introduced in this chapter. It introduces the process related to the study as well as data collection. The case study organization is described in general terms. The final part of this chapter examines the trustworthiness of the study.

3.1. Research strategy and method

Social science research can be conducted in different ways, such as experiments, surveys, histories, archival analysis and case studies. This study's research method is a qualitative case study, which can be used in several different types of studies, such as political science, community psychology and organizational and management studies, out of the latter this study represents. (Yin, 1994) The study was made by utilizing the qualitative research method with an abductive research approach as a single-case study.

Qualitative business research approaches a study in a naturalistic manner which tries to understand phenomena in an empirical situation. A qualitative study attempts to illuminate and understand comparable phenomena. It also gives the researcher a possibility to concentrate on studying business phenomena in a related framework. The process creates knowledge of real-life business phenomena, their modus operandi, as well as how to figure them out and how to alter them. (Eriksson & Kovalainen, 2008a) The method usually applies wide-ranging questions instead of narrow scope hypotheses. The questions' funneling effect from broader to more specific during the study bring flexibility and responsiveness to the study, hence it can be called emergent research. (Fossey, Harvey, McDermott, & Davidson, 2002)

Case studies are a favored research strategy when "how" or "why" questions are being studied, the researcher has little effect on the study target, and if the scope is on an empirical phenomenon. It gives the researcher a possibility to gain a holistic and relevant feature of actual events, for example in organizational and managerial processes. A case study is an especially suitable research strategy when there is a need to deal with multiple

different types of data sources, such as documents, artifacts, interviews and observations (Yin, 1994, p. 8). Case studies can be defined as a research method which attempts to find reasoning for taken decisions, their implementation, and resulting outcomes. Critiques have also been expressed against case studies. Such are for example the possibility of the researcher being disordered when leading a case study, by using ambiguous data or prejudiced assessments, which can affect the outcome. Another critique has been that case studies can lack basis for scientific generalization. Empirical study requires a research design, at least on an implicit level. (Yin, 2003) The qualitative case study was chosen, as the purpose of the study is to find ways to aid organizations to keep up their CQI efforts. There is a need to study the situation in the case organization and explore it through theory. More specifically, a single case study was selected due to the interesting nature of the case organization's situation, as it is presumable that this is a *representative* case for similar organizations. The case organization works in an international environment and is in the process of developing its processes, giving this research a fitting study platform. Consequently, it can be assumed that the findings made in this study might be applicable in other similar cases. (Yin, 2003, p. 41) The case also has a *revelatory nature* to it, as the author has been working in the same matrix organization as the studied organization for multiple years, and has therefore access to information not available for an external researcher. (Yin, 2003, p. 42) There is also a part of action research in the study, as the researcher is involved in the process development of the organization, hence trying to find evidence from the organization which may be useful in its development (Center for Collaborative Action Research, 2019).

The interviews were crafted in semi-structured form with mainly simple open questions, as the interviewees come from different backgrounds and work cultures. Therefore, it was interesting to keep the discussion within a framework of a given topic, as this leaves room for discussion and bringing up points that might not come up with direct questions. The interviews were recorded with the permission of the interviewees in order for the author to be able to transcript, examine, and analyze them thoroughly after the actual interview. The interviewees were from the case organization, and its management. As the group of interviewees was small and they all work for the same organization, there was a possibility for follow-up questions after the actual interview if new questions would arise from

the gathered information. Answers to the interviews were analyzed in a socially constructed manner, as the interviewees come from different levels of the organization, different geographical, cultural, and educational backgrounds as well as are from different age groups.

3.2. Case organization and data collection

This section will present the studied organization and the data collection work done.

3.2.1. Introduction of the case organization

The case company is from the Finnish technology sector. The company is a global leader in intelligent technologies and complete lifecycle solutions. The products and services offered help its clients to achieve their business goals in an efficient and environmentally friendly manner all around the world. Added customer value is provided by emphasizing sustainable innovation, total efficiency and data analytics, which maximize the environmental and economic performance of its solutions. The company is committed on ensuring profitability, providing environmentally sound products and services as well as following responsible business conduct.

Quality is in constant monitoring within the case company. This to provide better customer satisfaction and spend less resources on handling non-conformities, and hence achieve better economic success. The case organization is a quality team which is responsible for the quality development work of a select scope of a supply chain. It consists of four quality experts (out of which one acts as team leader), and a team manager. The quality experts come from different geographical areas and their role is to be the link between the quality team and their respective area in terms of rolling out new practices, related information distribution and providing support in quality associated matters. All members hold two organizational roles, as the quality experts are all senior employees and therefore are experienced in the daily work that they are tasked to develop. The team has a defined role within the organization. It is to implement corrective and preventive actions to improve the quality of the work conducted in its scope of the organization. The

scope refers to a part of the organization, which consists of different teams' handling business from the customer and ending to a coordination team. The time allocation for the team's quality experts' quality work is set at 50% of total working time.

The main responsibilities of the team are as follows:

- Root cause analysis and documenting of corrective actions in scope related notifications,
- Provide direct feedback on one-time claims,
- Provide input to local leadership on repeating mistakes and area key users on process understanding and training needs,
- Investigate and have a complete overview on the long-term challenges at front-end in own area,
- Liaise with colleagues in areas and other departments on analyzing results, clustering and preventive actions proposals and implementation,
- Provide input to supervisors for corrective preventive actions,
- Ensure implementation of quality initiatives in all areas,
- Provide monthly updates for the quality figures and weekly update on location scope figures,
- Participate in quality improvement forum and monthly meetings,
- Organize and run area management team monthly quality meetings,
- Support colleagues in own area with quality related questions.

Currently the team's organizational structure is an ad hoc rolling organization, which has not been formed according to any QMS. The current structure would likely fall between QCC and Wide-focus CI organizations on Berger's (1997) scale. Data exists on the work done by the team as well as measurement data from the company's information systems, but the data needs to be examined and analyzed from a bird's-eye view in order for the author to be able to study it.

From the case company's side, the motivation for this study is the possibility to acquire new ideas on how to advance the quality improvement work conducted. The organization

and its methods being studied in this thesis have not been put through an assessment based on academic studies before in this context, hence the thesis will hopefully raise new ideas how to further improve the current development work, as well as help raise appreciation of some of the steps already taken.

The company has ready crafted material on claim definitions. In the company's nonconformity documentation, quality terminology is defined as follows:

Costs of conformance:

"Costs of conformance are the costs of achieving specific quality standards for products or services. These costs include prevention, appraisal and inspection costs."

Nonconformity costs:

"Nonconformity costs are the costs that arise when failing to meet the required standards for products or services. These costs include internal and external nonconformity costs which, based on failure source, can be further classified into design, sourcing and internal operation related costs."

Definition for "nonconformity":

"Nonconformity is a nonfulfillment or failure to meet a requirement. A requirement is a need, expectation or obligation. It can be stated or implied by an organization or interested parties. A deviation from a requirement in a contract, specification, standard, process or from an expectation, e.g. shorter component lifetime due to failure, is considered a nonconformity. A nonconformity occurs when the company fails to meet the defined scope, agreed performance targets, commitments or the expectations of the customer or other interested parties e.g. in products, solutions or services."

These definitions match what was introduced from literature in chapter two of this study, and it is apparent that the company possesses academic know-how on the topic of quality management.

3.2.2. Data collection

The data for the case study has been collected from the case company by direct observations as well as direct interviews. (Yin, 2003) This was accomplished via reading internal documents, Skype for business interviews, attending meetings and by work experience. Studying company internal documents gave the author a general view of the work being conducted, how it has been organized and what are its goals for the case company. The company has internal data visualization tools, which provide data from the operations and which's data has been also utilized in this thesis for numerical evidence of claims spread.

Material for the study was gathered by interviewing key stakeholders in the organization, by using the author's work experience to analyze the observations made from the operations of the case organization, by attending a workshop related to the actual work of the organization, and by analyzing statistical data from the organization's information systems. The case study part of this thesis will include interviews of the case organization's experts and management, an introduction into the tasks, methods, goals and challenges the organization faces in its work. Other data gathered from the case company on the organization and the tasks it processes were used to attempt to find supporting information for the study. This to utilize multiple sources of data, as such practice can increase the reliability of qualitative research. (Yin, 2003) The author participated to a cross function workshop aiming to develop the quality work conducted in the case organization in order to learn on the challenges of the organization and make notes that could aid in the analysis work of this study.

The author has worked for the case company for several years and is familiar with most of the ways of working, tasks and goals that the case organization has set on a general level. This experience was useful while conducting the research.

The interviews were conducted vis-à-vis online via Skype for business software, due to the interviewees being located around the world. The interviews were held between the 29th of May and 6th of June 2019. Interviewees were provided the question sets beforehand in order to offer an opportunity to prepare for the actual interview along with elaborations on the vocabulary used. The interviews were recorded with the permission of the interviewees for analysis purposes. The actual interviews were carried out in a relaxed and friendly atmosphere. The question sets were re-examined after the two first interviews, in order to review if there would have been need for adjustments, but this was deemed unnecessary. The interview questions were crafted around the research questions and the theoretical background from the literature review conducted for this study. Question sets for the interview were crafted to their final form after receiving feedback from both the thesis' supervising professor as well as the company's supervisor. A positivist research approach was applied, as the research is interested in facts rather than in experiences or meanings lead from interaction. (Eriksson & Kovalainen, 2008b) The interviews were formed in semi-structured format with open ended questions. The question sets are listed in the Appendix section of this thesis.

Table 5. The interviewees.

Interviewee	Role	Duration	Date
1.	Quality Expert	59+60 min	29 - 30.5.2019
2.	Quality Expert, Team leader	49 min	31.5.2019
3.	Quality Expert	60 min	3.6.2019
4.	Quality Expert	60 min	4.6.2019
5.	Manager, Global Quality and Process	68 min	6.6.2019

3.3. Data analysis method

Data analysis is what a researcher must do in order to process the gathered data for the study and interpret it. (Kawulich, 2004) Each study is a unique situation and the data gathered for it must be processed under a similarly unique research design and analysis. (Saldaña, 2014) The data analysis phase requires rigor from the researcher. When going

through the data, its validity and accuracy needs to be continuously monitored, while aiming for a meticulous result for the process. The researcher must also keep acknowledging any possible personal biases that might occur from one's own opinions, experiences or values. (Golafshani, 2003) A challenge regarding qualitative research is that there is little numerical data, but text, which limits the analysis methods. (Yin, 2011) The empirical data gathered is to be compared to the theory presented and reflected on the research questions of the thesis. The data was not coded, so the author needed to keep constantly comparing the created substantive notes to the original database in order to ensure consistency while searching for themes. (Yin, 2011)

In this study, the theoretical proposition strategy is utilized to compare the theory presented and the empirical data gathered to the research questions. (Yin, 2003) Hence, the study follows *positivism* as a philosophical orientation, which is the conventional position in management research. Coined by Auguste Comte in the late 19th century, positivism's position is that knowledge of the world is acquired from empiricism and experiences by applying scientific methods to it. (Eriksson & Kovalainen, 2008c) The data analysis started when the study began and once the empirical data was first gathered, the processing of it has been an on-going process until the end of the study. Different analysis strategies were applied to the data. The process progressed from recognizing wider lines and progressing through these to a deeper study on the most relevant themes. Interrelation and reasoning utilized in this study is a combination of inductive and abductive methods. Inductive data analysis relies on experiential exploration and interpretation on the evidence to accumulate knowledge, moving from the specific to broad level. Abduction interprets from evidence which is likely ideas based on indications. Difference in the corollaries of these two different methods is that inductive interpretations are likely to happen, abductive inferences are merely plausible. (Saldaña, 2014) The content analysis was processed in the following manner; first the data was prepared (collection of data from the organization, theoretical study), organized (filtering out the relevant data, comparing empirical data to theory) and finally reported (offer outcomes of the analysis). Content analysis was used to capture the essence of the empirical data to be compared to the theory in order to provide key themes for the organization phase. This to

make it possible to draw conclusions from the filtered data to increase understanding on the research topic. (Elo, Kääriäinen, Kanste, & Pölkki, 2014)

3.4. Reliability and validity of the study

It is important to know if a study can be trusted. This is to ensure that the events that have been studied and the findings made can affect future studies. (Fossey et al., 2002) When assessing the trustworthiness of quantitative research, some criteria has been proposed to be used while evaluating this. Yin (2011) mentions that to build trustworthiness into a qualitative study, the research procedures would need to be transparent. This in order for others to be able to examine the evidence provided to support the offered conclusions. Yin continues that methodic-ness is also needed in qualitative research, as the researcher needs to avoid carelessness and biases. Still, there must be space for unforeseen changes in the research. Methodic-ness creates reliability via making cross-checking data and procedures easier. A study is supposed to be able to display a logical set of statements, so the reliability and validity of the research needs to be able to pass a critical review. The study needs to be able to convince the critical reader that the researcher has indeed succeeded to get the methodology right regarding the analytical methods used, the interviewees, thought processes, and the conclusions. (Saldaña, 2014)
An important part of the trustworthiness evaluation is the evidence provided to support the conclusions drawn from the research. As qualitative research relies mostly on empirical and experimental data, much attention needs to be given to the language on how the findings are presented in the study. (Yin, 2011)

Yin (2003) discusses four dimensions of reliability and validity to ensure the trustworthiness of a study: construct validity, internal validity, external validity, and reliability.

Table 6. Validity and reliability in case studies. Adapted from Yin (2003).

