

The Process of Obtaining ISO Certification Within a Logistics Company

Process for ISO 9001:2015 and ISO 14001:2015

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Abstract

The aim of this thesis was to follow along the process of ISO certification within a real-life logistics company, to understand the reasoning behind the need for ISO certification, what processes are relevant for the certification and what those processes look like.

A qualitative method was used to gather data for the empirical part of the thesis. The data was collected from internal documents, meetings, the writer's own experiences as an employee at the company and a short interview with the person in charge of the ISO certification process at the company. This data was then compared to the theoretical framework.

It was concluded that the certification process within the company followed the guidelines established in the theoretical framework. Important aspects showcased in the theoretical framework were taken into consideration when the company started their journey towards ISO certification. Since this thesis was not able to follow along the process until actual certification, due to time constraints, a recommendation for further research was stated to be a follow-up on the company and how the ISO certification has worked out for them.

Language: English

Key Words: quality management, quality management systems, ISO,

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Abstrakt

Målet med detta examensarbete var att följa med processen för ISO certifiering inom ett verkligt logistikföretag, förstå motiveringen till varför de vill ha ISO certifiering, vilka processer som är relevanta för certifieringen samt hur dessa processer ser ut.

För empirins datainsamling användes en kvalitativ forskningsmetod. Data samlades in från interna dokument, möten, författarens egna erfarenheter som anställd vid företaget samt en kort intervju med personen som ansvarade för ISO certifieringsprocessen vid företaget. Denna data jämfördes sedan med teorin.

Det fastställdes att certifieringsprocessen inom företaget följde riktlinjerna som fastställdes av teorin. Detaljer som ansågs viktiga inom teorin hade tagits i beaktande under företagets väg till ISO certifiering. Eftersom detta examensarbete inte kunde följa med certifieringsprocessen enda till faktisk certifiering, på grund av tidsbegränsningar, så gavs som en rekommendation för vidare forskning att kolla upp företaget i ett senare skede för att se hur ISO certifieringen har påverkat dem.

Språk: Engelska

Nyckelord: kvalitetsstyrning, kvalitetsstyrningssystem, ISO

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1 Introduction

With all markets and fields spreading globally it is an ever-growing challenge for companies to stand out from the masses. One aspect that has been determined to be important for consumers is quality, a study by Deloitte found that quality was listed among the top three reasons for purchases among consumers (Haas, McGuire Christian, & Keuky, 2022).

Caramela (2025) argues that there are several reasons why quality is important, the main reason is thought to be trust; the consumer trusts that the product or service lives up to their expectations. If the product or service does so, it results in fewer complaints and more recommendations. This in turn strengthens the brand and results in a higher return on investment. Garvin (1987) refers to a survey done in the U.S. in 1981 when he states that almost 50% of U.S. consumers are of the opinion that the quality of their domestic products has decreased in the previous five years. Garvin backs up this alarming statistic with a more recent study stating that about 25% of U.S. consumers are not confident in their domestic companies being able to deliver reliable products.

But what is quality? Quality differs from every consumer, every product and every field. The key is to know your target customer and what they define as quality (Caramela, 2025). According to Juran, quality is determined as fitness for use, or put in other words, the ability to fulfill the customer's needs (Gibbons, 1994).

With quality being of utmost importance for any thriving company in this day and age, there are also plenty of different theories surrounding quality and how it is managed. This thesis will use Juran's trilogy as a base, meaning quality planning, improvement, control and assurance.

A company can manage their quality by identifying a few key elements of their business, such as what is most important for the brand. Does quality mean fast delivery or a set aesthetic of the product? A product strategy can be helpful here since it describes the company's vision for the product. By testing the products and gathering customer feedback the company adds one more layer of quality protection since they have the opportunity to fix any issues the product might have before releasing it to the public. Companies can also benefit from analyzing their competitors and defining what makes them stand out from the crowd. What does our company offer that our competitors do not? To manage all this

successfully it is recommended to implement a quality management system that takes all this into consideration and encourages continuous improvement by inspecting both products and processes regularly. (Caramela, 2025)

From the quality theories have evolved several different quality management systems (QMS), all with a focus on the customer and fulfilling their needs. These systems are in place to offer the company a guidebook on how to manage their quality and ensure continuous improvement. This thesis will focus mostly on the ISO standards 9001 and 14001 but other options will also be discussed in order to provide a broader understanding of the subject. It is important to note that one QMS might not fit all and therefore it is recommended that each company thoroughly examines what QMS fits them best.

Based on this theoretical framework this thesis will look into the quality process of logistics company NCS Finland and what steps the company has taken to achieve ISO certification. This journey includes mapping out all processes within the company and determining what the company defines as their quality standards and how they plan to uphold them. Besides process mapping, quality management involves how employees are being led and guided in their daily work and how any deviations are handled.

1.1 Problem statement

There is an ever-growing need for quality management systems and for companies to prove to their customers and partners that they live up to set standards. With this pressing need for said systems, there also needs to be clear and easily followed instructions on how to obtain certification for a quality standard, in the case of this thesis the ISO standard. Unfortunately, there seems to be a lack of these types of instructions easily available.

The aim of this thesis is to provide a better understanding of quality and QMS, while also following along the process of a real company trying to obtain ISO certification. An important part of any QMS is mapping out different processes within the company, which is something that will be discussed and explained further in the thesis. The goal of showing how to generally map out a process is to give future certification seekers a helping hand in getting started with their own certification process.

1.2 Research objectives

Even though there is a lack of easily understandable instructions for quality management systems there is by no means a lack of different quality management systems and quality management techniques. This thesis will take a look at a couple of different systems and techniques to give all readers a better understanding of what is out there. Even though the thesis will focus mostly on the ISO standard it is important to highlight that there are plenty of other options available.

This thesis will discuss relevant theories surrounding quality, quality management and ISO certification to give all readers a basic understanding of the subject. To understand the ISO standard and ISO certification, one must first understand why they are needed in the first place.

The goal of this thesis is to provide clarification on the process of obtaining ISO certification for quality and environmental systems. The thesis will follow the process of a real logistics company operating on an international level. With offices spread out over several locations, both national and international, there is a need for unified systems and guidelines. These systems and guidelines require process charts of key processes to ensure that the whole company provides the same service.

A result of this thesis will be a collection of generalized process charts that give a basic understanding of how the processes are built and what aspects to consider. The process charts can be used as a templet, or at least as a starting ground, for other companies mapping out their processes.

1.3 Research questions

- 1) What are the reasons for NCS wanting to achieve certification for ISO 9001:2015 and ISO 14001:2015?
- 2) What processes are relevant to identify and explain when implementing ISO 9001:2015 and ISO 14001:2015?
- 3) What do the relevant processes look like for the implementation of ISO 9001:2015 and ISO 14001:2015?

Since the aim of this thesis is to provide a better understanding of the ISO certification process while also offering some easily understandable process charts, these research questions should be able to satisfy the aim of the thesis. While answering the research questions this thesis will offer a good foundation for understanding the ISO certification process and underlying theoretical framework. With a theoretical foundation, the reasoning behind the relevant processes and how they are structured is more easily understandable.

1.4 Limitations

Quality management is a broad subject, and it can look greatly different between different organizations and industries. There are, however, several aspects of quality management that follow the same principles throughout different systems, techniques and industries. This thesis will focus mostly on what is relevant within an international logistics company, such as leadership, mapping processes and a common understanding of the company's goals and what the quality targets are based on.

This thesis will focus mostly on the requirements for ISO 9001:2015 and ISO 14001:2015 certification and what steps are needed to achieve certification.

Furthermore, this thesis will follow along with the process of just one company. It is important to note that the process of ISO certification might vary from company to company depending on their starting point and what regulations apply to their field.

1.5 Vocabulary

EMS = Environmental Management System

QM = Quality Management

QMS = Quality Management System

TQM = Total Quality Management

2 Quality management

There are considered to be three major “gurus” within the field of quality: Philip Crosby, W. Edwards Deming and Joseph M. Juran. Each of these three has a unique philosophy when it comes to quality improvement, even though all of them have some points in common they also have some points that differ from each other. (Gibbons, 1994)

Crosby suggests a 14-point program for quality improvement with four absolutes regarding quality: 1) quality is conformance to requirements and getting everyone in the organization to do it right the first time, 2) prevention is the system of quality, 3) zero defects should be the performance standard and 4) quality is measured by the cost of non-conformance. The first absolute is regarding managers and their responsibility for supplying the production with enough resources and guidance on the requirements. The second absolute is about analyzing the process and recognizing where errors can occur and preventing them from happening. The third absolute means that people need to understand the standard they are given to be able to live up to zero defects. And lastly, the fourth absolute is about tracking the data of cost for doing things right, which is to be able to identify areas of improvement and to track improvement. (Gibbons, 1994; Six Sigma, 2025)

Deming is most known for his chain reaction model on quality improvement and his 14 points as mentioned above. Deming also recommends following the Shewhart Cycle, or the PDCA cycle as referred to in this thesis. Some key takeaways from Deming’s 14 points are to adopt the new philosophy, adjust the award system to focus on quality, constant improvement, eliminate barriers between staff areas, encourage self-improvement and take action to accomplish the goals. Deming believes that quality improvements should be based on statistical data rather than just experience or hunches. (Gibbons, 1994)

The basics of Deming’s chain reaction are that by focusing on continuous improvement the costs will go down and profits will go up. Another important part of the Deming chain reaction is to reward workers as the company thrives instead of trying to thrive on the backs of those workers (Romford, 2022). The chain reaction is illustrated below.

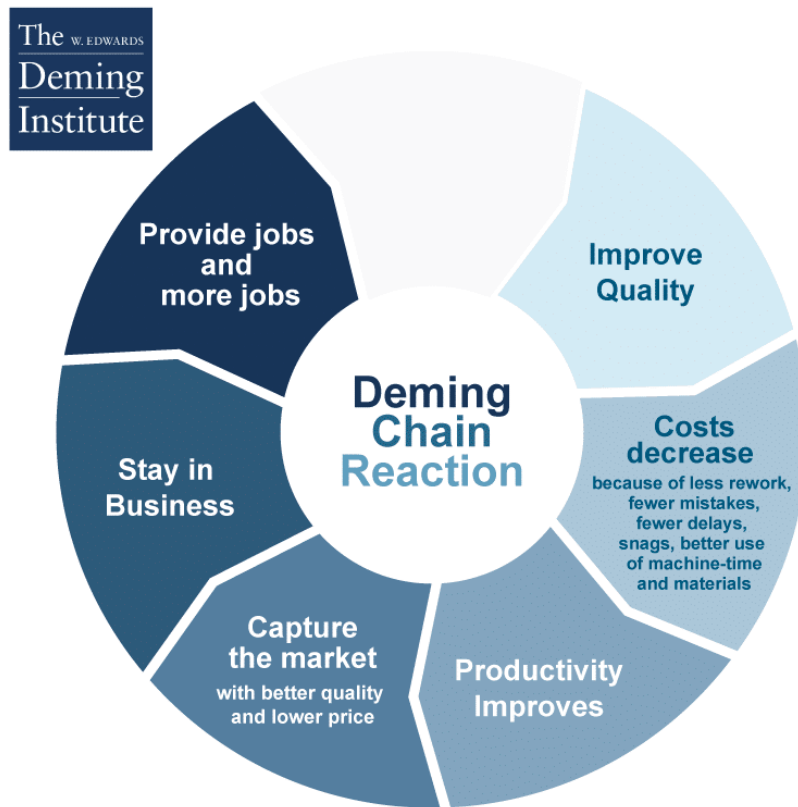


Figure 1 Deming Chain Reaction (Hunter, 2012)

Deming's has also determined, what he calls, the seven deadly diseases. These are what Deming believes stands in the way of organizations making the changes needed for quality: 1) lack of purpose, 2) focusing on short-term profits, 3) performance evaluations, 4) top management mobility, 5) running the organizations purely on sales figures and cost, 6) excessive medical costs, and lastly 7) excessive warranty costs. (Gibbons, 1994)

Juran is most known for his quality trilogy, avoidable and unavoidable costs of quality and company-wide quality management (Gibbons, 1994). Avoidable costs stem from defects, such as scrapped material, while unavoidable costs stem from prevention, such as sampling (Garvin, 1987). Juran defines quality as fitness for use, meaning that the product meets customers' needs and is free from deficiencies. Juran follows a 10-step process for improving quality. Here are some key takeaways: build awareness, set goals, organize and provide training, progress reports, award success and annual improvements (Gibbons, 1994).

Juran's trilogy consists of quality planning, control and improvement, which will function as the base of this thesis.

At the core, quality management is a culture of high standards within an organization, it is a culture of improvement, compliance and quality (ISO, 2024; The Investopedia Team, 2024). Consistency is the goal of quality management, ensuring that all parts of the process keep up with the set standard within the organization. (CFI, 2025)

A common challenge within quality management is to get the operational staff to understand and support the quality changes needed since the operational staff usually view things only through a financial lens. Juran has identified this problem as being an issue of using different languages. Juran's trilogy is used to illustrate the language of quality so that the ones who speak a financial language can better understand and then support the quality changes (Nuland, 1993). A common thread within quality management is that quality saves money with a mindset of doing it right the first time. It is estimated that poor quality contributes to costs of 15% – 20% of a company's annual revenue (Six Sigma, 2025).

It is considered that quality management consists of four main key components:

1. Planning
2. Improvement
3. Control
4. Assurance

The planning component is for identifying what standards of quality are relevant to the processes within the organization and making a decision on how to meet the set standards (CFI, 2025). Garvin (1987) lists eight categories of quality that can serve as a framework when analyzing what standards are relevant for the company in question, as seen in Figure 2.

The standards of quality within each category depend mostly on the customer and their needs. A simple example that Garvin (1987) uses in his article is the

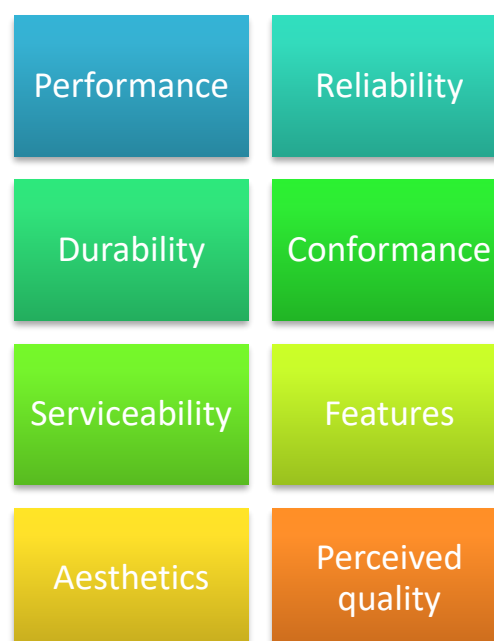


Figure 2 Garvin's eight categories of quality (Garvin, 1987)

properties of cosmetics, some customers find it most important that the product does not smudge while others find the irritation-free properties more important. Some preferences can also be seen as universal, like the noisiness of a car, Garvin (1987) explains that the noise level of a car is often viewed as a reflection of its quality.

The improvement component explains itself quite well, you simply have to continuously make improvements to your organization to continue to guarantee the standards. The control component could be seen as a component working hand in hand with the improvement component by controlling that each process upholds the set standards. Assurance could be seen as a more in-depth component linked to controlling and upholding the standards within a process. (CFI, 2025)

Quality management goes further than just complying with standards within a process, it also looks to uphold standards within organizational culture, products and services, all this with the focus on success through customer satisfaction (CFI, 2025). A state of mind that is familiar among successful companies is that if the staff are happy, the customers will be happy. If you think about it, are you more satisfied with the services performed by a person who is glad to see you and takes an interest in you, or by a person who could not care less if you are satisfied with the outcome of the service?

To simplify the idea or general structure of quality management: agree within the organizations what your quality targets are, define how you will measure whether the targets are being met, and lastly, report on the level of compliance with your set quality targets. (CFI, 2025)

Common benefits of quality management are consistency, efficiency, improved customer satisfaction, and it benefits a business in their marketing, making it easier to integrate new employees as well as helping with continuous improvement. The aspect of efficiency points to an efficient use of resources, time and a reduction of waste. When it comes to an easier integration of new employees, it stems from the mapping of all processes and quality targets, thus providing the employee with a complete map of how the company operates and what quality standards are expected to be fulfilled. (CFI, 2025)

Since quality management, and the improvement of quality, takes into consideration products, processes and people, there are a number of different quality management systems and quality management techniques that can be applied: ISO, top down and bottom up, Kaizen, zero-defect programs, six sigma and quality circle, just to name a few (CFI, 2025).

The ISO standard could be considered the most popular of the quality management systems, or at least in Europe. The ISO-standard will have its own chapter in this thesis, but the rest of the above-mentioned systems and techniques will be further explained in the following chapter.

2.1 Quality management principles

The customer focus lies in the center of quality management, it is for the customer and their experience that an organization wants to ensure a consistent service and/or product. For the customer to be in focus an organization needs engaging leadership that keeps the personnel aimed at the same goals and inspires a want amongst the personnel to keep a mutually beneficial relationship with customers and other stakeholders. For a consistent and constant improvement organizations need to base all decisions on factual evidence and apply a process approach to the organization. (ISO, 2024)

The seven principles of quality management, as seen in the figure below, are most commonly used in quality management and quality management systems:



Figure 3 The seven principles of ISO 9001 (American Society for Quality, 2024)

There is no set priority ranking in this figure and the significance of each principle may vary from organization to organization. (ISO, 2024)

To illustrate the validity of this approach, let us take a look at the same principles reversed: customers are exploited, the staff is uncommitted, decisions are based on a coin toss, regression, the leaders are irresponsible, the organization has a random approach to issues and stakeholders are disregarded. This list seems more like a recipe for how to get a company or organization to crumple to pieces in record time. (Promé, 2022)

As stated previously the seven principles of QM are: customer focus, leadership, engagement of people, process approach, continual improvement, evidence-based approach to decision-making and relationship management. Customer focus points to the understanding that the customer is in the organization's focus. This is done by meeting the customers' needs and expectations (Citation ISO Certification Limited, 2024). The principles of QM can also be described as strengthening systems and processes, encouraging teamwork and employee engagement, decisions based on reliable information, improved communication and leadership commitment (Population Reports, 1998).