Tests	Case study tactic	Phase of research in which tactic occurs
Construct validity	- Multiple sources of evidence - Establish chain of evidence - Have key informants review draft case study report	- Data collection - Data collection - Composition
Internal validity	- Do pattern-matching - Do explanation-building - Address rival explanations - Use logic models	- Data analysis - Data analysis - Data analysis - Data analysis
External validity	- Use theory in single-case studies	- Research design
Reliability	- Use case study protocol - Develop case study database	- Data collection - Data collection

For *construct validity*, the researcher should be able to form valid operational processes for the studied themes. *Internal validity* is related to the quality of the data analysis, where the researcher should be able to form reasonable causal relationships from the data. *External validity* is related to the researcher being able to establish a domain in which the study can be generalized. *Reliability* is the repeatability of the study and that if the research were to be repeated in the same manner, same results would occur. (Yin, 2003)

The earlier mentioned methods were applied to this research in order to reach a high level of validity and reliability. Multiple sources of evidence were utilized (internal data, interviews, work experience), informants have commented on the study, theories were utilized, and the research is carefully documented in order to guarantee repeatability. Interviews were conducted in the same format with all the interviewees and the author attempted to keep the discussion flow in a similar format as well, in order to ensure a high consistency amongst interviews. All interviews were recorded in order to be able to verify the collected data afterwards. Due to time-zone and geographical differences, the interviews were held at different times of the day. It must be noted, that the organization's unique conditions present for this research will likely not be available in the future and are hence unrepeatable in the exact same way.

The purpose of this chapter was to shed light on the research methods and strategy, data gathering methods, the case organization, and finally the trustworthiness of the research made. This in order to offer the reader an understanding on the steps taken in attempt to ensure the transparency of the research, as well as how the reliability of the study has been attempted to keep on a high level.

4. FINDINGS

This chapter will introduce the findings made from the gathered data from the case organization along with an analysis on the results in the light of presented academic research. The aim was to gain understanding on the function and how to contribute on the theoretical understanding on the topic with the gathered data. The organization's own goal is to develop in the mentioned field; hence the processes will be examined in the light of the research questions and theoretical lens.

The first purpose of the interviews and other data gathering was to find out how the quality team's organization functions in its current state. Second purpose for this was the co-creation of future development ideas. Topics studied here were team member's general knowledge on quality management theories and CI, how do the members' backgrounds support the quality work, how is management committed to the quality development, available resources, what sort of quality tools are being used currently, how is value creation perceived in the organization, and the take on CA and future development ideas that could be utilized to improve the function.

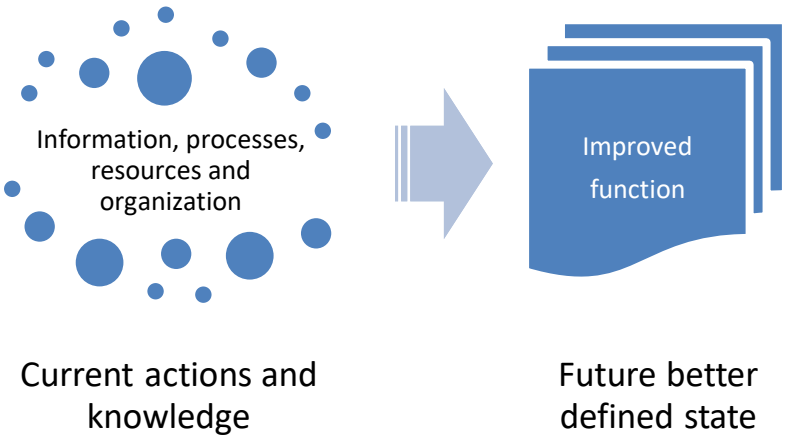

Figure 11. Desired future development.

It was possible to draw information on the front-end claims from the case company's internal reporting system. From the total claims of the front-end organization, a significant part is heavily concentrated on a few claim reasons. Figure 12. illustrates this system data and it indicates that 41% of total claims have been under the biggest cause code group from the beginning of the year 2019. Top three of the cause codes represent 67% of all the claims in the front-end organization, and hence in the quality team's scope. This does support the quality team's interview results on the need for more focus on value creating tasks, instead of focusing on less acute challenges. This is what the earlier introduced Pareto principle guides an organization to do in order to gain greater results in development work. One thing to be noted, is that the quality team does not have yet data on the costs of different claim reason codes, so financial evaluation cannot be prepared yet on this matter, but this observation takes only into account the number of claims per root cause. Another thing to be noted with this data, is that in the interviews, the QEs and manager stated that the cause codes might not be perfectly defined. This is why a deeper, more structured root cause analysis could benefit the accuracy of the data and aid the team to focus their efforts into the most value creating issues for the organization's customers. Quality management tools and methods would need to be chosen by the team to see what tools would benefit them most. Ideas for such tools will be introduced in the end of this study.

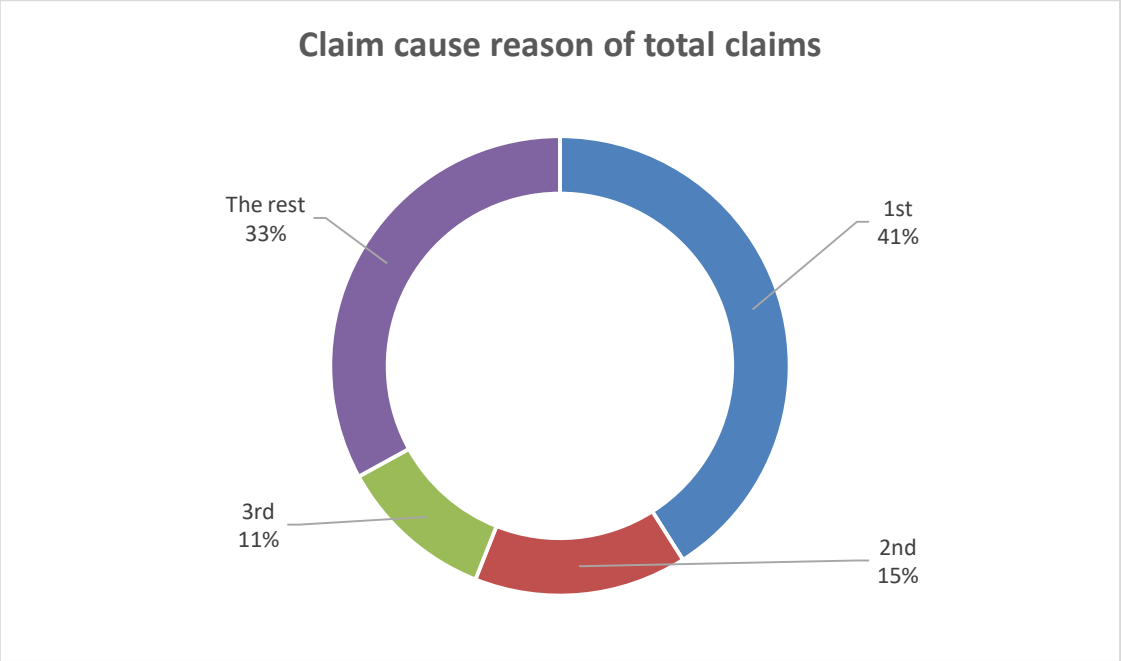

Figure 12. Claim cause reason of total claims.

From the company's reporting portal, it can be seen that the number of claims has been fluctuating since January 2018, as was reported by the whole quality team in the interviews. No clear development trend can be seen; hence, these data support the statement that the development of quality in the front-end context can be seen as plateauing. However, it must be noted that based on the interviews, multiple changes have been made and more understanding on quality has undeniably been created by the quality team within front-end. The challenge the team now faces, is to translate their actions into concrete results which can be verified by the data. Many of the steps taken so far have been to better understand the reasons behind the current quality defect reasons. Next the team would need to make impact on the figures, in order to possibly gain further resources.

Globally, the claim spread globally is also rather uneven, but this can be due to dissimilar business volumes, customer types (few large vs. many small customers, field of business), as well as cultural differences (multiple different cultures per area vs. more uniform cultures per area). This poses a challenge for the quality team, as emphasized later in the interview with the quality team manager, in terms of creating global alignment within the

quality team on the most pressing challenges regardless of geographical or cultural area and differences.

4. Interviews

The interviews resulted in a thorough understanding on the matters related to the practical work and planning utilized for the development work in the case organization.

Findings indicated that the team lacks training regarding quality management theories, tools, and systems. Also, a lack of time to concentrate on the quality work was reported by the whole team. The team benefits from a steadfast commitment and passion for the work being done as well as strong support from each other as well as other stakeholders and upper management. Moreover, they have many development ideas ranging from very practical and feasible to very theoretical and demanding. However, the amount of resources is limited from the company's side, so not all the development ideas can be implemented, at least for the time being.

4.1.1. Team results

During the interviews, the team members seemed a bit confused on which of their role was being discussed from time to time. This can be seen as testament to the challenges of perception of the double role.

Backgrounds

QEs backgrounds proved out to be similar. All are experienced employees who have been with the company for multiple years, some in several different positions. Having worked extensively on the functions that they are now tasked to develop; they are experts in the field when it comes to practical know-how. The team members have all been requested or assigned to join the quality team due to their experience and suitability for the task. The longest experience of a QE within the quality team is nearly four years, while the most recent addition has joined the team six months prior to this study.

"(company manager) *said that OK, I know someone who might be interested, so that's how I joined." QE 1.*

"Around three to four years I've been a member of the team. I was just assigned to the task." QE 4.

Surprisingly, none of the QEs had any relevant scientific nor practical training on the field of quality management theories, systems nor tools. All QEs underlined their previous work experience in the front-end scope, as well as in other related functions within the company, as justification for their membership in the quality team. Only the latest addition to the team reported receiving a week long training for the QE role, which was facilitated by the quality team's TL. Even this training however was targeted to introduce the team's current approach to quality development to the newly joined QE, hence it cannot be said that the training was conducted under any QMS guidelines. From the interviews, it was visible that all QEs were interested in quality as a topic, most also in theoretical context, which can be seen as a good foundation for the future development work.

"...most of the things (skills) *I got regarding quality is my own experience as coordinator, through all the years..." QE 1.*

"I'm super interested actually (in quality development) *and ... after several years of practicing I mean, coordinator stuff, honestly speaking this quality role is very very interesting and I would like to do only that, you know." QE 3.*

Operational value creation, continuous improvement and quality

The team members have a very practical approach to the value creation that they do in their QE role. They see that the development work they conduct, generates value to the customers of the organization in decreasing the amount of claim reoccurrences, by actually taking preventive steps in this direction, making the processes more customer friendly and therefore increasing their satisfaction to the business they conduct. The work is also

focused on internal process development in order to filter out the possible problematic phases which run a risk of causing claims. The effectiveness of this work can be seen as questionable due to the limited structure applied to the development and root cause analysis work, as well as limited alignment on topics within the team.

> *"For customers it's mainly focusing on solutions, I mean for the quick ones ... the root cause analysis is granting a quicker handling time for the* (notification) *I would say, but also very customer focused solutions which is what customers want to see, you know." QE 3.*

> *"Well we're trying to implement proactive measures, to make the ordering process, quotation process and claims process easier for the customer. We're trying to prevent the claims before they happen. We're instructing everybody to not to put anything in the system unless you have clear and concise information from the customer, which will then obviously prevent the claim at the back-end." QE 4.*

The company benefits from the work in terms of operational excellence, as processes become more transparent and faster, have less errors, less wastes, and as a result efficiency is increased. This lessens the amount of resources the organization needs to spend on handling claims. By decreasing the total amount of the claims received, the company saves money and resources, as such will not be needed to mend earlier quality issues. The quality team also takes charge of issues that would be left without ownership otherwise and promotes their solving efforts, thus aligning the whole extended organization for more value and improved quality. This operation creates value as the "leaks" in processes are better defined and structured. These development points align well with the competitive priorities, introduced in chapter two.

> *"One of the things for the company, we also touch challenges that everybody else is a bit in-between, so somebody takes responsibility. Because it's a big company, and we then try to find the correct departments or maybe influencers to get things changed quicker." QE 1.*

"For the company obviously will be, each claim runs a cost for man hours, freights, what not. So, by doing these proactive measures we're preventing extra expenses for the company." QE 4.

The QEs influence the front-end quality in numerous ways, such as by organizing trainings, monthly quality meetings, root cause analysis, intra-organizational cooperation activities, listening and advising colleagues in the realm of quality development. The activities may be numerous, but they all rely heavily on communication; verbal and written. The team also leads by example, by guiding colleagues in the field of quality improvement, by showing example with their own actions on the same organizational level. Cooperation with corporate claims team has already increased the common knowledge of these two teams, making the root cause analysis more fluid.

"I always try to motivate others with my own motivation. I always think that people need to be heard, not only give them work, but also listen to their opinions, so that somebody creates value for their opinions. So what I try to do is always listen and take their opinion and let them think a bit deeper and challenge them again, like have you thought about this, not passing it on, but what can they do themselves to get better and understand." QE 2.

"...what I think is paying off is to always speak very frankly without hiding mistakes or my personal point of view and being loyal to the colleagues is a very very good point." QE 3.

The tools and methods utilized by the team currently, are not highly structured. The only tool from the quality management toolbox all QEs had used is the five whys method. Also, the cause and effect diagram (Ishikawa diagram in the interview) was mentioned by a QE, but the use of it did not seem familiar. There were mixed feelings regarding the five whys method, ranging from struggling with it to not seeing the need for its use. The tool was also seen as too stiff and time consuming, but also valuable in terms of bringing structure to the work. Other things that could be considered as tools that the team uses are the company's internal reporting system and ad-hoc root cause analysis. It was apparent,

that the team would need and, at least most members, appreciate more structure to their development work in the form of quality management practices. The current situation is that due to the lack of training in the field of quality management, the QEs do not know enough on the methods and tools which would bring this structure and likely contribute to the productivity of the work. Suggestions for potential approaches to this matter will be introduced later in this thesis.

> *"I have not really used it* (five whys) *so much, but it is also what we had in the workshop, I think you attended it, we had a big discussion about having correct cost codes and how to analyze it in a perfect manner, to be honest I'm actually recently also using it a lot and I'm still struggling it to get the correct causes and define really the ones." QE 1.*

> *"We use five whys when it's applicable and time appropriate. No lean, no nothing."* QE 4.

It was clear that the team's current work set-up is not highly structured, nor defined according to any QMS. There is however good understanding on the potential benefits, such as adding understanding, creating more value, or introducing more structure to the work, along with quality management practices. Potential development paths were mentioned, such as the combination of the practical know-how of the quality team to the theoretical quality management know-how of corporate quality department. The value creation potential was also recognized in the interviews, which can be seen as a positive sign for future development to this direction.

> *"I think it does, the thing is that we're not there yet, is not saying that we haven't created value yet. Because before we didn't even do it yet, I think if I look at a few cases … these would be claims which would continue forever, no we can have a set-up and work on it." QE 1.*

"I think it (quality tool value creation) *starts with the rich understanding, then it's a bit hard to get things changed in this organization. You also create understanding for each other I think… Better knowledge of what people are doing and how and why things are happening, so…" QE 2.*

"Yes (the tools add value)*, because you proceed in a more structured way if you have a technique let's say in the end. You can avoid waste and focus to the point. So that's for sure. Of course, we are not that technical people in this sense I mean and would be nice maybe to approach again* (claims) *team to see the perspective they are looking at the claims. That would be very interesting." QE 3.*

Regarding the progress of development, or lack of it, the QEs were relatively single-minded. All see that development is proceeding, but the pace is so slow, or the results are not verifiable by claim data, that it can be said that the development is plateauing. It must be noted that the data always trails in the past, so the developments already made have not necessarily had the chance to prove their worth yet. QEs feel that their development efforts are limited by the organization's resources, which would be needed for software development as well as time resources.

"I think we're progressing as I mentioned earlier, were not there yet. We I think it's also taken seriously by management, also I can see that they take so much time to make a workshop for a week and everyone's involved, so it's been taken seriously." QE 1.

"We are not standing still I think; in the last two - three years the team has faced people are more aware and people are more quality minded. The only thing is that it's still humans, we still have some manual processes and influence from the outside, so I think to solve the smaller problems due to money problems or automations, it will take a while before we can say that everything will be solved soon, but yeah, it's a big organization so everything is about money. Automation will cost money… what I really think sometimes is that we come up with ideas, we contacted groups so the responsible teams, and OK there are other views than what

we have, so sometimes it's very hard to get our opinion or our way of through or convince someone else about it." QE 2.

"OK, if you look at the figures and numbers on a global level, I would say that it is a bit stable. (Claims) *actually are not decreasing as expected." QE 3.*

"Yes, we're making progress. Is it as fast as I want it to be? No. So am I spinning my wheels? Yes, kind of, but I'm still moving kind of forwards slowly. I'm not stuck, but it's not as fast as I would like it to go. Make a real impact. We should be treated with higher priority." QE 4.

When discussing the biggest cause of claims, the opinions are quite aligned. All state that *human error* is one main cause. The reasons for this are listed as lack of training, lack of understanding, too high workload (lack of concentration), too many interruptions during work, having too many locations for information, constantly changing instructions, fractured data, lacking quality of communication, and time constraints. Another main issue, as observed from the interviews, was the *quality of the data* that the whole organization utilizes, known as master-data. Operations are being run based on partly expired information, certain members of the organization fail to update vital data into the system, making the availability of correct data under threat. Hence, the organization's trust in the data is eroded and can then lead to inefficiencies due to unnecessary double checks and technical identification tasks.

"The biggest cause in front-end I think we still have a problem with (master-data) *not updated. So, the material needs to be updated correctly." QE 1.*

"I think it's by working too fast. People are (over loaded)*, people have a lot to do, it* (way of working) *is always also changing so the organization is changing so people need to adapt, and that will also take time. And due to this work pressure, things of say customer master-data, customer changes, they will not be changed but they will re-write down on a paper, and then somebody knows, but the other one does not know, and yeah, this is I think a big problem. Also related to old*

ways of working, differences between (departments)*, countries… We all want to* (be) *one team, one goal, but it's everywhere different in practice." QE 2.*

"I would say it's the human error, yes. Some of it has to do with getting (information collected) *correctly, and if you are under time constraints or high workload, and the information is somewhere mumbled in the text, like this big* (small)*, and you tend to overlook things. It is a human thing to do." QE 4.*

Regarding the split role of quality expert and senior coordinator, most of the QEs were satisfied with their role. However, three out of four were eager to start working full-time on quality matters and saw that the current 50 – 50 time-split between the roles did not allow them to concentrate on the root cause analysis and other development tasks sufficiently. One QE mentioned specifically that ending the coordination work was not favorable, due to the added professional understanding and satisfaction that the QE gets from getting to work with customers in an operational context. This particular QE saw, that the coordination role contributes significantly on the value created of the quality team members, due to having up-to-date understanding on potential root causes of claims due to in-depth first-hand knowledge of the everyday challenges the front-end scope faces daily. The majority of the QEs believed that they could contribute more value and develop quality more, if they could focus full-time on the quality development role. This due to having a possibility to better conduct in-depth root cause analysis on more claims and hopefully find more relevant solutions, with efficient corrective actions. There are also differences on workload per QE. Some have lighter coordination workloads, thus making it easier to combine the quality development role. This seemed to be in the light of the interviews mostly due to their line management's commitment to the quality team's work, as well as local resources and workload. Also, local corporate target setting contributes to the different levels of workload experienced per QE.

"I would like to keep the double role, biggest reason being that the coordinator work gives you the practical knowledge and you keep in taps with the field, if you become a quality expert only, then you become an outsider. Then you lose the touch, you don't know how it in reality works. That is my opinion." QE 1.

"Yes (not too much workload)*, but this is also due to my* (line management) *and I don't have any customers at the moment, that are allocated to me. … So yes, this quality expert - senior coordinator role, I can combine it pretty well at the moment. On paper 50 - 50, but I think it is more 75 quality expert and 25 coordinator role. But in the quality role and the senior coordinator role I also have the key user role..." QE 2.*

"Yes, I like it (double role)*. … Having the experience of the coordinator is the background to understand all the real cases and the several scenarios I jump into, that's for sure. I don't have training for being* (QE)*… knowledge is coming from the field, but this QE role is, I mean I like it so much, and of course I got a bit frustrated when … a new urgency comes in and you have to stop all the root cause analysis you're performing, all the quality stuff, because in the end still in this mixed role, customer has his or her weight." QE 3.*

"It should be full-time. That (five whys) *is a very time consuming task, yet if you do it right now with everything else going on, you keep it on in-box session or I need to handle this first before I do anything else, because the order book, because the revenue, because whatever. You cannot focus, you cannot be creative. Let's say if you have 2 min, let's be creative for 2 min. It doesn't work like that. So, if you're doing quality, it should be a full-time thing to actually come up with ideas. Maybe sketch them out, do a flow-chart... Right now, it's 5%* (time allocation) *on quality. It is to meet the quarterly budget." QE 4.*

The team's commitment level was considered by the whole team as stellar. All are interested in the topic and feel that the work that they do creates value for the organization and contributes to their professional development. Team members support each other and have a good team spirit, regardless of their geographical distance and time-zone difference. Also, it was clear that the three longer time members of the quality team did share a special bond, due to their relationship from the team. The demotivational aspect that came through from the interviews was that the lack of resources, time resources and

funds, was clearly on everyone's mind. The QEs have rarely a chance to meet their stakeholders and this limits the influencer role they are tasked to pursue. Still, all were ready to go the extra mile for their QE role by doing for example overtime.

> *"It's very good, it's super high. Apart from me, I see a lot of commitment from my colleagues, and this is fantastic because it is a source of energy for us, so it's super good." QE 3.*

The team's pros and cons, as informed by the QEs:

Strengths: Commitment, motivation, communication, work experience in the field, collaboration with other stakeholders, passion for finding solutions, specific areas of expertise, and close relationship with the colleagues in coordination teams due to belonging to them.

Weaknesses: Over analysis, team focus points sometimes too internal, many ideas – not prioritizing them, not all product lines under their scope, lack of authorization for system changes, bureaucratical constraints, lack of alignment inside the team, and lack of resources.

> *"Commitment, experience, people know what they're doing, know analysis, know how to see it. Weakness could be that we might sometimes go a little bit all our own ways, so not enough alignment, so we need to align more." QE 1.*

> *"I think the strengths are that we are full of motivation work experience in the coordinator roles, we also know how it is "on the floor", I think that people really know what's happening, and they hear also the opinions what they are doing, so we are not behind the rest, we're still the same as the rest, so we are still in the team. Weaknesses are that we have many ideas, but sometimes we lose the focus to close one, so then we have five, six, seven new ideas again and nothing gets really worked out to the end." QE 2.*

"I would say that as weaknesses, it's the time allocated for this role. Which on paper is 50% coordinator and 50% QE. But it's never so good balanced, and sometimes to balance, it requires some overtime hours spent here, so also being a coordinator you're always very distracted by… OK, not the offers and orders because you can decide to do half-day customer requests and half day quality stuff, but in case you receive two urgent requests, all the other will be forgotten. So, this is, and another strength would be for sure the commitment, the energy we put into this and also people specialized in something. So, I mean it's a good melting pot of experience and background all of us have." QE 3.

Management and organizational discussion

The team's take on their management is unanimously positive. The management structure of the team members is fairly complex, due to an unusual reporting line arrangement. The TL has no earlier leadership experience, so this is the first time the person has been put in a position of lead. The team feels that the manager and TL are handling their tasks well, even if the role of the TL, nor the need for such, was not necessarily embraced whole heartedly by all the members of the team. There was discussion on the need for such, even if the QEs did acknowledge that the TL likely brings structure to their work and supports the manager as a stand-in and in administrative tasks. One QE reported not to have known that the team had a TL, which was a peculiar piece of information.

"Yes, yeah for me it looks good. It's still more the team than then being managed really." QE 1.

"We get full support from management. (team manager) *and my managers here are all like yes, full back up, everything is good. Then again, they are also constrained by have to jump through hoops, have to set up meetings… I had no idea that* (team leader) *was team leader." QE 4.*

The team enjoys mostly solid support from management and their colleagues and has mainly sufficient resources to perform their daily tasks. Some stakeholders were reported

to respond slowly to the different requests that the QEs might reach out to. However, all QEs reported that it was hard for them to acquire resources to get their development ideas approved, such as system updates, trainings which involve costs to the organization, travel and most importantly the time resources they have allocated for their quality work. The team did not have access to a report which would make it possible for them to define an average value per claim, which would be important for the team to indicate the value creation and waste removal potential of claim reoccurrence removal projects.

"So, the support is there, the resources that I think then I really could come back to the workshop in March. Looking at cost codes and changing the system etc., so it has been taken very seriously. That is my feeling." QE 1.

"I noticed that management is really interested in what we are doing so the support and is quite good, I think. How it works a bit is that, (team manager) *take it to the management meetings, our findings, and yeah there's always coming structural feedback or another challenge for us to think of. So, I think that they are supporting us quite well. For the resources, sometimes it's really of course difficult due to people still doing their own work in between or other work… From my point of view if I have, if I ask my* (line manager) *something, it's no problem at all to join a meeting or whatever." QE 2.*

"Yes, I mean we have a good level of support. Although for specific cases we noticed a slow feedback from management, I mean not from management, it was for instance I have a case, we realized that we used to have in the past a lot of claims due to (reason). *I mean, we are understood by our stakeholders let's say, but things are not moving that fast I would say." QE 3.*

"So, support from our management, our team leaders, our manager, (former sponsor) *even when was still doing it. Yes, good support. They like the ideas we send, but then it stops most of the time there as they face a wall and they have to climb this wall or go right through it. Resources the quality team has… again, if it were full-time, we would be OK." QE 4.*

The objectives of the team were not answered straightforwardly. Some QEs had a clear answer to this question straight away, some did not. The team has a general target of reducing the number of claims to half of their current state, while offering solutions to prevent reoccurrences. Another team level objective is to spread quality mind-set in the organization and promote cooperation between different teams horizontally as well as vertically. The team's manager is working on a benchmarking to develop the current goal setting for the team. On an individual level, the QEs have KPIs from their line organization, which has been determined outside the quality team. Value creation in this context has not necessarily been considered outside of the set objectives, which would benefit the organization's customer as well as itself. Same applies to customer satisfaction; it is seen that if objectives are met, customer satisfaction will increase. This could be a focal point for future development.

> *"This is a good one. Actually, the objectives of the team setting, this is for* (team manager) *really working on and to benchmark what we're doing.* (Team manager) *always asks for the quality team's inputs, if we have something, what's happening, what we've achieved, what's not going well and that we indicate that's also being under attention by the management team, so that's a bit objectives. Benchmarking ourselves is a bit objective setting." QE 1.*

> *"Yeah, the target was set at reducing claims by* (target %)*, which is a lot. But targets are now on the* (%) *in front-end." QE 2.*

> *"No, I would say that we go along with KPIs of the coordinators. But I don't know about the other guys what did they decide to do. Of course, the decrease on a global level of the claims, we should reach, but if you talk about front-end, we already had some good signs, from the field. And we are also trying to spread this kind of behavior* (quality mind-set) *let's say…" QE 3.*

The current structure of the quality team was viewed by the QE's mostly as a good structure for the function the team serves at the moment. A need for change is recognized, if

the scope of the team would grow in the future. According to the team's answers, most likely the team would manage far into the future with four full-time employees and the team manager. It must be noted that one QE mentioned here that, the part-time nature of team is preferable, while all others would rather move to a full-time function. One thing that was mentioned as a compromising structure, was the reporting line. This is linked to the fact that the QEs can have four managers simultaneously (due to a matrix organization), as well as to the changes happening in the organization outside the quality team. One QE specifically mentioned that belonging to the local reporting structure was favorable, in order to be a part of the local group in a social sense. Also, a fact that was mentioned regarding the organizational structure was that the quality team would benefit from more empowerment, giving them wider influencing capabilities.