Leadership, engagement of people and relationship management are all principles that are closely related to each other. With good leadership the engagement of people comes almost automatically. With a satisfied staff being a classic link to happy customers, this then links back to the principle of relationship management (Citation ISO Certification Limited, 2024). Another key aspect of good leadership is the ability to involve the employees in the process of setting goals and objectives within the company. This is seen as a motivating factor for employees, thus increasing their loyalty and productivity. (CFI, 2025)

Just as in the passage above, process approach, improvement and evidence-based decision-making are all also closely linked. All processes within the company should follow the same principles for maximized efficiency. The processes should also be continuously checked and improved. All improvements should be based on facts and data gathered from reliable sources (Citation ISO Certification Limited, 2024). Garvin (1987) also states that the collection of facts and data requires a reliable data collection system. This system should gather data from all aspects of the company, including testing failed parts in a laboratory to gain a better understanding of what went wrong.

To further dive into the significance of leadership it is also important to consider whether you should implement a top-down or bottom-up management style. To explain this concept as briefly as possible: top-down relies on the bosses to know what is best while bottom up takes into consideration what the most "bottom" employees have to say. (Principle Based Management, 2022)

Top-down management is seen as causing fewer misunderstandings and the hierarchy is clear. However, this method limits the team members' creativity. Bottom-up is the reverse, it encourages creativity but communication risks being unclear and slow. Also, this method lacks insight from a higher level (Team Asana, 2024). There is however evidence that a combination of the two methods offers a good mix of leaders communicating "why" changes need to be done and the employees offer the "what" and "how" of said changes and improvements. (Millard, 2023)

Top-down management is the classic way of running a business, a handful of leaders dictate how the business should be run, they set the strategy and coordinate implementations. Some positive aspects of top-down management are that most people are familiar with this type of management, expectations are clear and the workers "on the floor" can focus on their day-to-day tasks. Even though this is a classic way of management it does have some downsides as well: employees might feel unconnected to the greater picture of the business and its goals and strategies, the future of the company is determined by a handful of individuals, and it limits creativity amongst the employees. (Millard, 2023)

As a comparison, bottom-up management still holds the leaders responsible for the strategic plan, but all employees are encouraged to share their own ideas on possible improvements. The positive side of bottom-up management is that employees are more engaged in the company and its future, the productivity increases with a feeling of ownership and employees can offer a better understanding of day-to-day issues that leaders might not be aware of. On the other hand, some downsides could be that too many ideas, and too much feedback could lead to disagreements, unclear directives and slower processes, employees might not feel comfortable sharing their true feelings with leaders and it can be challenging for employees to choose the most important projects from a strategic point of view. (Millard, 2023)

2.2 Quality planning

According to Juran, quality planning involves the following steps: 1) identify the customer, 2) determine the customers' needs, 3) translate these needs into a language the organization understands, 4) develop products with features that align with customer needs, 5) develop processes to meet customer needs and 6) transfer the processes to operating areas. (Gibbons, 1994)

2.2.1 Zero-defect programs

The term “zero defects” is credited to Philip Crosby and his book titled “Absolutes of Quality Management”. The mindset behind zero defects is not as literal as the name suggests, it is simply to strive to get things right the first time, increasing quality and reducing waste. By striving for perfection, even if true perfection might not be technically possible, the least it will do is increase quality throughout the process. (Simplilearn, 2024; Zhang, Li, & Yu, 2024)

To implement a zero-defects approach to an organization it is important to create a culture of quality throughout the organization and for each aspect of the employees’ workday. To be able to implement a culture of quality you need to have clearly defined quality standards including metrics to be able to follow up on the actual quality of work. Hand in hand with all of this is the process of continuously identifying potential defects, which can be done with the help of customer feedback and reviewing processes. Once the possible defects have been identified, it is key to implement some form of preventative measures, such as training programs and quality control. To tie this all together, by measuring the quality with set metrics and implementing a spirit of continuous improvement, quality will be assured, and defects will decrease (Simplilearn, 2024). Garvin (1987) lists a few concrete examples of things that helped a missile production company to keep up the motivation amongst their employees to ensure that they held up to the “zero defects” standard: employee training, posting quality results and positive criticism.

A fundamental part of the zero defects philosophy is the elimination of waste. In this case, waste is not just trash, but every aspect of the process that is deemed unproductive. This could be a whole process, tools or employees. By eliminating waste, we introduce a mindset of improvement and are able to lower costs. (Simplilearn, 2024; Six Sigma, 2025)

In all cases of change, it is important to remember four key principles of change management: understanding, planning, implementation and communication. Some other aspects to keep in mind when considering implementing the zero defects philosophy are to keep the customers’ quality expectations in mind, if it does not matter to the end user, there is no point in overcomplicating things. Give the employees some incentive by rewarding them when they successfully achieve zero defects. Learn from your mistakes and encourage continuous improvement. Measure the quality of your processes and monitor the progress within the different teams (Simplilearn, 2024). All the different quality management systems

and theories seem to follow the same basic principles; be aware of the problem, make a plan to fix it, communicate your plan and implement it, monitor the progress and adjust if needed.

A negative side of the zero defects philosophy is that a team could be trying to achieve zero defects in a process that simply cannot accomplish that goal. This could then lead to lowered employee satisfaction and morale. This philosophy could also spark conflict within the supply chain if other manufacturers define “zero” differently. (Simplilearn, 2024; Six Sigma, 2025)

2.2.2 Catchball

During the “plan” stage it is important to maintain an open channel for feedback. A technique that could be recommended for this is Hoshin Kanri Catchball, where “Hoshin” and “Kanri” mean “direction” and “management”. The main objective of Catchball is to maintain a constant loop of feedback throughout all levels of the organization, as shown in the figure below. (Toneva, 2024; Witcher & Butterworth, 1997)

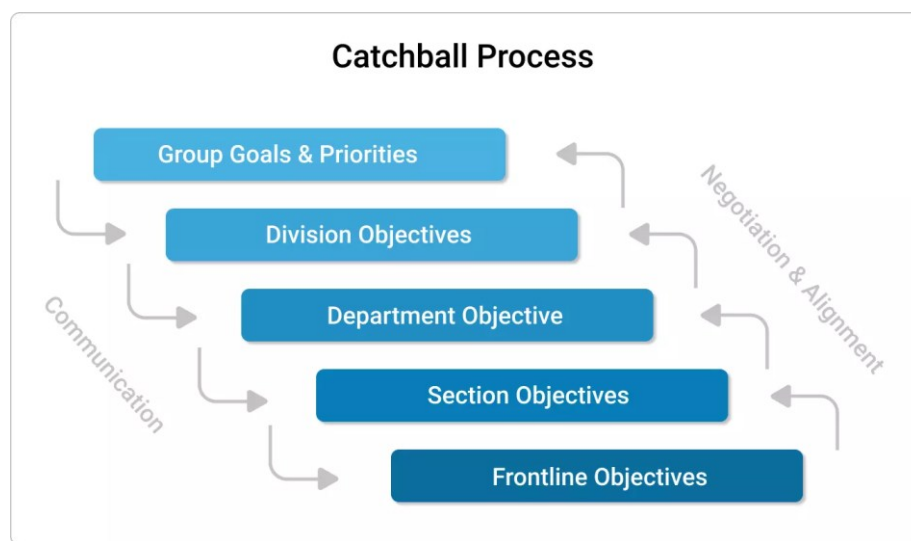


Figure 4 Catchball Process (Toneva, 2024)

A simple explanation for how catchball works is that upper management sends their goal strategy proposal to the next level down and waits for their feedback to then make changes if needed. The point is that every level of the organization gets an opportunity to give their input on the proposal. By following this process employees gain a better understanding of how they fit in with the bigger picture. (Toneva, 2024)

When employees feel like a part of the bigger picture, they naturally feel more engaged in their work, which in turn leads to aiding the concept of continuous improvement. (Toneva, 2024)

An important aspect of Catchball is that every participant gets enough time to consider the proposal and give their feedback. It is also important to ensure that everyone feels heard but is also held accountable for their proposals, as this is to ensure that the plans are carried out. (Millard, 2023; Toneva, 2024)

To guarantee that everyone feels heard and comfortable participating in Catchball, it is important to use the right forum for each organization or each part of the organization. For example, sometime is might be more suitable to have a one-on-one discussion and sometimes a team discussion might be better suited for a more natural flow of ideas. (Toneva, 2024)

Another benefit of Catchball could be that by keeping an open discussion with all parts of the organization and taking into consideration all their feedback, the mistake of jumping to conclusions could be avoided. (Millard, 2023; Howell, 2022)

Catchball has also been linked to more innovative leaders who encourage the development of their team members' abilities. (Howell, 2022)