"I think for now it's good, for the future I am not sure yet. It (quality team scope) *might become bigger, it might become wider, I mean quality, we are now focusing completely on notifications front-end claims. Maybe in the future we might be focusing on notifications on the whole organization, with* (other team) *and maybe we can also cooperate with them and finding ways to get more focus on our customers." QE 1.*

"I think it's good that we are now in the same structure as the (related function). *We are now in the same team, what only I think that the challenges are that the same, the reporting line is not really known now. … I think that it's good that we're a small team and that we only have one reporting line, I think that's a good thing. So, it's not that we have to report to everybody, but only to* (team manager) *and* (team manager) *will report to the rest. If I could change the role, I would say that we have more empowerment in the changes." QE 2.*

"Besides being full-time… Ok, no I think the set-up is fine. It does not bother me, because if you were to take me out of the reporting structure (location)*, I would no longer be part of the group so to speak, you know." QE 4.*

Future development

The main challenges the team saw they have regarding future quality improvement and value creation were diverse. It was obvious from the answers that the team had been thinking about this topic earlier. Every QE mentioned a different main challenge in this context. The first one is focusing on relevant value creating matters and trying to find ways to not having to dive deep into the claims. Another is the need for further mind-set alignment amongst the organization for quality. Not all parts of the front-end organization see the value in investing time in process development (e.g. way of working, updating information in systems) upstream in order to have less quality defects downstream. Third mentioned challenge is the amount of resources the quality team has at its disposal, mainly budgetary constraints and the limited time resource of QEs. The final challenge which was mentioned was the change pace of the organization. There are too many changes, occurring too fast, too often and the team members are lacking tools to communicate these changes within the organization. And regarding the changes, automating the process changes would decrease the need for the employees to implement changes from memory, nor multiple locations where the instructions are stored.

> *"So the first thing is alignment, globally, with other entities outside* (organization)*, this is the first thing, second thing is getting the data correct, the cost codes, so we have, we do all the same also and we have for example* (most common cause code) *is not a cause, it's a result, these things need to be changed. Then we went so far that we have so many root causes that we are getting so detailed info that we have 20 reasons, and everything is causing like 2% of the claims. That's the second challenge. Having a good overview and having all these root causes created in the system." QE 1.*

> *"The main challenge is to get the coordinators mind-set into* (quality) *if I arrange this background work that costs time with master-data or automation, then it will benefit them in the long term. I think that people are a bit hiding behind they're busy and that "I need to do this or that, I don't have the time for that". They don't*

see the benefit of thinking ahead and investing time in their own customers, or way of working, or… That is the main thing." QE 2.

"I am a bit afraid that budgets are the big issue, I mean money, we are required to do a lot of business cases, so I would say money. And also, the fact to have us as a full-time dedicated only on quality, would mean to have another person to do my job as coordinator, so I see money." QE 3.

"OK… they (employees in front-end) *have too many changes, too fast, too often and all we can do in quality or our key user achieve is, is shoot up a message that "hey, this has changed, please, remember this the next time". Because development in the system itself does not allow us to be this reactive to have it done within the same day." QE 4.*

The QEs see that more value could be created within their scope. The following were offered as the key improvements, that would from the team's perspective add to their value creation. *Basics need to be strengthened*, as in the data in the organization's systems needs to be up to date and in easy to understand format. This would contribute to the quality work being done in the form of making the work more approachable and interesting for the employees. *More influence and empowerment* for the quality team. Making it possible to implement changes faster, would aid in the quality team's capability to create value faster as well. *Alignment* within the team. Agree on bigger lines of development within the team, focal points that would be the same globally. Crafting a road-map for the team's development steps. Possible intra-team further specialization on important development topics, such as automation. *More interaction* with the front-end. Meetings face-to-face, providing full-time support on quality and quality development related matters globally. Having more weight in development efforts, such as in process development.

"This is the first thing, have the basics, the data right, make it understandable. … I mean get examples, make it so that the quality feels alive for other people, first in (coordination) *and also for sales and customer. Second thing I did but I did not present it myself, but colleague was in* (country) *last week and had a presentation*

and one of the things I created was from the template from the (claims) *team that they ask for more information and a lot of questions that are coming back. If you have a claim it takes longer to get the claim solved with which you are probably already in a rush, so if you follow this check list there is only a small chance that we come back to you asking for more information. That way I think that we already created more value with that." QE 1.*

"Maybe like I answered before, we have more influence and more (ERP) *rights to make change happen quicker. We are still of course waiting and relying on others instead of taking the lead. There is something where we can win more value." QE 2.*

"First of all, deciding what we should do for instance. … So, to know what we have to do, so having a good discussion the five of us together about business (quality team task)*, maybe we could also think about the fact to have specific tasks, for me could be* (area of expertise)*, for* (other QE) *could be* (area of expertise)*, something like that. So, whenever we jump into an issue, so we have an expert of the experts, so…" QE 3.*

"Full-time. More weight. Like if we're screaming, drop whatever you're doing, then you can go back to whatever else you were doing, because whatever we are screaming about costs money. If you don't prevent it from happening again, it will cost more money. … Supporting function let's say, in the technical side, could be aware of what we do and why we do it. And when we call, do it, no discussion, there should not be one." QE 4.

The QEs were slightly struggling with strategical thinking, as in order for their team to create CA for the organization with their efforts. It was clear from the data from the interviews, that the quality team does not have sufficient information on the competition's capabilities on the field to really compare to their own capabilities. Hence, benchmarking the competition was seen as a way to recognize the strong points of the quality team, and the whole organization and equally spotting development needs. Still, the whole company

is seen as a CA due to its solid reputation in the field and its resources to conduct quality development. Due to the case company's size, smaller competitors might not be able to respond to develop similar capabilities and offerings. Also, by looking into the processes and other internal matters, such as improvements in the work environment and ways of working, they can create CA and increase the value proposition for the customers. Bolder developments were also suggested, such as creating an application for quality related matters which could be utilized to handle claims more efficiently and track shipments while providing a near instantaneous communication link between the customer and the company. This is however a wider development project and would be outside the front-end scope, and the quality team could not lead this development. The team also suggested area specific specialties, which contradicts the management's vision of future developments being exclusively in a global context as well as focusing on select key matters.

> *"If you have good quality in processes, and you think if you ask the customer how to make it better, I believe we have a CA compared to* (smaller competitors) *especially, who are only selling.* (Externals) *say that parts quality is good but service not always, so there we should improve." QE 1.*

> *"I think that we are not looking only at the material quality and first time-right delivery but are also searching for internal challenges or internal changes to where the customer could benefit from things that we are doing. We'll also now see on the people, what can influence the people to have better work environments and work quality, which the customer can benefit from. I don't think all our competitors are doing this." QE 2.*

> *"It depends on the level of competition. If we go to the very slow section of our competitors, I'm sure they can't even think about having people dedicated to speed up processes or to see where the grey areas are, so, I mean* (the case company) *is already the CA in this kind of roles. But maybe improving, maybe giving some strength to this* (claim) *team maybe merging the two teams, being a very powerful entity in* (organization) *that could be something different." QE 3.*

The development ideas for further quality development and on how to counter plateauing were on the lines as mentioned before in the interviews. Making the data clear and most importantly correct, would lessen the need to get back to it constantly, therefore releasing resources to other purposes. Also, there is still need for further alignment in the organization, so there is a need for workshops, discussions, meetings, traveling to locations, and plenty of related work. The organization would need to be benchmarked against the competition to get a comparison point on the capabilities. It would also need to recognize its members better who contribute to the development activities and create ways to get ideas quickly to evaluation. The scope of the team's efforts could be widened in the future to get a bigger impact with the actions being conducted. The team would benefit from better acknowledgement from the organization, so marketing the team's activities, e.g. in a roadshow, could be beneficial. The team could approach problems from a different angle, by possibly focusing on the positive effects of the already done actions which could bring more motivation to the employees. Agreeing on a few big topics within the quality team, and see them get processed and closed, which would release mental and physical resources for other purposes, instead of having multiple on-going project simultaneously. Development should be conducted together with the teams on-site, in order to demonstrate the actions being taken, gain a more holistic view on the issues and reach better recognition in the teams. Once again, more time to focus on the topics is mentioned. This to reach deeper root cause analyses and give time for further development tasks. The team wished for more autonomy. This would apply to making ERP changes in minor scope autonomously, while leaving global mass updates for specialists.

> *"First of all, … you need to get the basics right, you need time for it, you need to get it very clear, take like six months to one year, to make it perfectly fine. Once you have that all ready, the data, you don't have to come back anymore, but you need to take time for it, you need to discuss, like in the workshop. … Secondly, get it benchmarked, make sure that some actions are taken. I mean preventive actions are not usually the actions we have to take, but we have to indicate these, and follow-up that the preventive actions are taken by the teams etc. These are results and they are held accountable for and this is the second thing. The first thing is that bit longer term is to get the* (front-end) *and organization already perfectly in*

order, so we know what to do with the documents, the (master-data) *etc. and we can then bring it out to sales teams, to customers and to make it like a* (case company) *thing. And then it's shared and if you follow these paths, you are not plateauing very soon." QE 1.*

"What would help is that we also go travel to the teams. The local teams and make some sort of training where we do something together, where could demonstrate what we do, to make it more open to people. And that we also make sure that if the good ideas are coming from the people, the people also get recognition for this. Also, the closing of big topics, so that people feel that something changed." QE 2.

"More time to be used for the quality stuff, especially for the follow-up, I have a lot of tasks I start, and I don't even remember I have to close. I mean this is a lot of how people organize themselves, but also a matter of time. To make this be a job to cure (quality challenges)*, would be interesting and also giving people the chance to do something different you know, I mean, I think we all* (quality team) *would take a lot of energy from this decision in case if it will be decided." QE 3.*

"Be more autonomous. We would not be doing (development changes) *on mass basis, we would be doing it in individually when the claim comes and e.g. that this customer has this agreement of a 5% discount and everything, OK done." QE 4.*

When discussing BOS, the whole team was out of their comfort zone, which can be seen as understandable. All reacted with genuine interest in the thinking process, but clearly did not have past experience in looking at their work from this angle. Most saw that they could best utilize their skills in new arenas within the company, by possibly widening the scope of their work or by taking the formula for the team's work elsewhere in the company. This new arena would need to be chosen carefully in order for it to truly match the value that the team could bring. Mentioned arenas could be found in the realm of sales, sales support, account management, and technical teams. This could help spread the quality mind-set closer to the customers and functions critical for quality. A new arena could

also be process development, to join the decision process where global development projects are decided to help filter out the ones with the most impact on front-end. Meeting customers in the quality role could also be a new arena of entry, where the team would take a new kind of role in the education of customers and learning from them. This could add customer commitment by adding reciprocity to the customer - supplier relationship.

"More cooperation, make it broader, look at operational excellence, make it farther for operational excellence, but focus still on the areas which are important for us in the front-end and so still be part of the end thing and not becoming a quality team inside the whole organization that you have at some point, purchasing quality, warehouse quality, sales… because then you lose track, then you end up in a bureaucracy and then it will not be visible anymore. Stay focused." QE 1.

"I hope that, I think we as (organization) *should have like some sort of meeting or training or something with the sales account managers for example, sales support,* (technical team) *or whatever. So that people know a bit more that what we do, why we do it, especially the account managers that what they tell our customers. What's possible and what would benefit the customer, but also us." QE 2.*

"For instance, we are just for the front-end, but claims are coming from wherever, not just from front-end, not just (organization)*, or customer but I also mean like parts supply could have quality experts inside their organization, it might be that duplicate us somewhere else in other departments. … maybe we could extend our knowledge into parts supply and this kind of stuff, would mean to be very very into specific processes we really don't know." QE 3.*

"Sure, it can be applied anywhere. For example, we have our own colleagues from (subsidiary) *who takes care of* (product line) *and stuff, we also have* (subsidiary) *and they are separated. If customer orders from* (case company) *to be or if some* (subsidiary) *and no matter who processes the order, is it me or for* (subsidiary) *or* (subsidiary) *people, should be able to plug it in and off it goes." QE 4.*

Summary of team results

From the team's interviews, some conclusions can be made. Quality organizations of this type seem to suffer from lack of structure and know how in methods which could aid them to advance from plateauing progress in development. The methods exist, but their use is not familiar to the organizations and hence they are not actively seeked.

While the team has not been trained in the field of quality management theory, many of their challenges and ideas can be linked to theory. Also, value creation and competitive advantage were well understood by the team, and it was clear that they had considered their actions from this point of view.

It is apparent that many of the shortcomings of the team could be fought with structured quality management practices. By selecting a quality management system along with a select choice of tools, the organization could reach higher levels of structure in their operations.

4.1.2. Management results

Background

The manager of the quality team, notably not the line manager, has joined the team in January 2019, and the scope of the role has been enlarged from the original quality manager to manager of global quality and process. The person does not possess previous training in quality related matters and sees that the experience of 17 years in the company in related tasks has been educational regarding quality work. The previous tasks of the manager have been related to quality matters partially in the past in various positions in the front-end scope, from operational to management level. In this sense, the manager's background is very much aligned with the QEs.