2.3 Quality improvement

For any business to survive there must be some form of improvement happening every day, but for a business to truly thrive it needs to undergo some breakthrough improvements. These improvements require leadership support and tried-and-true methods to be truly effective. An example of a breakthrough improvement is lowering the chronic waste within a process. Chronic waste could be work that needs to be redone due to some form of failure. (DeFeo, 2019)

2.3.1 Pareto Principle

Juran was the first to note that the Pareto Principle (also known as Pareto's Law), created by economist Vilfred Pareto, not only applies to economic activity but also to quality problems. This principle is also known as the 80/20 rule, meaning that 20% of an organization's actions account for 80% of their results. Or put in other terms, 20% of the employees stand for 80%

of the results or outcomes. This can also be described as the vital few and useful many. (Hardy, 2010; Juran, 2019)

The 80/20 rule can be looked at from both a negative and a positive angle. A positive: 20% of employees generate 80% of sales. A negative: 20% of steps in a process generates 80% of the scrap. The key in these cases is to focus improvement efforts on the vital few problem areas to be able to make the most improvements. (Hardy, 2010; Juran, 2019)

Even if the Pareto Principle seems to be simple it is still painfully common for organizations to try and solve a long list of problems with the same vigor, instead of gathering data to be able to identify the vital few and focus efforts on those. The Pareto Principle has proven that most results can be gained from correcting those vital few problem areas. A Pareto analysis diagram or table can be used to visualize those vital few. The Pareto analysis table is split into four columns: 1) the contributors, such as steps in a process, 2) number of detected errors, 3) percentage of total errors and 4) cumulative percent of total. The contributors should be ordered according to the amount of errors to more easily visualize the vital few. An example of such a table can be seen below. (Juran, 2019)

Order-Form Item	Number of Errors	Percent of Total	Cumulative Percent of Total
G	44	29	29
J	38	25	54
M	31	21	75
Q	16	11	86
B	8	5	91
D	5	3	95
C	3	2	97
A	1	0.67	98
O	1	0.67	98
R	1	0.67	99
N	1	0.67	99
L	1	0.66	100
I	0	0	100
E	0	0	100
H	0	0	100
K	0	0	100
F	0	0	100
P	0	0	100
TOTAL	150	100	100

Figure 5 Pareto analysis table (Juran, 2019)

2.3.2 Kaizen

Kaizen translates to “change for the better” and stands for continuous improvement. This theory was developed in Japan by car manufacturer Toyota’s Masaaki Imai, after the second world war. The basics of the kaizen philosophy are that small changes lead to increased efficiency, efficiency in this case also includes improved quality and reduced waste. Kaizen requires an active participation of all employees and follows the PDCA cycle. A cornerstone of the kaizen principle is that improvement is an ongoing aspect of an organization and not just a one-time project. (Clayton, 1995; Walter, 2023)

The kaizen principle can be split into six core ideas: small steps, continuous improvement, all employees, process orientation, customer focus and measurable results. With kaizen the focus with changes is to do it in small steps made regularly rather than radical changes. With the small steps all forms of improvement come automatically at a continuous rate. Kaizen

encourages all employees, regardless of position, to participate in finding new ways of improvement. The process orientation within kaizen does not mean it only looks at the process, it means that the process of business and operations is looked at just as closely as the products. Just like many other quality management systems, kaizen strives to keep the customers happy. To be able to monitor the results of the efforts it is important to have some form of way to measure the improvements being made. (Daniel, 2021; Walter, 2023)

Some of the main benefits of the kaizen principle are flexibility, continuous improvement, cost reduction, increased efficiency, quality improvement and increased employee motivation. To tie these together it could be said that kaizen promotes an organizational culture with a focus on learning, flexibility and continuous improvement. (Daniel, 2021; Walter, 2023)

2.3.3 Quality circle

Quality circles, also known as QC or kaizen circles, consist of a group of employees who come together to identify, analyze and solve problems related to quality within an organization. The main objectives of these quality circles are problem solving, continuous improvement, skill development and employee engagement. Employee engagement comes quite naturally when working with quality circles since employees tend to feel heard and more involved in the process when being part of a quality circle. (BBC, 2025; Indeed Editorial Team, 2025; Kothari, 2024)

Quality circles usually consist of 6 – 12 employees from different departments and levels of management. The group appoints a team leader who is in charge of keeping the discussions on track, arranging meetings and keeping in touch with management. During the meetings the quality circle discusses quality issues with the help of different tools, such as PDCA and fishbone diagrams. (Kothari, 2024)

Even though a quality circle might feel more relaxed and informal at first glance; it still follows a structured process just like any other quality management method. It all starts with the identification of quality-related problems that are then analyzed and data relating to the problem is gathered. The next step is to generate possible solutions to the problem by, for example, brainstorming. After the brainstorming session the best solution is selected and a plan for implementation is made and executed. Next comes the review of the implemented solution and possible adjustments are made. The last step is standardization, where the

improved solutions are standardized into the process and continuous improvement is encouraged. (Indeed Editorial Team, 2025; Kothari, 2024)

2.3.4 Six Sigma

Six Sigma is a set of techniques developed by Bill Smith in 1986 and is used to improve processes within a company. The Six Sigma technique relies on statistics, financial analysis and project management to achieve the goal of a better and more efficient process. Six sigma is also known from its five phases known as DMAIC, meaning: defining, measuring, analyzing, improving and controlling. (Bento da Silva, Gonçalves Cabeça, Barbosa, & Shiki, 2022; Hayes, 2024)

The fundamental idea of six sigma is that all processes can be measured and optimized. The original goal of the theory was to achieve long-term deficiency levels below 3,4 DPMO (defects per million opportunities) but has now been more generalized to focus on customer requirements, improving and sustaining products, services and customer retention. (Hayes, 2024)

As previously mentioned, six sigma follows five phases called DMAIC. Let's break it down into each individual step to understand it better. The first step, "define", simply is looking at a process and to define in what problem it strives to solve. Next, we have "measure", in this step the original process is measured to create a benchmark and a list of possible hinders is created. The third step is "analyze", in this step each possible constraint is looked at to see if they are to root of the problem. After this step comes "improve" which simply is the phase of implementing changes to improve the process. The last step is "control", in this step a set of controls is added to the process to ensure that it does not become ineffective again. (Bento da Silva, Gonçalves Cabeça, Barbosa, & Shiki, 2022; Hayes, 2024)

Six Sigma follows five key principles: 1) customer focus, 2) measure the processes and find the problems, 3) eliminate waste, 4) continuous improvement and 5) a culture of flexibility. The goal of the first step, customer focus, is to bring as much benefit to the customer as possible. To be able to do this a company needs to understand their customers and what their needs are as well as what drives their sales and loyalty. The second step involves mapping out the processes, identifying areas of waste and other problem areas within the process. This step also contains data collection and defining what data that needs to be collected. The third step is all about removing bottlenecks and waste, waste can be defined as anything that does not add to the value for the customer. The fourth step should involve all stakeholders and

require team members to get continuous education relevant to the quality of the process. The last step focuses on flexibility within the company, its teams and processes. This is due to the need for rapid adjustment once a process is changed or removed due to waste or being a bottleneck. (Agrawal, 2025)

The DMAIC model of six sigma is used when improving current products or processes but there is another version that is used for designing new products or processes or when current products or processes are not up to standards even after optimization. This model is known as DMADV and stands for define, measure, analyze, design and validate. Still, the DMAIC model is the standard application within most companies. (Agrawal, 2025; Six Sigma Online, 2025)

Each phase of the DMAIC model can be split into three more tangible steps. First, we have the “define” phase where the problem is defined from a customer’s perspective, then the goals are set, and resources are planned for, and the last step of the phase is to map out the process and to verify with stakeholders that the plan is on the right track. The next phase is “measure” where the problem is measured in numbers, performance goals are set and the system for evaluation is evaluated to ensure it fits in with the overall goal of the process. After this comes the “analyze” phase where it is determined if the process is effective and if it achieves what is needed from it, the goals are quantified and lastly, variations are identified using past data. The next phase is “improve” where possible reasons and variables are identified, the relationships between variables are identified and process tolerance is established. The last phase is “control” where the measurement system is validated, the process capacity is established and, finally, implementation. (Agrawal, 2025)

Some techniques that can be helpful under the Six Sigma process are, for example, brainstorming, the Five Whys, voice of the customer, kaizen and value stream mapping. Brainstorming is especially helpful during the “improve” phase of six sigma since it encourages participants to bounce around ideas together to hopefully find a new and creative solution to the problem at hand. The five why’s, or also known as root cause analysis, can be helpful during the “analyze” phase and is asking the question “why” as many times as necessary to get to the root cause, much like a toddler bombarding with the same question to gain understanding of something new. The number five is just a rule of thumb, it is necessary to ask “why” as many times as it takes, no matter if it is twice or ten times. Voice of the customer is a necessary part of the “define” phase since it uses customer feedback to help identify any issues. Kaizen strives for continuous improvement by small steps and value

stream mapping is used for waste reduction within processes. (Agrawal, 2025; Six Sigma Online, 2025)

2.4 Quality control

The basic steps for quality control according to Juran are: 1) evaluate performance, 2) compare performance to goals and 3) make changes as needed. By following these steps Juran argues that performance will be brought in line with the goals set by the organization. (Gibbons, 1994)

Why do we need quality control? Quality control (QC) is the daily process of delivering products and services according to the features needed to satisfy customer needs. Any variation to these features could have a detrimental effect on a product's safety, performance and/or compliance with regulations (DeFeo, 2019). Benefits of QC include, customer satisfaction, defect prevention, cost reduction, brand reputation and increased efficiency (Agrawal, 2024; Indeed Editorial Team, 2025).

QC works as a feedback loop; the performance of the process is measured and if it deviates from the set standard actions are taken to get it back on the right track (DeFeo, 2019). QC is also a process of implementing a protocol for controlling and improving the delivery processes of production or services. Key components of QC could be inspection and testing, documentation, corrective action, training and continuous improvement. (Agrawal, 2024; Indeed Editorial Team, 2025)

The QC process relies on testing the product or services through different stages of the process. In a manufacturing setting the raw material, the finished product and samples from different stages of the process are tested to ensure compliance with quality standards and regulations. A non-manufacturing process can be tested with the help of customer reviews, surveys and inspections (Agrawal, 2024). Some useful tools for QC include checklists, control charts, Pareto chart and scatter diagrams, just to mention a few. (Bloom, 2018)

QC is closely related to quality assurance (QA), QC is all about detecting and correcting problems while QA is about preventing them with the help of solid processes. Or put in other words, QC determines if a product is defective or not while QA looks at the bigger picture to try and prevent defects from occurring (Agrawal, 2024).

2.5 Quality assurance

Three primary arguments for implementing a quality assurance (QA) program could be defined as customer satisfaction, public trust and product quality. All three aspects rely on products keeping a set standard and proactively preventing issues. (Hashemi-Pour & Gillis, 2024)

QA could be seen as a broader process compared to QC. QA follows along throughout the development process and works to prevent any issues or failures in a proactive way. QC is a narrower process that takes place after development and works to detect any mistakes within a product. QA works to find and issues in the process before they cause problems while QC looks for imperfections in completed products or services. QA is an ongoing process, just like the basics of quality management, while QC takes place after development. Both parts are important, and both are needed to ensure that quality standards are being met and upheld. (Product Plan, 2025)

When it comes to systems to help uphold an effective QA, the ISO 9001:2015 is the most widely used and the 2015 version is the newest within ISO. QA has its origins in the manufacturing industry but has now spread into most other industries. QA can be split into three main reasons why it is important: customer satisfaction, public trust and product quality. A well-functioning QA system contributes to products or services meeting expectations of customers, and these high-quality products lead to increased trust from customers and the clearly defined standards proactively prevent defects. (Hashemi-Pour & Gillis, 2024)

3 Quality management systems

The basics of a quality management system (QMS) and techniques are a collection of processes that map out how each part of the organization operates and ensure that each task is done to the highest standards set within the organization and by its customers. The QMS ensures communication and consistency within an organization, which then in turn reduces waste and encourages improvement. There are several different QMS in existence, but they

all share the same basic principles: identify potential hazards and work on improving them. (ISO, 2024)

3.1 PDCA

The plan – do – check – act (PDCA) cycle is the foundation for several quality and management systems and was developed by Walter Shewhart and W. Edwards Deming (Williams, 2020). There are two important questions to ask when working with the PDCA cycle: Who is the customer? And how can I give them what they need? (Gibbons, 1994)

Both ISO 9001 and ISO 14001 follow the PDCA cycle. As the figure below shows, the PDCA cycle follows a circular plan, meaning that you should continuously re-evaluate the process to ensure constant improvement. (American Society for Quality, 2024; Pan, Luo, & Duan, 2022)



Figure 6 PDCA cycle (American Society for Quality, 2024)

The PDCA cycle should be used when improvements or developments are planned, when mapping a process that is repetitive or when implementing any change. The PDCA cycle is built up of four parts: plan, do, check and act. The planning stage is for recognizing the need for change and making a plan for it. Next stage is do, which is meant for testing; often, a small-scale test is recommended. The third stage is check; in this stage the change should be analyzed. The last stage is act; in this stage the change should be implemented or if the change was not up to par, the PDCA cycle should be repeated. (American Society for Quality, 2024)

Put in other words: in the “plan” stage it is stated what will be done. In the “do” stage the plan is implemented. In the “check” stage it is confirmed that the plan is being followed without variation. And lastly, during the “act” stage the previous stages are evaluated and possibly improved upon. (Williams, 2020)

Some examples of important questions during the “plan” stage are what problem needs to be solved, what resources are available and what resources are needed, what is the best solution and what are the goals? To ensure that the PDCA cycle works as efficiently as possible it is important to first have a strong foundation in the “plan” stage. It is recommended to use facts to outline the problems, for example, SWOT analysis is a suitable tool for this. (Naydenov, 2024)

It is common for unexpected issues to arise during the “do” stage of the PDCA cycle. This is why it might be best to implement new systems first on a small scale. These issues are also a natural part of the cycle since the whole point is to continuously re-evaluate the situation to guarantee continued learning and adaptation. For a successful “do” stage it is recommended to try out any changes on a small scale and to have enough resources, such as time, people and money. During this stage it is important to gather data about how the plan is working so that this information can be analyzed during the “check” stage. (Naydenov, 2024)

The “check” stage is suggested to be the most important part of the whole PDCA cycle since this is where issues discovered in the “do” stage are thought over and the plan is revised to fix any problems. (Naydenov, 2024)

With the PDCA cycles’ practical approach the problems are in focus and with the continuous cycle these problems are ensured to be solved as efficiently as possible. (Pan, Luo, & Duan, 2022)

Studies have shown that employees feel more enthusiastic about their work when following the PDCA cycle. Moreover, these employees also reported that they felt a greater ability to work in teams successfully. The same employees also felt more satisfied with their work when following the PDCA cycle. (Pan, Luo, & Duan, 2022)

3.2 Environmental management systems

Environmental management systems (EMS) are built up on the same basics as quality management systems, the only differing aspect is that environmental management systems focus on the environmental impact of an organization and its processes rather than just the quality of a process. Therefore, the same methods can be used in an EMS as in a QMS. An EMS can help both with compliance-related issues, such as health and safety, as well as non-regulated issues, such as energy conservation. (EPA, 2024)

Some basic elements of an EMS are to evaluate an organizations environmental goals, analyze the environmental impact and set targets for reduction of the environmental impact, implement systems to keep on track with the goals and monitor the progress as well as ensuring the employees' competence on the matter (EPA, 2024). It is important to note that the EMS in itself does not state what goals an organization has to meet, it is the organization that sets the goals for themselves.

ISO 14001 is the most popular EMS and is often combined with ISO 9001 QMS. This is due to both standards following the same basics and rather than doing the work twice, both standards build on the same processes. The primary focus of a QMS is the customer while the primary focus of an EMS is the environment, both local and global, and the secondary focus lies on different stakeholders, such as customers and shareholders. (ASQ, 2025)

Besides ISO 14001 there are also other options such as EMAS, an extensive system, and EcoCompass, a streamlined system (Suomi.fi, 2022). Both are explained in the subchapters below while ISO 14001 will get its own chapter further below.

3.2.1 EMAS

EMAS, the Eco-Management and Audit Scheme, is a voluntary EMS based on both EU regulations and the ISO 14001 standard, thus making it mostly used within the European Economic Area. When following the EMAS EMS the organization should adhere to environmental legislation, continuously improve their environmental impact and publicly report on their progress. The certificate for EMAS can be applied for from the Finnish Environmental Institute. (Suomi.fi, 2022)

As of November 2024, there are 4 101 organizations, and 17 208 sites are registered under EMAS. The leading sectors are waste collection, public administration and specialized construction activities. (European Commission, 2024)

There are eight steps to follow to be able to join the EMAS register: 1) plan and prepare, 2) define environmental policy, 3) develop environmental program, 4) establish and implement EMS, 5) internal audit, 6) create environmental statement, 7) external verification and 8) join the EMAS register. The first step includes defining the scope of the EMS, environmental review and being transparent with all information. Step two includes establishing environmental policy and involving top management into the process of defining the organization's core identity for the environment. In step three the organization must set clear goals, identify relevant measures, assign responsibilities, allocate resources and develop a timeline. Step number four includes defining roles and responsibilities, mapping compliance obligations, engaging employees and offering them training on the matter as well as establishing how you are going to communicate the progress and results both internally and externally. For the fifth step the organization must establish the procedure for internal environmental audit as well as set it up, perform it regularly and conduct systematic evaluations and document all findings. Step six includes preparing the environmental statement, establishing what the minimum requirements for the statement are and defining the environmental performance indicators. In step seven the organization must select an external accredited verifier and work with them to ensure compliance. And for the last step, number eight, the organization can submit an application to the competent body in their country and will, after an approved application receive the EMAS verification. (European Commission, 2025)

3.2.2 EcoCompass

EcoCompass is a practical and streamlined EMS based on ISO 14001 and is adapted for small and medium-sized organizations. (EkoKompassi, 2025)

EcoCompass requires organizations to comply with and continuously improve upon ten criteria, as seen in Figure 7:



Figure 7 EcoCompass ten criteria (EkoKompassi, 2025)

3.3 The ISO standard

This chapter will explain the two certificates and what they require of the company. Moreover, there will be further explanations on relevant aspects of the certifications.