> *"Not really, I have to say* (received quality training). *I'm now in* (case company)*, this year's going to be 17th year. I've always worked for* (business line)*, so always*

in the aftersales business. Formerly from a sales support point of view, then within (company)*, so managing people for the former* (area)*. So, the quality as a subject was one of the tasks within the role, but to be honest I didn't have a specific focus or education or background in this respect. Yeah, learning by doing, experience." Team manager.*

Operational value creation, continuous improvement and quality

According to the manager, the quality team creates value to customers of the company by improving the speed on which the organization can respond to issues that the customers might face, while informing them on the preventive actions taken to ensure that they will not reoccur. Thus, reoccurrence prevention is one of the main value creating tasks as well. Failure root cause analysis is the foundation of this work. The team directs the focus of the development of the organization based on their findings and attempts to communicate and translate the data into relevant format to stakeholders across the organization. The impact of the work is relevant for the company, as the front-end scope represents a significant part of the company's total business. Therefore, when the number of claims is reduced and the quality of operations is continuously developed, the cost related to them is minimized and hence benefits the business.

"Well, (customers' perspective) *we're heavily focusing now on spotting what the major cause of failures are, and specifically in these days we are analyzing our corrective actions, or what we used to call corrective actions. … And how we should then be able to make it visual, so to have some figures making up our statements, in order to be able to address where the real issues are in the respective departments and functions, within the whole organization. So, in a nutshell, the too main points are focus on speed and I think we are on the right track there, it's moving down in the right direction. Now we want to prevent the reoccurrence in the future. So, these two main things are then leading all our actions, I would say. Well,* (company's perspective) *there of course all our actions are as you know impacted in the overall target, as a* (company) *and of course the business is very heavy in the whole picture for* (company)*. So, in this respect when we can*

keep the claims down and especially with, we deny the cost of the claims and both the financial impact, but also the image impact sometimes, that will of course beneficial for the business in general." Team manager.

The ways of influencing the manager has are different than those of the QEs. QEs are very much into the details of quality challenges and development matters, hence the two top levels of the CI organizational levels. The manager's role is to run reports and pull data, conduct a preliminary analysis in order to find patterns or trigger points, and then inform the macro level findings for the QEs for micro level analysis. Similarly coordinating the team's work and keeping the QEs on target is a value creating task. Both, macro and micro level actions, create value but in different ways. Management and group level CI see different issues than individual level CI; only by combining these, optimal situational awareness can be achieved, and the quality development directed to address them. Consequently, the manager needs to balance the efforts between these points of view.

"OK, I'm also running reports and pulling out data on which I do some preliminary analysis, where I think I've found some patterns or triggers, then I give it to them for further analysis. So are my presumptions correct, so I'm taking a bit from a higher view, but when I see something could be further analyzed, I give it to them (QEs). *So, I'm kind of coordinating and giving the hints and yeah, do a bit macro level analysis as such. Sometimes though when you're are so detailed into the cases, you tend to narrow the picture, so maybe for you it's a very big issue, but in the overall picture it's not so impactful. So in that respect, it's both ways discussions and so I try to show them the big picture, so how would that fit or challenge them to, when they really feel passion for something like, OK build a business case, we need to have a strong statement behind if we want really to bring it forwards. This is also a part, as I see it, of people development in this sense, which I'm trying to help out with." Team manager.*

Regarding the biggest reason behind the claims that the team faces in management's view, master-data is mentioned. The biggest cause of the claims does not indicate the root cause accurately enough. This is what the team is attempting to clarify with its work, along with

the reason allocation. Categorizing root causes accurately would assist the quality development efforts, as actions could be targeted more precisely. These issues are linked to human errors, master-data inconsistencies, as well as mistakes made in other functions in the front-end scope. There is still much to be studied and learned regarding the root cause analysis, but development has already been made in this field under cooperation with other teams.

> *"Well, the biggest cause at the moment* (risk category) *and so it's* (biggest claim reason). *We just recently went deep into this case, and it came out that half of the cases received, in total from the beginning of this year we had* (number) *cases, half of them are related to incorrect customer master-data." Team manager.*

Management does recognize that the team does not approach claims with any mentionable quality development practices. There is a steadfast drive to make the quality team to take a step forward in this sense and introduce different scientific quality methods and tools into their work in order to add logic and structure to the team's work. It must be noted that the team does apply the tool 5whys from time to time, but this is not widely used. Also, the team is subject to KPIs, and some members utilize checklists. According to the manager, the front-end quality team might need the support of another quality team to push change to a scientific direction.

> *"We're now slowly introducing the logic and the concept, also to bring to light that we need to take a step forward eventually, and really approach with scientific methods, if we want to get the real cause of failure and we want to do a proper root cause analysis." Team manager.*

Development work in general is going in the right direction in the team, but management is not satisfied with the present pace of improvement. The reason for the pace is mainly the lack of time resources according to the manager. More resources are unlikely to be granted until solid results can be presented to upper management. The pace of improvement is challenging to track, as according to the manager, the scope of work constantly changes. This poses a challenge on tracking development of the parts of the organization

which are being introduced to the quality mind-set, as these change constantly as well. As an outcome of all this, the manager struggles to prove the team's achievements. Nevertheless, the team's efforts have been effective, as approximately 70% of organizations influenced are meeting their targets. Remaining 30% are being tackled along with local management by targeting trainings and making background changes. Hence, CI is occurring.

> *"Well, it's not developing at the speed we wish it would be, it's linked to the reason I was mentioning before, and people are only dedicated for half of their time. And unfortunately, until we are able to show consistent results, I do not have enough arguments to ask for more time allocation or resources. I think we're going in the right direction, but unfortunately, the scope behind keeps on changing, so you cannot really compare periods from before. Yes, this is hard to show even to my boss." Team manager.*

Value creation is a topic, which is brought up constantly by management within the team. The manager has emphasized in the team's bi-weekly meetings, that the QEs should constantly monitor if they are creating value with their tasks. The manager raised a concern regarding the QEs ability to focus on value creation in their quality work as operational tasks can draw attention from the development work.

Value creation is also attempted to be exhibited to externals or other stakeholders when management introduces the team's work. This to promote the quality mind-set and indicate consequences that bad quality can have on the whole organization and how countering this creates value. Value creation can be understood in multiple ways in this context, such as waste cutting, process development, information creation and cost saving.

> *"That's something I'm basically preaching in every bi-weekly meeting ... I try to link this to every practical action. I encourage always to think, yeah is this what I'm doing, what is the purpose. I think we made some steps ahead there as well. On the other hand I'm also a bit concerned that in some cases they are so dragged into the operational stuff, because of this split of their internal allocation*

that sometimes they kind of loose the focus and just try to do what they have to do, complete the task and job done. Because of the pressure they have to fulfil all the requirements, so in the time being there's no full serenity, that I'm now focused and try to have a plan, analysis behind, strategy behind. What I'm also doing in practice … I try to also show how I further present on the top or externally to the stakeholders what we are doing. So, I'm giving them a bit of a vision, more ahead." Team manager.

Biggest challenges for further quality improvement and value creation are seen as organizational. How to promote the topic of quality to stakeholders within the company, which are outside the quality team's influence capabilities, but their actions are reflected to the outcomes of the front-end business. Also, the part-time nature of the team limits its capabilities as mentioned before.

"Main challenges are I would say, more related to those coming from (less aligned areas). *So those claims are either coming from* (outside) *our organization, or from sales, coming from field service. So basically, how they can sell the stakeholder the matters to avoid reoccurrences, so this is their definitely biggest challenge. And then of course the time constraint, at least from a couple of QEs, they are heavily confirming that they don't have enough time to focus, as they wish they could do, but this has been addressed we see a bit how we can cope with the whole… I would say the biggest is to how lower down area and customer, which are out of our influence possibilities and try to still have good progress." Team manager.*

Management and organizational discussion

From the manager's perspective, the quality team's functionality is two tiered: first part of their role is to conduct root cause analysis and suggest as well as implement corrective actions to counter them, in order to fight reoccurring quality defects. In this sense they support other stakeholders in the organization. The second part is to act as quality ambassadors within the front-end organization and promote quality topics, quality thinking and

educate employees on quality. Work is done in the QEs own teams, quality meetings, trainings, and by contacting employees directly.

> *"We,* (quality team) *are the problem solvers for the claims regarding the front-end, so this area and customer defect locations, so they* (QEs) *are actually analyzing those claims and going through a root cause analysis and corrective actions, with the aim to avoid reoccurrence. ... In addition, the important function they have is to transfer the quality mind-set let's say within the organization, so keeping these quality cafés, showing the progresses of the actions we're doing, showing the results and so forth." Team manager.*

The structure of the team is not ideal from the team manager's perspective but does appreciate the existence of a TL. Part-time role limits the work being conducted, and full-time QEs would benefit development. Also, the reporting line should be within the quality team, instead of local team reporting line. Consequently, the manager sees the current role more as a coach than an actual manager. This topic splits the QEs; some would prefer a direct reporting line with the quality team, some would not. The intra-team reporting line could support the change towards a truly global quality organization and moving away from legacy area-based model, with area specific process peculiarities. Focus of the team would rise from micro to a more macro level. Quality and process developments from special cases to global developments. QEs are still learning the global point of view, but their partly local approach will need to change in the future. Local support is still required, but actions should target the global organization. Synergies would be available with other functions in the reporting line and would then create value. This would fit the management's future vision. Customers require local understanding and approach, but the company's processes should not be location specific.

> *"As in all groups, it's a very key figure* (TL) *in the structure, as a TL also coordinates, makes sure things proceed, so definitely as per any other team we've established in the expertise model, we have a TL there. Personally, I would believe now besides the time allocation, so it's in reality two people full-time* (4*50%)*, I would prefer them to report to me directly. As sometimes I feel, you know, I can instruct*

them, I can encourage them, motivate them, but we are more working as a team now, as kind of peers… I feel more like a coach of the team than the manager." Team manager.

Regarding quality team management as a task, the team manager does not actually manage the team in the traditional sense, as QEs do not report to the team manager. The manager coordinates the team's activities by collaborating with the QEs who report to their line managers and by crafting strategy to tackle the pressing development issues at hand. As reporting lines run by business, QEs can have several different managers. As the QE role is only 50% quality development, the manager can only coach, advise and talk to the QEs' line managers in order to impact the quality development work. The manager knew most of the QEs from before, so it was easy to start leading the team.

"Right now, all I can do, is coach them a bit, advise, or talk to their line managers. To give my comments, so it's a bit different. Limited. The plus is that I knew them all from before, so the relationship was already established…" Team manager.

The team provides excellent support for the manager in the tasks they face. QEs drive to succeed makes the manager's role easier and this is very much appreciated. The team has a good spirit.

"They (QEs) *are committed, they are motivated. Even though they might not have enough time, they really want to do it. It keeps us a live at the moment. I have great support, I cannot complain." Team manager.*

QEs are very committed to their work. 75% of the QEs would, according to the manager, be willing to take the quality role full-time, the remaining 25% only likely. But this will not happen before they deliver concrete results, that can be presented to upper management.

"¾ would like to do this full-time. They have clearly said it to their line managers. The constraint is at this very moment, is that if we are unable to show the results, it's difficult also to justify full-time positions for that." Team manager.

The target setting from upper management is on a general level. The number of claims needs to reduce. It has already reduced, but this is hard to measure due to changes in scope. The manager sees that they are close to set objectives, but their quality measurement tools would need to be developed in order to verify this. This is work in progress as the manager is collaborating with a group of other managers in the field to develop relevant measurement tools for this function. Upper management monitor the claim percentage and lead times, as well as from a cost point of view, but this measurement is approximate due to not having reliable data available on the actual costs of the claims.

"Lower down this (%)*, they want to have less. The point I'm trying to make since the beginning since I got this role, is fine we have these measurements now this year, since the last year, we were higher up, we were around +*(figure)*% six years back... We managed to take it down to* (below target)*, now we had acquired or integrated other business lines, this year it's still* (original target) *the target." Team manager.*

The quality team's strategy for development actions is handed down from upper management and adjusted also with the group of managers mentioned earlier with the team manager. This strategy is then brought by the manager to the QEs whose task is to implement it. Due to this approach, the strategy crafting has been closer to the QEs this year and they feel more ownership over the development strategy.

"Well the strategy is, I deliver, so I forward them (QEs) *the strategy so what is coming from* (upper) *management team, and from this group I was just mentioning, so this group is specifically working on the* (corporate) *strategy for the quality stream." Team manager.*

The value created by the quality team is communicated to the upper management in a reciprocal manner, so that the actions taken are discussed and agreed on. The reporting is then to indicate the actual developments going on.

> *"I have to say that I'm thinking a bit what we have there in the strategy, it goes a bit both ways. We as managers when we met, we want to put down this strategy for quality, we were very projected into the future, what is that we don't have, what we'd like to implement. Then we got the comment from upper management, what are you doing now." Team manager.*

The manager enjoys the role and feels that it is a good opportunity to learn while being a challenge professionally. As mentioned, the manager is new to quality management, at least in a theoretical scope, so a steep learning curve is taking place. The manager is also pleased with the amount of information available in the company on the topic.

> *"For me personally, I'm also learning, as I've never been deeply tackling the quality side as I'm doing. So I'm also learning several aspects I was ignoring before, e.g. these ISO specifications or all the available material in* (intranet) *regarding the quality directives, quality organization at corporate level, but even if we drill it down to our organization, also learning what the colleagues simply in the other functions are doing about quality…" Team manager.*

The objectives for the team are set per QE in individual development discussions, which are tied to the general target setting of front-end. Value creation nor customer satisfaction are not separately considered here, but the customers appreciate the added speed of the processes. The recognition of issues also creates trust in the customers. Thus, development is proceeding, results are achieved, and value is created in the process. Major accomplishments are yet to actualize, however.