3.3.1 ISO 9001

The International Organization for Standardization (ISO) published the ISO 9001 standard in 1987. The ISO standard is used in more than 160 countries, and the latest version was published in September 2015. (American Society for Quality, 2024)

ISO 9001 is a standard for quality management that is globally recognized. This standard can be implemented in any company of any size and brings along several benefits such as quality control and greater customer satisfaction. (ISO, 2024)

Quality management systems (QMS), such as the ISO 9001 standard, are used by companies within all kinds of fields to prove that their products and services follow regulations and customer requirements. (American Society for Quality, 2024)

The ISO 9001 standard is used by over a million different organizations and companies. These organizations report that they have gotten support in organizing their processes, being more efficient and implementing a culture of continuous improvements by following this standard. (American Society for Quality, 2024)

ISO 9001 standard offers a greater focus on customers, management practices and guidance on how these management practices can change an organization. This ISO standard also helps to optimize processes, efficiently help customers with any issues or questions as well as increase their satisfaction overall. A philosophy within the ISO 9001 standard is to encourage organizations to regularly look over their QA processes and identify any areas that need further improvement. (Hashemi-Pour & Gillis, 2024)

Key areas

ISO 9001 can be split into four main areas: leadership, resources, products and improvements. ISO 9001 can also be viewed as seven clauses: organization, leadership, planning, support, operation, performance and improvement. (Citation ISO Certification Limited, 2024)

The clause for organization requires organizations to recognize what internal and external factors affect their products or services quality. Organizations also need to identify the stakeholders and both the stakeholders' and the customers' needs. (Citation ISO Certification Limited, 2024)

Leadership in the ISO 9001 clause points to the need for managers to implement the necessary changes and lead employees towards the set goals. The support clause is closely related to the leadership clause since ISO 9001 requires organizations to provide their employees with the resources and support needed to meet their goals. (Citation ISO Certification Limited, 2024)

The planning clause is an essential part of the ISO 9001 standard. Organizations need to have a clear risk-based plan that recognizes potential risks and how to solve them. With a plan in place an organization can solve problems with minimal, or hopefully no impact on their customers and stakeholders. (Citation ISO Certification Limited, 2024)

The clause for operations states the requirements for the products or services quality, guides and other documentation to help staff to keep a uniform result, monitoring of quality and storage of information. (Citation ISO Certification Limited, 2024)

Closely related to operations is the clause for performance and its evaluation. Organizations need to continuously evaluate their performance to make sure it is up to ISO 9001 standard. (Citation ISO Certification Limited, 2024)

Hand in hand with performance evaluation is the clause for improvements. Improvements should be made based on information gathered from the performance evaluation, such as product improvements to better fit customer needs and identification of processes that have not gone according to plan. (Citation ISO Certification Limited, 2024)

Job satisfaction

By following the ISO 9001 standard organizations have reported a more satisfied staff. This could possibly be due to a better organizational structure and communication. (American Society for Quality, 2024). Rateb, Rawan, Sharaireh and Moarefin found in their study that the overall job satisfaction was greater in companies with an ISO 9001 certification than in companies that did not have the certification. (Rateb, Rawan, Sharaireh, & Moarefi, 2019)

Job satisfaction can differ immensely from individual to individual and therefore can be challenging for organizations to control. Studies show that if individuals feel heard, no matter if it is positive or negative feedback, they feel more satisfied at work (Rateb, Rawan, Sharaireh, & Moarefi, 2019). An individual's feeling of control over their tasks seems to be closely linked to their feeling of job satisfaction. Moreover, employees need a feeling of safety to feel satisfied with their job. (Rateb, Rawan, Sharaireh, & Moarefi, 2019)

Studies suggest that having a system and clear guidelines might play an important part in employee job satisfaction. But it is also important to keep in mind that employees might feel stressed or overwhelmed if too many rules are implemented. This holds true both for managers and the rest of the staff. (Rateb, Rawan, Sharaireh, & Moarefi, 2019)

Even though ISO 9001 certification brings along greater job satisfaction with its clear processes it also brings along a greater workload with its need for clear documentation. This increased workload then decreases job satisfaction. But then again with clear documentation organizations could save a lot of time looking for information, regarding for example bookings, in the case of something going wrong. This then would again increase job satisfaction. (Rateb, Rawan, Sharaireh, & Moarefi, 2019)

Employees have reported more respect for their manager and a greater feeling of team spirit since adopting the ISO 9001 standard. The feeling of control is important, both control of

individual tasks and a feeling of things being under control within a team or department. This feeling could be linked back to the clear processes associated with the ISO 9001 standard. (Rateb, Rawan, Sharaireh, & Moarefi, 2019)

Furthermore, employees might feel more satisfied with their job within an ISO 9001 certified company since they would have a well-developed QMS containing all the information needed for the job, thus minimizing potential misunderstandings. Within the QMS there is also a clear division of responsibility which then makes it clear who is in charge of what, making communication easier and faster. (Rateb, Rawan, Sharaireh, & Moarefi, 2019)

Looking specifically at managers, studies show they have a higher level of job satisfaction within companies with ISO 9001 certification. This might be linked to the QMS of ISO 9001 and its requirements for clear and full information regarding all aspects of the job. (Rateb, Rawan, Sharaireh, & Moarefi, 2019)

3.3.2 ISO 14001

Like ISO 9001, ISO 14001 is also an international standard but with a focus on environmental management rather than quality management. ISO 14001 certification increased noticeably during the start of the century and continues to be a popular standard for environmental management systems (EMS). (Naudé, Quaddus, Rowe, & Nowak, 2012)

The annual ISO survey from 2017 shows that the number of companies and organizations obtaining the ISO 14001 standard is continuously increasing (with a small decrease in 2017) as the figure below shows.

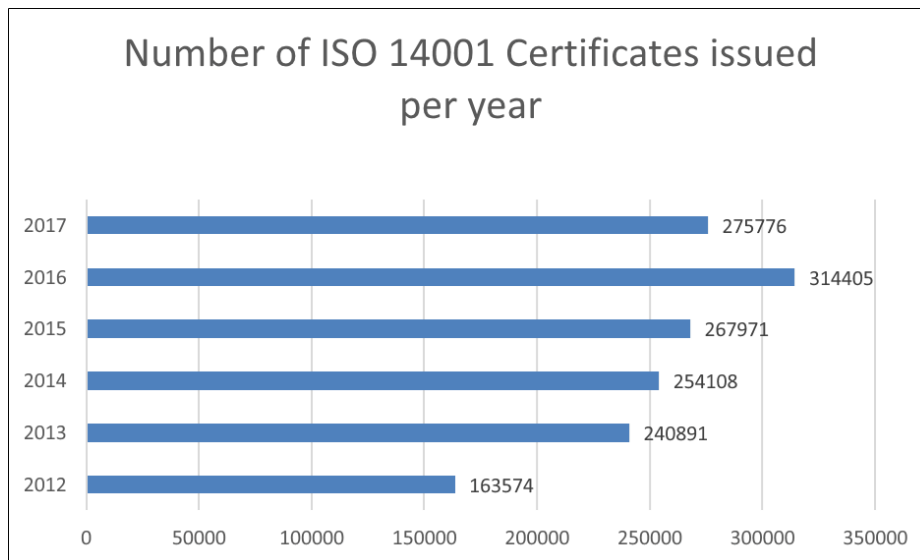


Figure 8 Number of ISO 14001 certificates (Hammar, 2024)

Just like ISO 9001, ISO 14001 is a voluntary standard that different companies and organizations can certify to. ISO 14001 follows the same PDCA model (plan, do, check, act) as ISO 9001. By following the ISO 14001 standard a company can more easily follow up on their compliance with regulations and recognize its risks and opportunities. (American Society for Quality, 2024)

Globally, there is a growing need for a more environmentally friendly way of doing things. With this need also comes a demand for companies to report their ecological footprint. And with a large part of a company's competitors reporting their environmental impact, there is a natural need for improving their impact on the environment. (Naudé, Quaddus, Rowe, & Nowak, 2012)

It is also suggested that a company's environmental impact is linked to its sales since customers are more and more aware, and concerned, about their own ecological footprint. With this in mind, it can be concluded that a company might suffer damages to their reputation if they are caught harming the environment. (Naudé, Quaddus, Rowe, & Nowak, 2012)

With a company's environmental impact being a growing interest for customers and investors, there has been a clear increase in companies reporting their environmental impact on their own webpages. This is probably due to webpages being an easy way for stakeholders to gain information about the company or organization in question. (Naudé, Quaddus, Rowe, & Nowak, 2012)

Some benefits a company can gain from obtaining ISO 14001 certification could be cost reduction due to efficient use of materials and less waste, increased business opportunities due to customers being reassured that the environment plays an important part in the dealings and increased trust in the company from both stakeholders and customers since the company easily can show they follow legislations. (American Society for Quality, 2024)

It is also suggested that employees feel greater motivation to work for a company that shows an interest in the environment. Hand in hand with this is often a company culture of improvement. (Hammar, 2024)

Even though ISO 14001 certification brings plenty of benefits, such as greater security for investors, better public reputation and lower costs due to more efficient use of materials, there are also some aspects that companies might view negatively. Some aspects that are suggested to be negative are a lack of economic reward (mostly regarding government contracts), no public recognition from the government, no enforcement and an inconsistency between government policies. (Naudé, Quaddus, Rowe, & Nowak, 2012)

Key areas

The key areas for the ISO 14001 environmental management system include largely the same aspects as the ISO 9001 quality management system but with an environmental focus.