> *"This is a good point, though again the objectives regarding the individual targets are set in their individual DDs by their line managers. And as far as I know, the general target that was signed for all PCM coordinators, is this 0,9% at front-*

end. … I believe that the customer satisfaction when it comes to claims handling is just the speed in the first place. The other point I think that's good, and we're recognized from the customer's that we take responsibility and ownership, so they know that if they have a problem, (the company) there. It's work in progress I would say." Team manager.

Future development

If the manager could develop the team immediately to reach better results in quality development and counter plateauing, the methods would be multiple. First would be the global quality mind-set. This would help tackle issues of the whole organization. Prioritization would be the second one. Focus on value creating changes instead of micro level process development, this could be by selecting e.g. top three most impacting actions and seeing them through. Third would be the development of quality topic's communication within the organization. Data should be translated into interesting format for impact. This would also apply to communicating the team's actions across the organization on social media and other tools. Lastly, the team should take a step forward with quality management tools and methods, in order to introduce structure to the work and benefit from best practices. The manager would like to personally spend more time on the field with QEs to deeper understand the challenges there.

"What I'm trying to do still, this very moment is to develop this global mind-set. So really tackle issues from a wider perspective and make it so that whatever we propose or try to develop and fit in global level. And then also a bit helping them (QEs) *to prioritize, maybe something I see that could be developed at the moment is this time management and prioritization. Sometimes they get lost in very little details, so keep their helicopter view to help them turn towards the right things at the right time." Team manager.*

For the team to create more value in its work it should communicate and influence more stakeholders. Alignment is needed, as currently QEs have independent ways of conducting trainings, quality meetings, and root cause analysis for example. Hence, best practices

could be mapped and then crafted into a global way of working for the quality team. This would also add value to the team's internal stand-in readiness.

> *"I was planning to have this as discussion point and bring a bit the feedbacks and see how we can reformulate the format of these quality cafés. I was thinking that I should first go and see for one time. Because, what I know for sure, right now they are running it in four different ways." Team manager.*

The manager had not considered CA in this context, but it did raise interest. This topic will be raised in the benchmarking taking place in the quality team's context. One thought was that online mentality would be something that the competition does not offer, and it would speed up processes. The manager will be looking into this deeper. The work on this has already begun but is not implemented yet. This would be better in multiple ways than current way of working, with more accurate data, more user friendly, faster and mutually beneficial for the customer and the company.

> *"That's a good one, honestly, I haven't had the time to think about it in this month, but I will look deeper into it with the benchmark with other companies in the industry. It's a very interesting point. But what I think we could be competitive on, is further development of this online mentality. So, I'm working on that, I think this could be a competitive advantage." Team manager.*

The manager had not thought about new arenas of competition for the quality team in the BOS point of view. The person liked the idea and planned to bring it to brainstorming sessions within the organization. One idea was that the script of the quality team could be implemented in other business areas where similar functions are yet to exist. This might be included in a future quality development road map, which is being developed currently.

> *"That's honestly, I haven't totally thought about. As we're still in the middle of the brainstorming. No, it's a good one, it's a long-term strategy you know. The step to this direction* (BOS) *is to get the people together, create a mapping, who's*

doing what and how, and see whether we have the low hanging fruits where we can easily align or integrate." Team manager.

Summary of management results

The management's results indicate similar results as the ones from the team. It seems that quality management practices have been widely overlooked in a quality organization of this type. Potential benefits are the added structure, ready to implement tools and increased improvement capabilities for an organization. These all would be relatively easy to implement and adopt to an organization of this type, and could likely augment significantly the CA, CI and value creation potential from the reference level.

As the background of the team's management is similar to the one of the team members, it is no wonder that the quality management practices are not well-known. The strategic thinking related to the theories presented can be linked to the thinking of the team manager on how to develop the team's operations. It is clear that the manager is driven towards structured development for the team. This will likely lead to the team to start deploying quality management practices in the near future.

4.1.3. Summary of the interviews

Regarding the topics discussed in the interviews, most were answered in quite uniform manner by all the interviewees. This stands testament to the good cohesion within the team. All interviewees agreed that quality management practices could bring more value to their operations. They would likely also contribute to the progression of CQI, as by building a scientific approach to process the challenges faced, therefore combatting development plateauing.

CA is a topic that has not been widely discussed within the team and the interviews shed light on the team's views on their possible current CAs and their validity against the competition. Still, there was interest in this topic, and it is likely that CA will be considered

more in the organization. Notably, the same applies to the BOS discussion. All interviewees were interested in the thinking behind BOS but were not familiar to it.

Based on the interviews, the biggest challenge for the organization will be to find a structure that matches the demands of the everyday work, available resources, and the target setting given from upper management.

A thematic matrix on the key themes that were discussed in the interviews is presented in table 7.

Table 7. Thematic matrix on key themes.

Themes				
Interviewee	Value creation with quality	Continuous improvement	QMS and quality tools	Future
1	*"…the thing is that we're not there yet, is not saying that we haven't created value yet."*	*"I think we're progressing as I mentioned earlier, were not there yet."*	*"…the first thing is alignment, globally, with other entities outside (organization), this is the first thing, second thing is getting the data correct… "*	*"If you look at quality and CA, I need to know what are the* (other companies) *doing, and I need to ask the customer to ask them hey, what do you think is good about* (case company)*."*
2	*"…we are looking at the quantities and reoccurrences, maybe the process, trainings so… we have a better overview what's happening over these small mistakes, but still have influence on the customer."*	*"We are not standing still I think; in the last two-three years the team has faced people are more aware and people are more quality minded."*	*"I believe that they are very beneficial if you have a correct group of people from different backgrounds."*	*"…*(if) *we have more influence and more* (system) *rights to make change happen quicker. We are still of course waiting and relying on others instead of taking the lead. There's something where we can win more value. "*

3	*"… we try to reach a concrete fix to see and to focus on where the process is leaking, so that's why we, whenever we see something going wrong, we start approaching several different departments that we know can help us and… changing it in the way we see… it should be done."*	*"…if you look at the figures and numbers on a global level, I would say that it is a bit stable.* (claims) *actually are not decreasing as expected."*	*"…you proceed in a more structured way if you have a technique, let's say, in the end. You can avoid waste and focus to the point. So that's for sure. Of course, we're not that technical people in this sense…"*	*"More time to be used for the quality stuff, especially for the follow-up, I have a lot of tasks I start, and I don't even remember I have to close. I mean this is a lot of how people organize themselves, but also a matter of time."*
4	*"For the company obviously will be, each claim runs a cost … for man hours, freights… by doing these proactive measures we're preventing extra expenses for the company."*	*"…we're making progress. Is it as fast as I want it to be? No. So am I spinning my wheels? Yes, kind of, but I'm still moving kind of forwards slowly."*	*"We use the five whys when it's applicable and time appropriate. No lean, no nothing."*	*"…everybody has a smartphone, … if you would be able to order parts with your smartphone, file a claim… the app will sync up to the cloud… Ordering, claim filing, all of this should be done via app."*
5	*" …focusing now on spotting what the major cause of failures are, and specifically in these days we are analyzing our corrective actions…"*	*"…not developing at the speed, we wish it would be, it's linked to the reason… people are only dedicated for half of their time. And unfortunately, until we are able to show consistent results, I do not have enough arguments to ask for more time allocation or resources."*	*"Until we decided … to revise the categorization level so to do this… I cannot say that we as quality team were approaching the claims with these methods. We're now slowly introducing the logic and the concept, also to bring to light that we need to take a step forward eventually, and really approach with scientific methods, if we want to get the real cause of failure and we want to do a proper root cause analysis."*	*"To try to settle down a common base frame of understanding on how we want to do things, how we're doing things, how they are doing things, what's the best way to do it… and try to align."*

Conclusion	Value creation is clearly considered on all levels of the team. Not all members are sure if the team has the evidence to show it, but there is consensus that value is created.	CQI is, if not plateauing, not advancing as wished. All members recognize this and reasons for this are many, such as resources.	The value of quality practices is almost universally recognized. Strong interest to implement more structured and scientific approach to quality development.	Future prospects are more or less ambitious, but mostly aligned. Development of the team's work with methods, further resources and global alignment stand out.

4.2. Discussion

In this section the conceptual framework of this thesis will be reflected to the empirical findings made in the case study. Relevant links will be explored and conceptualized.

Quality development plateauing is a genuine phenomenon in a modern multinational corporation based on the gathered data. When looking at the data from the interviews, it is apparent that the studied organization is suffering from at least some levels of development stagnation. Similar reasons were reported from the QEs as well as on the management's side. The reasons behind this are multiple; resources, training, alignment within the organization, continuously changing work environment, influencing capabilities, and other were mentioned by the team. However, the team did simultaneously report that their efforts were greatly appreciated by management and the organization, with high levels of support coming from them.

The case organization talks about CI, but due to limited knowledge of the field, does not utilize the scientific terminology of quality management. The levels of organizational scope go as indicated in figure 4, QEs operate on the *individual level* and partially *group level*. The quality team manager operates on *group* and *management level*, depending on the context. Strategy crafting for the whole team along with the upper management is clearly *management level* activity, while analysis crafting and team coordination more *group level.* It can be argued that organizational learning is in strong use within the organization, due to the educational role of the quality team, their own drive for CI and steps being taken towards a more defined, possibly QMS derived approach to CQI. Table 7. offers a conclusion on the key findings from the interviews in a thematic matrix.

4.2.1. Value creation with quality

Value creation is generally well perceived in the case organization. The personnel have not been trained to consider value creation specifically, but the building blocks of value creation were constantly present in the interviews. This aligns with Swartling and Olausson's (2012) major goal for CQI; the creation of value to the customer. Customer's perceived value on the services offered was mentioned in all the interviews. Also, the need for cost reductions as a way to increase value creation for the company was communicated multiple times. Ways to achieve these reductions were many, such as removing wastes, saving time by developing more efficient processes, and influencing the whole organization for a quality mindset. By pursuing these developments, the organization is indeed improving the value – cost relationship of the services offered to the customers, hence matching what was discussed in chapter two regarding Hines *et al.* (2010) and elaborated in figure 2. It must be again noted that all this work is done without a structured set-up under any QMS', utilizing very little quality tools, nor refined development strategy. But as the organization's management is working on all of the previously mentioned and the QEs' nearly universal interest in both quality management practices as well as introducing more structure into their work, the case organization should be able to reap benefits into their development stagnation by introducing scientific value creation methods.

Creating additional value in the future is a challenge that all organizations face which operate in a contested market. As mentioned in chapter two, according to Prahalad and Hamel (1990) an essential task for management is to create an organization that is constantly reinventing its value proposition, so that it stays relevant for customers. Due to the fact that the case organization was not educated in the field of strategic management nor quality management, the interviewees were not particularly familiar to the concepts of competitive advantage and blue ocean strategy or strategic thinking of the work in general. The fact that the team members' role does not include addressing strategic matters in their work must be acknowledged and mastering this cannot be expected in all fairness from the QEs. Hence, the discussion of strategic value creation development in the future

was a challenge, but the topic was greeted with enthusiasm by the interviewees. New development ideas where potential blue oceans could exist, which would be suitable for an organization of this type, ranged from extending the team's current role to a larger scope, creating a script of the team's role and exporting it to other parts of the company, and joining some of the development efforts with the process development function.

4.2.2. Continuous improvement

The concept of CI is central in today's competitive business world. If an organization operating in this arena fails to embrace CI, chances are high that it will start to decline.

The case team's task is to conduct CQI in the front-end scope of the organization, in order to develop the organization's value creation in an evolutionary manner as described by Bhuiyan and Bagel (2005). Still, the team has not embraced any relevant methods (e.g. Lean, Six Sigma, Lean Six Sigma) nor tools (e.g. DMAIC, VSM, mistake proofing) which would aid it in this and bring structure to the work. Some steps in this direction have been taken, such as the five whys which has been performed by QEs, but in limited scope. The QEs did not really embrace this tool, which notably is partially due to the existing time constraints. Other tools that were mentioned and are in use in the context, but not necessary *by* the quality team are KPIs, fishbone diagram, checklists, and brainstorming. However, a noteworthy aspect regarding the before mentioned is that none of these are used by *all* team members (checklists, fishbone diagram, brainstorming) nor *managed* by the team (KPIs). Checklists were mentioned in the interviews to be have been used with customers in some circumstances, where the aim was to guide the customer to provide sufficient information for the company to process the matter at hand efficiently without needing to ask for further information. Fishbone diagram was also mentioned in the team's workshop as a tool for root cause analysis, and later in the interviews by one of the QE's, but no concrete evidence on the use of it nor achievements by its use were reported. Brainstorming was mentioned by the team manager regarding future strategy crafting and road-map development for the team. KPIs were mentioned in all of the interviews, but the use of them was directed by QEs line organization management or regarding the quality team's KPIs, by upper management. Therefore, the case organization is subject to the

KPI tool within the company, but the quality team itself is not utilizing it in their own actions towards CQI.

This all means that there is a myriad of tools available for the team to introduce into their development work. As mentioned by Nowicki and Sikora (2015), to efficiently introduce these practices to the quality team's work, continuous learning, adaption and training would be required for the whole organization. This would require further resources, which are limited.

4.2.3. Quality management systems

QMS' can provide an organization a good framework for future development steps by offering a ready process and tools to follow and implement. There are several options to choose from, out of which three were introduced in this thesis. From the gathered data it was apparent that the case organization is not operating under any specific QMS but is more of an ad-hoc organization in its structure, even if it resembles a QCC and wide-focus CI organizations by Berger (1997). The interviews did not reveal any preferences for future QMS adoption from neither the QEs nor the management's side, as knowledge on them was limited. The company itself is ISO 9001 certified.

During an informal discussion with the team manager, the goal of moving to a leaner structure was mentioned in order to develop operations. This does not however mean that the organization is looking to adopt *lean* as such but would be motivated to introducing a structured scientific approach to the quality development work in this spirit. This could be seen as a good opportunity to explore the possibility to utilize a hybrid methodology, such as Lean Six Sigma, which would allow the case organization to find an optimal mix of QMS', which would be regarded suitable for the specific organization, or as Bhuiyan and Baghel (2005) put it, "cherry picking" the most suitable tools and techniques. The team would have the possibility to build a custom set-up of quality methods and tools to implement for optimized continuous quality development impact.

4.2.4. Contribution

The theoretical contribution for the development of global quality development organizations can be summarized as presented on figure 13. An organization that is suffering from plateauing in development would need to acknowledge the situation and start taking development steps in an organized manner.

The situation can be so, as in the case organization, that much work is being done but the actions are not necessarily creating value as much as they could due to the work being unstructured. An organization can start countering this by starting to develop their work. Based on the theory and empirical findings made in this thesis, a functional development stage could be described as follows. An organization that does not deploy scientific methods to their quality work should first train the staff to have understanding on them. Next, a benchmarking should be conducted against leading organizations in the field to gain understanding on the expected future performance levels. Then the organization should be ready to craft its development strategy that consist of, but is not limited to, selecting relevant quality management practices (QMS & tools) to be used, build structure to the organization's work, and while doing this strive to make the organization such that it is aligned for maximum value creation, understands principles of CI and is determined to build CA.

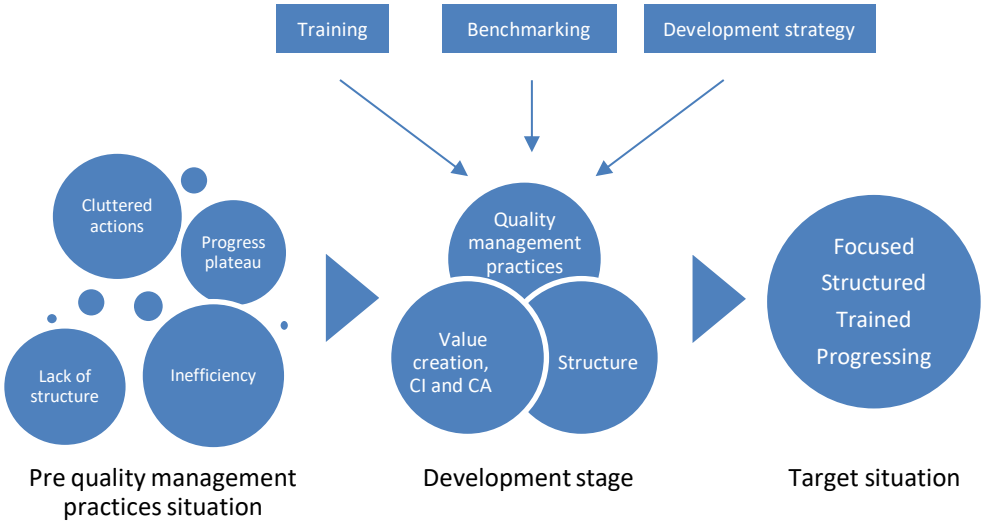

Figure 13. Theoretical framework for quality management practices implementation.

Therefore, when an organization decides to embark on the path of developing their operations via implementing scientific quality management practices, it should consider to first craft a development plan. Here ideas and inspiration can be drawn from conceptual frameworks for QMS implementation, such as the one from Garza-Reyes *et al.* (2015).

The case organization is currently facing a situation where a structured development step would be desired. Figure 14. is the researcher's suggestion for a potential development path for the case organization.

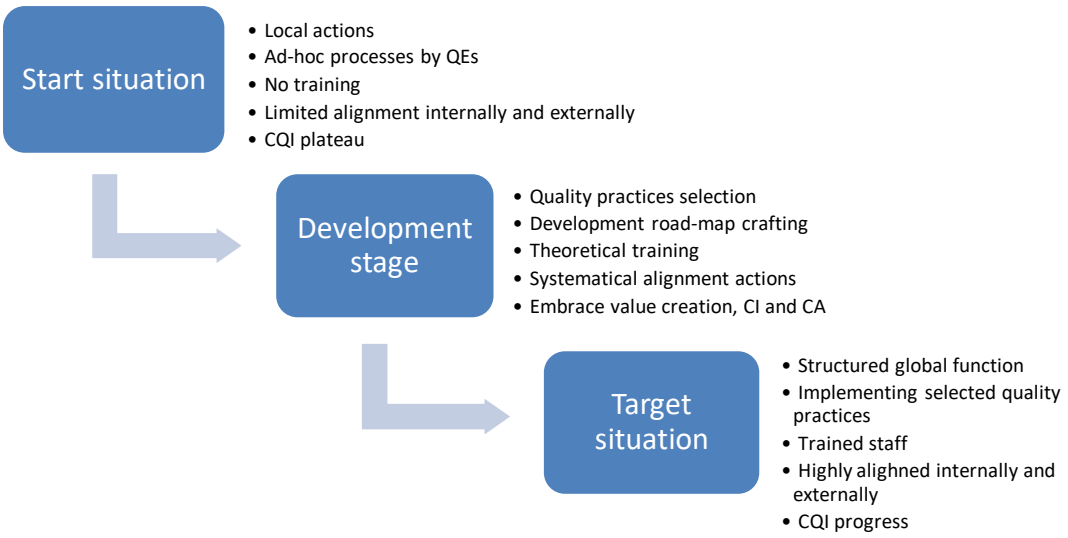

Figure 14. Case organization potential development path.

5. CONCLUSIONS

5.1. Research questions

In the beginning of this thesis, two research questions were presented. These are attempted to be answered by the study results.

The first research question: *How quality management practices may help companies to value creation and cope with plateauing progress in a quality organization?*

From the data that was gathered to the empirical part of this thesis and the academic literature on the subject, we can draw conclusions regarding the main research question of this study. Quality management practices, in this study incorporating quality management systems, tools and continuous improvement methods, based on this study can bring additional value to global quality organizations by introducing structure to the development work conducted and by giving intellectual as well as practical tools on how to process quality issues. These practices can help align the team internally for increased efficiency, by giving the employees a common methodology for problem solving and development work. They can also improve the communication with specific vocabulary for the topics in the scope, therefore increasing understanding within an organization by introducing a common terminology for a group which is not familiar with the theoretical side of continuous quality development.

Regarding the plateauing progress development, it was discovered in this thesis, that the lack of focus and prioritization in development themes is one of the significant causes behind plateauing progress. Quality management practices answer to this by aiding the quality organization to filter the most affecting reasons for the quality defects and focus on them for maximum development impact. This way the organization does not waste time nor resources by focusing on micro level solutions, leading to micro level outcomes, which can seem relevant when an employee does not have a macro vision on the causalities of development activities. The quality management tools can also give a quality organization valuable intellectual tools for root cause analysis, which once again can help

to determine the most valuable development points. These all factors contribute to combatting plateauing progress and thereby advance continuous quality improvement.

The practices can aid an organization on waste cutting activities, provide ready structures for process development and even organizational work splitting by task groups. These all can be seen as reasons that are likely to aid a quality organization to create more value for its customers and stakeholders. Also, the fact that there are so many different QMS', tools and methods available, means that an organization suffering with value creation is likely to find relevant tools to support the next steps in development.

The study also indicates that understanding on strategic thinking in quality organizations is not necessarily on the level as would be beneficial for developing future value propositions and applications.

The second research question: *How quality management practices can be utilized to develop global quality management in the case organization?*

The second research question was an empirical exercise to seek suggestions for relevant quality management practices, tools and methods which could create value for the case organization from the findings made in the study. The practices were to be selected from the ones introduced in the study for added relevance. It must be noted however, that the introductions made in this study's second chapter are general level information on the select quality practices and if the organization will continue on the path communicated while making the study, it should dive deeper into the tools for optimal effects.

The biggest issue communicated by the case organization whilst making this study was clearly the lack of time resources to conduct the quality development work. As quality management practices cannot directly influence this resource, it would seem relevant to firstly focus on the efficiency of how this limited resource is utilized. There introducing internal structure and start applying e.g. the Pareto principle to continuously keep the team's focus on the biggest impact making development actions. As was indicated by the claim reasons spread in figure 12, most of the claims fall under three reasons. By tackling

the biggest claim reasons, the quality team could likely impact the results enough to prove their value better towards upper management via reporting. Delivering concrete results might aid to promote the idea of a full-time quality team upgrade to upper management. This would also create the biggest savings in claim handling times and processing costs, therefore creating value to the whole company and its customers, as claims are always unpleasant incidents to customers.

Second main point that could generate a high impact is organizing the quality team theoretical training(s) for the quality work. Deeper understanding on the possibilities of the theoretical tools would likely result to the quality team themselves identifying suitable tools and development paths that would make most sense to the case organization. This naturally requires some degree of investment from the organization in time and likely funds.

The case organization is in theory well positioned to start developing its operations with scientific tools, as it is currently deploying them sparingly. The experiences of the quality tools they have used, namely five whys, checklists, brainstorming, and KPIs, have not all been inspirational to all QEs. The team has the motivation, intellect, and commitment for taking their development work to the next level in terms of a more structured and scientific approach. The introduction of, example given, basic *Six Sigma DMAIC* approach to direct the development process could be a good step for the team. *Value stream mapping* key processes to spot wastes and "leaks" is something that could help their work by introducing deeper understanding and finding the beforementioned inefficiencies. By utilizing *5S* to study and *standardize* a functional desktop work set-up suitable for global use could help spot inefficiencies and best practices which could potentially benefit the whole coordination organization. The process could be deployed to the physical workspaces where work is conducted as well as in the digital realm by developing or finding ideal digital interface set-ups for stakeholders.

The introduction of an actual QMS set-up would aid the case organization to take a big leap forward on the desired scientific approach path. This would in practice require a thorough investigation on the desired set-up.

5.2. Theoretical implications

This study contributes to the existing understanding on quality management practices and their link to value creation and development plateauing within quality organizations and attempts to fill the research gap in this context. Theoretical implications of the study are that there is a link between countering quality development stagnation and enforcing value creation with the utilization of theoretical quality management practices. These different practices, which have been studied in great detail in academic literature, have clear relevance in the real-life world, which underlines their validity if implemented appropriately. Still, the understanding on their usability in this context is augmented with this study, and therefore contributes to the earlier mentioned literature such as the ones mentioned previously (Andersson et al., 2006; Bhuiyan & Baghel, 2005; Salah et al., 2010).

The theoretical framework for quality practices implementation contributes to the literature on quality development plateau countering practices and attempts to build a bridge on understanding between the deployment of wider quality practices and value creation in relation to conceptual frameworks implementing just QMS', such as the one by Garza-Reyes *et al.* (2015). This gives an input to a basis for a decision-making model for managerial research on the topic. In the study light was shed on the reasons behind that contribute to the actual stagnation of development in a quality organization, which is not widely researched.

5.3. Managerial suggestions

This study contributes to the understanding on the importance of quality management practices for a quality organization suffering from development plateauing. As was introduced, the mentioned practices can positively contribute to the value creation and continuous quality development activities conducted in organizations. This leads to the conclusion that management of similar organizations can gain value for their work by implementing quality management practices, or by developing the use of them if already deployed. All these actions contribute to countering development plateaus.

Managerial suggestions on the findings can be summarized to three points. *First*, concentration on the most value creating actions. An organization's role is to create value with its actions. A lack of focus or focus on non-essential matters can dilute the potential maximum outcome of an organization due to wasted resources. This is in the core of multiple quality practices and is an on-going process for any organization wishing to avoid development stagnation. Limited resources are a constant challenge, so it is vital to maximize the return-on-investment per action. *Second*, structuring the work conducted. In the light of this study, higher internal efficiencies should be achieved by introducing structure into the work of an expert team. This helps get results that should be benchmarkable and cross-referenceable across different employees, as results have been achieved under the same research methods. Adding structure should also increase the productivity of the work, as employees have readily available processes and tools for problem solving. *Third*, education of the employees. An organization conducting work where expert level knowledge is required, combining theoretical and practical expertise could be seen to support the skills of an employee executing the work and the total productivity. Training gives intellectual stimulus and contributes to the creation of new and ready-to-implement problem-solving techniques. Here the quality management know-how possibly already existing inside a company could likely be utilized to train the quality team further in theoretical subjects and take notes from lessons learned.

Organizations are always unique, but with these general guidelines an organization which is suffering from development stagnation can likely find easily approachable steps which support progress on the path of development. They can also be applied all together simultaneously or by selecting the ones that contribute most to the organization in question. They are not time critical, so their implementation can be conducted little by little or summarily, depending on the resources available and prevailing circumstances. But as mentioned in this study, these activities are meant to be adopted permanently to the operations of an organization in order to reach continuous development.

5.4. Limitations of the study

The fact that the study was made with a qualitative research methodology as a single case study limits the statistical generalizability of the findings, as they reflect the situation within the case organization. Hence, the interviewees' unique points of view, the circumstances of the case company, and other existing factors make the study relevant in this context. However, the findings contribute to the overall knowledge base on the topic.