Figure 9 ISO 14001 EMS framework (American Society for Quality, 2024)

The first part of ISO 14001 is the context of the organization. This means that in order to gain a functional EMS the company needs to map their challenges, both internal and external. Moreover, a company needs to know what parties have interests in the company and what expectations these parties have. (Hammar, 2024)

The next clause talks about leadership. This clause is basically the same as in ISO 9001, meaning that managers need to guide their employees to meet the goals and to give them the resources needed. The clause regarding support is closely linked to leadership since this clause calls for competence and communication. (Hammar, 2024)

The clause for planning can also be seen as being linked to leadership since it talks about the need for planning and recognizing potential risks and opportunities within the EMS. The operational clause is closely linked to planning, since this is the part where the plans are implemented. During a company's day-to-day operation there might arise different situations that call for a change in plans and or processes to be able to meet the set goals. (Hammar, 2024)

Lastly comes the clauses for evaluation and improvement. These clauses are closely linked to each other and also to the clauses regarding planning and operation. This is due to the need for constant evaluation and improvements to gain the most out of having an EMS, just like for the QMS. (Hammar, 2024)

ISO 14001 can also be split up into these four main areas: environmental impact, management responsibility, resource management and analysis. Here the environmental area means the process of the company running a successful EMS. The management area focuses on everything related to managers and leadership. Resources include everything from people to buildings and materials. And the last part, analysis, talks about the constant need for improvement of the company's EMS. (Citation ISO Certification Limited, 2024)

3.3.3 Combining ISO 9001 and ISO 14001

Both ISO 9001 and ISO 14001 standards are linked to several benefits even though they are voluntary standards. Most commonly organizations have reported being more efficient, staff being more satisfied and gaining a better reputation among customers and stakeholders. (Martí-Ballester & Simon, 2017)

Even though both these ISO standards are linked to several benefits, there have also been reports of some difficulties. Some organizations have reported struggles with implementing

the QMS or EMS due to a lack of managerial support, not enough resources to successfully complete the process and difficulties with the corporate culture. (Martí-Ballester & Simon, 2017)

Since most of these studies only look at companies that have implemented one of the above-mentioned ISO standards there have been suggestions from researchers that benefits might be more reliable when implementing both a QMS and EMS at the same time. This is since ISO 9001 and ISO 14001 have several aspects in common and organizations then not having to do the same work twice. (Martí-Ballester & Simon, 2017)

Some suggested benefits of obtaining both these certifications at the same time include less bureaucracy and no duplicates of processes and documentation. This is then suggested to streamline the whole process and keep employees motivated and on track. (Martí-Ballester & Simon, 2017)

4 Methodology

This thesis was conducted as a case study, that offers a description of specific situations with the purpose of generating insights and generalizations. Case studies are also a good research method for giving a better description of the bigger picture and processes (Pai Raikar, 2025). Case studies are a great way to capture large amounts of data to be able to give a generalized answer to questions such as “how”, “what” and “why” (Cherry, 2024). This is especially suitable for the research questions given and the aim of the study being to offer a generalized overview of the ISO certification process. Another aspect of case studies, making it a suitable method for this thesis, is the discussion of how the subject studied relates to theory (Monash University, 2022).

It is recommended to use multiple methods for data collection when doing a case study (Pai Raikar, 2025). Cherry (2024) mentions the use of archival records and documents, interviews and direct observations as useful sources for a case study. This thesis used a qualitative research method, and the data was collected from multiple sources, more on this in the following subchapters.

There are, however, some limitations to doing a case study. A case study, like this thesis, is often used when looking at a specific organization with a specific set of circumstances. Another challenge can be to sift through the often large amount of data generated by a case study and determining what is useful to produce scientifically valid insight (Pai Raikar, 2025). Cherry (2024) also highlights that the results can lead to bias and might not always be generalized to suit a larger population.

4.1 Collection of information

The aim of this thesis is to look at processes associated with the ISO certification and to give a better understanding of the reasoning behind them. The reasoning in this case is based upon the theoretical framework established earlier in this thesis as well as internal documents and employee experiences and therefore is best described in words rather than numbers. This is why the thesis is based on a purely qualitative research method.

Qualitative research answers questions such as “how” and “why”, compared to quantitative research that answers, “how many” and “how much” (Tenny, Brannan, & Brannan, 2022). The two methods can also be combined to give a fuller understanding of the research questions, but this was not something that was applied to this thesis.

Qualitative research is used to look at real-world problems and to explain participants' experiences and behaviors, compared to quantitative research that looks only at numerical data. Qualitative research can also more easily explain processes and patterns that are not easily quantifiable, such as human behavior. A qualitative research method allows participants to explain in their own words what they are thinking and experiencing. (Tenny, Brannan, & Brannan, 2022)

Data for a qualitative study can be gathered using several different techniques, for example interviews and observations (Tenny, Brannan, & Brannan, 2022), both of which have been used in this thesis. To be more exact, data for this thesis has been gathered from the writer's own experiences as an employee at NCS, internal documents and meetings relating to the ISO certification process as well as one short interview with the person in charge of the ISO certification process at NCS. All of this is further explained in the subchapters below.

All of the points mentioned above are why a qualitative research method was selected for this thesis. Since the research objective of this thesis is not to find numerical data but to

gather experiences and compile them into an understandable process for anyone to take part in, a qualitative research method is preferred.

The use of different sources for the data is to ensure the validity of the data. By compiling data from documents, meetings and interviews, the data points can be compared and checked against each other. This will be further explained in Chapter 4.3.

4.1.1 Internal documents

The majority of data collected for this thesis comes from internal documents that NCS has compiled for their ISO certification. These documents include mostly process explanations in as much detail as possible as well as documented routines such as tone of voice.

The processes depicted and explained in this thesis are all based on NCS internal documents and thus follow the same set-up. Most of the details in each process have been weeded out so that only the most fundamental steps and details are left, which is to ensure that any potential business secrets are kept intact. Moreover, the abundant details are not relevant to this thesis since the objective is to give a basic understanding of the whole certification process and the process charts in general.

4.1.2 Internal meetings

The data gathered from the internal documents was complemented by attending internal meetings regarding the internal process of preparing for ISO certification. During these meetings it was discussed what processes should be mapped, what steps these processes contain and what quality indicators should be used for each process. In other words, it could be said that the internal documents were created from the meetings.

There were meetings with connections to the ISO certification almost weekly. The first meetings were at a higher level with upper management just to get an overview of the processes that needed mapping. Upper management was also responsible for documenting general guidelines and company goals. After the general structure of the processes was established, each process was mapped out with the help of a small group of representatives for each process. For example, transport-related processes were mapped out with employees from the transport departments and sales processes were mapped out with employees from the sales department and so on. Finally, all the processes were checked and corrected if needed with the relevant departments.

During the whole mapping process all employees got regular progress updates, and all employees were encouraged to give their input. This input was taken into consideration when proceeding with the meetings and process mapping.

However, I did not have the opportunity to attend every single meeting and therefore have more heavily relied on information gathered from the resulting documents.

4.1.3 Interview

There was a minor need for further questions to better clarify specific details of NCS plans and goals with ISO certification. The best way to get an answer to these questions was to perform a small interview with Marita Saarres-Lakso who oversees the ISO certification process at NCS.

The interview questions can be found as an appendix at the end of the thesis but as a summary they focused on the plan before applying for ISO certification, why NCS wants to adapt the ISO standard rather than any other QMS, what the plan is to obtain ISO certification, what NCS hopes to gain from ISO certification and why NCS want to obtain ISO certification. The question about the desire to obtain ISO certification looks more at the motivation to want any form of QMS.

The interview was a needed supplement to gain a better understanding of the motivators behind NCS's decision-making as well as offering a further point for validation. The answers gathered from the interview were in line with the other data gathered from the internal documentation, meetings and the theoretical framework of this thesis.

4.2 Analytical method



Figure 10 Analytical method

Figure 10 illustrates the basic analytical method used in the data collection for this thesis. The fundamental mindset of analyzing the data was to identify what processes were important, what steps were included in said processes and what activities and routines associated with the processes are relevant and important to understand.