The scope of the study is limited on purpose, as the goal was set to study the challenges within this context. At the same time, we can note that if the study had incorporated a larger sample of the organization, the findings could have been different.

The realm of quality management is vast and therefore having prior deeper understanding on the case organization and quality management theory would have possibly contributed to the relevance of the study.

5.5. Suggestions for future research

The study conducted for this thesis indicates that further research is required in the field of quality development plateauing. This study focused on a single organization within a company. It would be interesting to conduct a companywide study on the same topics within a multinational corporation. This would shed light on the possible commonalities in the challenges of development on different levels of an organization and could they be countered with similar actions.

Regarding the organizational impact of development plateauing, it would be advantageous to conduct a follow-up study to understand the effect of implementing quality development methods to the case organization and measure the effects from implementation to a certain milestone. This would aid to increase understanding in the next steps of development and indicate if the choices made based on theory have been beneficial for the empirical value added. Also, there would be a chance to test the theoretical findings of this study in an empirical context.

As a final point, there is a need for further study on the topic on organizational acceptance of quality management practices. A wide benchmarking amongst industry would contribute to a deeper understanding on the commonality of the empirical and theoretical aspects observed in the study across the field.

LIST OF REFERENCES

Andersson, R., Eriksson, H., & Torstensson, H. (2006). Similarities and differences between TQM, six sigma and lean. *TQM Magazine*, *18*(3), 282–296. https://doi.org/10.1108/09544780610660004

Barbara B. Flynn, Roger G. Schroeder, & Sadao Sakakibara. (1995). The impact of quality management practices on performance and competitive advantage. *Decision Sciences*, *26*(5), 659–691. Retrieved from http://dx.doi.org/10.1111/j.1540-5915.1995.tb01445.x

Berger, A. (1997). Continuous Improvement and Kaizen: Standardization and Organizational Designs. *Integrated Manufacturing Systems*, *8*(2), 110–117.

Bhuiyan, N., & Baghel, A. (2005). An overview of continuous improvement: From the past to the present. *Management Decision*, *43*(5), 761–771. https://doi.org/10.1108/00251740510597761

Boaden, R. J. (1997). What is total quality management... And does it matter? *Total Quality Management*, *8*(4), 153–171. https://doi.org/10.1080/0954412979596

Center for Collaborative Action Research (2019). *Understanding Collaborative Action Research* [online]. Available from World Wide Web: <URL:http://cadres.pep-perdine.edu/ccar/define.html>.

Dahlgaard-Park, S. M. (2011). The quality movement: Where are you going? *Total Quality Management and Business Excellence*, *22*(5), 493–516. https://doi.org/10.1080/14783363.2011.578481

Defeo, J. A., & Janssen, A. (2001). The cconomic driver for the twenty-first century: Quality. *TQM Magazine*, *13*(2), 91–94. https://doi.org/10.1108/09544780110384006

Drohomeretski, E., & Lima, E. P. De. (2014). Lean, Six Sigma and Lean Six Sigma: an analysis based on operations strategy. *International Journal of Production Research*, *52*(3), 804–824. https://doi.org/http://dx.doi.org/10.1080/00207543.2013.842015

Elo, S., Kääriäinen, M., Kanste, O., & Pölkki, T. (2014). Qualitative Content Analysis: A Focus on Trustworthiness. *SAGE Open*. https://doi.org/10.1177/2158244014522633

Eriksson, P., & Kovalainen, A. (2008a). Introduction. In *Qualitative Methods in Business Research* (pp. 3–9). Sage Publications, Inc. https://doi.org/https://dx.doi.org/10.4135/9780857028044

Eriksson, P., & Kovalainen, A. (2008b). Qualitative Research Materials. In *Qualitative Methods in Business Research* (pp. 77–95).

Eriksson, P., & Kovalainen, A. (2008c). Research Philosophy. In *Qualitative Methods in Business Research* (pp. 10–24). Sage Publications, Inc. https://doi.org/https://dx.doi.org/10.4135/9780857028044

Finnish Standards Association SFS. (2008). ISO 9001.

Fossey, E., Harvey, C., McDermott, F., & Davidson, L. (2002). Understanding and evaluating qualitative research. *Australian and New Zealand Journal of Psychiatry*, *36*, 717–732.

Galeazzo, A., Furlan, A., & Vinelli, A. (2017). The organizational infrastructure of continuous improvement – an empirical analysis. *Operations Management Research*, *10*, 33–46. https://doi.org/10.1007/s12063-016-0112-1

Garza-Reyes, J. A., Rocha-Lona, L., & Kumar, V. (2015). A conceptual framework for

the implementation of quality management systems. *Total Quality Management and Business Excellence*, *26*(11–12), 1298–1310. https://doi.org/10.1080/14783363.2014.929254

Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report*, *8*(4), 597–606. Retrieved from https://nsuworks.nova.edu/tqr/vol8/iss4/6

Hines, P., Holweg, M., Rich, N., Hines, P., Holweg, M., & Rich, N. (2010). Learning to evolve: A review of contemporary lean thinking. *International Journal of Operations & Production Management*, *24*(10), 994–1011. https://doi.org/10.1108/01443570410558049

Juran, J. M., Godfrey, A. B., Hoogstoel, R. E., & Schilling, E. G. (1999). *Juran's Quality Handbook* (5th ed.). McGraw-Hill Professional.

Kawulich, B. (2004). Qualitative Data Analysis Techniques (pp. 96–113). Amsterdam, The Netherlands. Retrieved from https://www.researchgate.net/publication/258110388_Qualitative_Data_Analysis_Techniques

Keller, P. A., & Pyzdek, T. (2010). *The Six Sigma Handbook* (3rd ed.). The McGraw-Hill Companies, Inc.

Kim, W. C., & Mauborgne, R. (2004). Blue Ocean Strategy. *Harvard Business Review*, *82*(10), 76–84.

Kim, W. C., & Mauborgne, R. (2005). Blue Ocean Strategy: From Theory to Practice. *California Management Review*, *47*(3), 105–121.

Lahy, A., & Found, P. (2015). Towards a Theory of Continuous Improvement (pp. 1–10).

Lepmets, M., Mcbride, T., & Ras, E. (2012). Goal alignment in process improvement. *The Journal of Systems & Software*, *85*(6), 1440–1452. https://doi.org/10.1016/j.jss.2012.01.038

Long, C., & Vickers-Koch, M. (1995). Using Core Capabilities to Create Competitive Advantage. *Organizatoinal Dynamics*, *24*(1), 7–22.

Mehrjerdi, Y. Z. (2011). Six-Sigma : methodology , tools and its future predicts design quality at the outset ; *Assembly Automation*, *31*(1), 79–88. https://doi.org/10.1108/01445151111104209

Michela, J. L., Noori, H., & Jha, S. (1996). The Dynamics of Continuous Improvement. *International Journal of Quality Science*, *1*(1), 19–47.

Näslund, D. (2008). Lean, six sigma and lean sigma: Fads or real process improvement methods? *Business Process Management Journal*, *14*(3), 269–287. https://doi.org/10.1108/14637150810876634

Neyestani, B. (2017). *Seven Basic Tools of Quality Control : The Appropriate Techniques for Solving Quality Problems in the Organizations*. https://doi.org/10.5281/zenodo.400832

Nowicki, P., & Sikora, T. (2015). *Challenges of Quality Management*. PTTŻ Publishing House.

Pepper, M. P. J., & Spedding, T. A. (2010). The evolution of lean Six Sigma. *International Journal of Quality & Reliability Management*, *27*(2), 138–155. https://doi.org/10.1108/02656711011014276

Porter, M. E. (1980). *COMPETITIVE STRATEGY: Techniques for Analyzing Industries and Competitors*. New York: The Free Press.

Porter, M. E. (1985). Competitive Strategy: The Core Concepts. In *COMPETITIVE ADVANTAGE: Creating and Sustaining Superior Performance* (pp. 1–30). Toronto: Maxwell Macmillan International.

Porter, M. E. (1991). Towards A Dynamic Theory Of Strategy. *Strategic Management Journal*, *12*, 95–117.

Prahalad, C. K., & Hamel, G. (1990). The Core Competence of the Corporation. *Harvard Business Review*, 79–91.

Rodrigues, C. A. (2007). The quality organization: A conceptual framework. *Total Quality Management and Business Excellence*, *18*(7), 697–713. https://doi.org/10.1080/14783360701349658

Salah, S., Rahim, A., & Carretero, J. A. (2010). The integration of Six Sigma and lean management. *International Journal of Lean Six Sigma*, *1*(3), 249–274. https://doi.org/10.1108/20401461011075035

Saldaña, J. (2014). Coding and Analysis Strategies. In *Oxford Handbook of Qualitative Research* (pp. 581–605).

Savolainen, T. I. (1999). Cycles of continuous improvement: Realizing competitive advantages through quality. *International Journal of Operations & Production Management*, *19*(11), 1203–1222. https://doi.org/https://doi.org/10.1108/01443579910291096

Sitkin, S. B., & Sutcliffe, K. M. (1994). Distinguishing control from learning in Total Quality Management: A contingency perspective. *Academy of Management Review*, *19*(3), 537–564. https://doi.org/10.5465/AMR.1994.9412271813

Swartling, D., & Olausson, D. (2011). Continuous improvement put into practice.

International Journal of Quality and Service Sciences, *3*(3), 337–351. https://doi.org/10.1108/17566691111182870

Thalner, D. M. (2005). *The Practice Of Continuous Improvement In Higher Education*. Western Michigan University. Retrieved from https://scholarworks.wmich.edu/dissertations/1067

Vargo, S. L., Maglio, P. P., & Archpru, M. (2008). On value and value co-creation : A service systems and service logic perspective. *European Management Journal*, *26*, 145–152. https://doi.org/10.1016/j.emj.2008.04.003

Williams, R., Van Der Wiele, T., Van Iwaarden, J., Bertsch, B., & Dale, B. (2006). Quality Management : The New Challenges. *Total Quality Management*, *17*(10), 1273–1280.

Womack, J. P., & Jones, D. T. (2003). *Lean Thinking: Banish Waste and Create Wealth in Your Corporation* (1st ed.). New York: Simon & Schuster Inc.

Yin, R. K. (1994). Case Study Research: Design and Methods. In *Case Study Research: Design and Methods* (Second, pp. 1–53). London: Sage Publications, Inc.

Yin, R. K. (2003). *Case Study Research: Design and Methods*. *Case Study Research: Design and Methods* (Third). London: Sage Publications, Inc.

Yin, R. K. (2011). *Qualitative Research from Start to Finish*. New York: The Guilford Press.

Zangwill, W. I., & Kantor, P. (1998). Toward a Theory of Continuous Improvement and the Learning Curve. *Management Science*, *44*(7), 910–920. https://doi.org/10.1287/mnsc.44.7.910

APPENDICES

APPENDIX 1. Interview questions, team

1. Background - Let's talk about your background.
   - How long have you been a member of the quality team and how did you become a member of it?
   - What sort of previous knowledge and training do you have regarding quality work?

2. Operational – Value creation, Continuous Improvement and Quality tools.
   - How does the team create value to a) customers b) the company?
   - What sort of ways of influencing quality objectives do you have?
   - What sort of tools and methods does the team use in its development work? Do you think these add value for customers and organization? How?
   - How do you think that the development work is progressing?
   - What do you see is the biggest cause for claims in front-end? Why?
   - How do you feel about the double role of senior coordinator and quality expert?
   - How would you describe the team's commitment level for the quality work?
   - What would you say are the potential strengths and weaknesses of the quality team?

3. Management – Organizational discussion.
   - How is the quality team managed?
   - How would you describe the support and resources the quality team has?
   - How are the objectives of the team set? Do they take into account value creation and customer satisfaction? Are they reached? Why is this?
   - What is your opinion on the organizational structure of the quality team?

4. Future – How onwards?
   - What in your opinion are the main challenges the team faces regarding quality improvement and value creation?
   - How could the team create more value in your opinion?
   - What could help the team create competitive advantage for the company in contrast to the competition?
   - How would you develop the team for it to reach better results in quality improvement and counter plateauing?
   - Do you have ideas where the organization could find new arenas of competition where value could be created?

Thank you for your time!

APPENDIX 2. Interview questions, management

1. Background - Let's talk about your background.
   - How long have you been managing the quality team and how did you become the manager?
   - What sort of knowledge and training do you have regarding quality work?

2. Operational - Value creation, Continuous Improvement and Quality tools.
   - How does the team create value to a) customers b) the company?
   - What sort of ways of influencing quality objectives do you have in your role? How do you think these add value for customers and organization?
   - What do you see is the biggest cause for claims in front-end? Why?
   - What sort of tools and methods does the team use in its development work?
   - How do you think that the development work is progressing?
   - How is value creation considered in the team?
   - What in your opinion are the main challenges the team faces regarding further quality improvement and value creation?

3. Management – Organizational discussion.
   - How would you describe the functionality of the quality team?
   - What is your opinion on the organizational structure of the quality team?
   - How is the team to manage in your opinion?
   - How would you describe the support from the team you have for your role?
   - How would you describe the team's commitment level for the quality work?
   - Are the objectives for the team clear from upper management?
   - What sort of a strategy does the team have for its quality development?
   - How is the team's value creation seen from the management's side?
   - How do you feel about your role as manager of the quality team?
   - How are the objectives of the team set? Do they take into account value creation and customer satisfaction? Are they reached? Why is this?

4. Future – How onwards?
   - How would you develop the team for it to reach better results in quality improvement and counter plateauing?
   - How could the team create more value in your opinion?
   - What could help the team create competitive advantage for the company in contrast to the competition?
   - Do you have ideas where the organization could find new arenas of competition where value could be captured with less competition?

Thank you for your time!