This mindset, or method, had a constant presence when participating in meetings and analyzing the documentation. This was to ensure that relevant data could be identified and gathered rather than compiling everything that came up in the ISO certification process. What data was relevant was determined by keeping the theoretical framework and customer focus in mind. Since the customer, and their perception of quality, is the main focus of any QMS, it is beneficial to keep the customers' definition of quality in mind when mapping out any processes within a QMS. It is also beneficial to keep in mind that a customer is not always an external party, it can be the next person or process down the line. As an example from the empirical part of this theses, the billing process relies heavily on information from the transport process to be able to complete their process correctly and fulfill the quality requirements.

The three parts of the analytical method go hand in hand with the research questions asked in this thesis. With the questions in mind the data collection ran smoothly, and any unnecessary data could be filtered out already from the beginning. The data collected was then also compared to data from each internal source and the theoretical framework to ensure that it could be trusted and that there was an actual thought behind the data produced by NCS. The theoretical framework was constantly at hand to check that the gathered data truly was in line with the theoretical material gathered as a foundation for this thesis.

4.3 Reliability and validity

When evaluating the quality of research, one needs to look at the reliability and validity of said study. Reliability refers to the consistency of measurement while validity refers to the accuracy of the measurement. Reliability and validity are important to consider in any study or form of research since neglecting them can lead to different types of research bias. (Middleton, 2025)

Reliability tells you to what extent results can be replicated under the same conditions. Reliability is checked by comparing the results over an extended period of time, using different observers. Validity tells you whether the measurement truly measures what it is supposed to and it is checked against established theories on the subject at hand (Middleton,

2025). Put in other words, reliability is the consistency of the results while validity is the precision of the measurement (Questionmark, 2022).

To ensure good validity it needs to be considered from the start of the research. This is done by following a valid method and using high-quality measurement techniques so that the research measures exactly what it is supposed to. (Middleton, 2025)

To establish the credibility, or internal validity, of a qualitative study a helpful tool can be triangulation. Triangulation is when several different data collection methods are used, such as interviews, experiences and internal documentation (Tenny, Brannan, & Brannan, 2022). As already mentioned, this thesis has used several different methods for data collection. The data collected from NCS is also supported by the theoretical framework presented at the beginning of this thesis.

A common issue with qualitative research is observation bias. This is when participants knowingly or unknowingly alter their behavior when they know they are being observed or the participants alter their behavior to align with the result the researcher expects to find (Tenny, Brannan, & Brannan, 2022). The observation bias has been eliminated as a factor in this thesis since there are no individuals being observed and the processes that have been observed all follow set guidelines by ISO and the theoretical framework of this thesis.

By compiling data from NCS and looking at it with the knowledge gathered from the theoretical framework, all research questions within this thesis can be answered.

There is no other way to gather in-depth data about the ISO certification process within a company when the goal is to gain an understanding of the process within the one specific company. This thesis has taken into consideration the theoretical framework surrounding quality management as well as data and experiences gathered from within NCS to compile a reliable process description of NCS's ISO certification process.

5 Empirical findings

This chapter of the thesis will discuss the empirical findings. In the subchapters below, the company that is the focus of this thesis, NCS Finland, will be discussed, including why they chose to follow the ISO standard and the process they followed throughout the certification.

5.1 NCS Finland

NCS Finland is a family-owned logistics company founded in 2002 by Timo and Marika Hagman with an annual turnover of 47 million € in 2023. (NCS Finland, 2024)

NCS offers road transport in Europe and the Nordics. The head office is located in Espoo where they take care of transports in Europe. Vaasa takes care of the Nordic transports and Turku takes care of thermos-transports to Europe. NCS also has an office in Rostock and sales representatives in several locations in Europe. (NCS Finland, 2024)

The company has a fleet of 400 trailers and 80 staff that handles over 50 000 transports each year. (NCS Finland, 2024)

To gain a better understanding of what drives NCS to want to apply for ISO certification and what their overall goals with the certification are, I have done a brief interview with Marita Saarres-Lakso who is in charge of the ISO certification process within NCS. The interview focused mostly on NCS's plan and goals regarding ISO certification while also discussing why they chose to follow the ISO standard rather than any other QMS. Moreover, there was some discussion about what the situation was before starting the application process for ISO certification. The interview questions are available as an appendix at the end of this thesis.

Even before pursuing ISO certification NCS had some goals regarding quality and the environment with a focus on digital presence and improved customer engagement. Some of the most important goals included creating a comprehensive network for parcel transportation and offering diverse services including new transportation routes. Customer and employee satisfaction were important factors for NCS already before ISO. This also included investment in employee training and the overall well-being of the employees. (Saarres-Lakso, 2025)

Some numbers that NCS had as a goal before ISO were to reduce their emissions by a certain percentage by a specific year, increasing the electronic (referred to as automatic further down in the text) orders to 75% while also achieving an annual revenue growth of >10% and maintaining a profit margin of 5%. (Saarres-Lakso, 2025)

5.2 Reasons for ISO certification

RQ 1: *What are the reasons for NCS wanting to achieve certification for ISO 9001:2015 and ISO 14001:2015?*

Why does NCS want ISO certification instead of any other QMS? The ISO standards are a globally recognized and respected QMS that offer a structured framework for QMS and EMS with a focus on continuous improvement of operations and customer service (Saarres-Lakso, 2025). This claim is supported by the theoretical framework of this thesis, showing that the ISO standard is widely used globally and is built upon solid theories for quality and environmental management.

When it comes to the question of why NCS even want to obtain ISO certification the answer and its motivation are in line with the reasons previously discussed in the theoretical framework of this thesis. With ISO certification NCS seeks to enhance their credibility and reputation on the market while also meeting their customers' expectations as well as any regulatory requirements. Moreover, NCS want to improve their efficiency and their processes while also demonstrating their commitment to quality and the environment, thus hoping to gain competitive advantage. (Saarres-Lakso, 2025)

With ISO certification, NCS hope to improve their customer satisfaction and gain new customers while maintaining high employee satisfaction and well-being. NCS also hope to significantly increase their annual revenue growth while maintaining their profitability. Moreover, NCS also want to reduce their environmental impact and enhance their sustainability efforts, all while increasing their efficiency and effectiveness of their processes. (Saarres-Lakso, 2025)

Steps NCS has taken to achieve ISO certification, except the mapping of processes that will be discussed later in this thesis, are amongst others increased leadership training, developing internal documentation standards and a focus on internal communication in the form of newsletters, intranet, regular online breakfast meetings amongst the offices and monthly check-in meetings between employee and team leader as well as between team leader and

upper management. All this is supported by the theoretical framework as a fundamental part of any successful QMS.

Most of these steps are a form of communication improvement, and as suggested by the theoretical framework, communication is key within any successful QMS. This form of communication focuses more on communication between upper management and the employees of the company, ensuring that both parties understand each other. This helps upper management gain a better understanding of how the company operates from day to day and gives them feedback on possible improvements that can be made.

5.3 Relevant processes

RQ 2: *What processes are relevant to identify and explain when implementing ISO 9001:2015 and ISO 14001:2015?*

The theoretical framework suggests that the meaning behind mapping out the processes within an organization is to ensure quality. Quality, meaning that every customer gets the same experience, a customer does not need to be external, it can also be the next person or process in line. With this quality guarantee it is ensured that all linked processes run as smoothly as possible and defects are kept to a minimum.

Relevant processes have been identified in the plentiful internal meetings and resulting documentation. The goal of any QMS is to map out as many processes as possible but most important is to have a clear picture of the core processes. In the case of NCS these relevant processes are the core process and its main components, sales, transport and accounting.

The core process can be identified, or even mapped out quite well, by just taking a step back and looking at the company as a whole. What does this company do? And how is it done? In the case of NCS, it is a logistics company that takes on transports from sales departments and customers, these transports are handled in a certain way and customers are billed according to agreements.

The individual processes, sales, transport and billing, are then drilled into even further to give a step-by-step description of the processes from start to finish. Each step in the process can be drilled into further if there is a need for it. But it is not recommended to do a too detailed process explanation since it would just cause an overflow of information. All information gathered in the process explanations should already be well established in the normal work routine of each department, or put in other words, there is no need to explain

in minute detail to the employees how they should do their work. A suitable level of detail is one that is clearly understood by all employees without going into detail about exactly what boxes to check and what fields to fill in, it is enough to know what information is needed.

As stated before, NCS has done the mapping of all relevant processes, and these processes will be available for the staff to check and use whenever needed. A good example of when a process map can be helpful is when training a new employee. NCS already had an employee manual before starting the ISO certification process but it can now be completed with process maps to give new employees an even better understanding of how the different processes operate within the company. The process maps can also be helpful for more established employees since they offer them a better insight into what processes rely on their own output, thus limiting the possible conflicts that might arise from misunderstandings or poor communication. As stated before, communication is key in any QMS and with all possible information easily available to all employees any misunderstandings can be limited, and hopefully totally eliminated as misunderstandings can be counted as defects in a process.

5.4 Description of processes

RQ 3: *What do the relevant processes look like for the implementation of ISO 9001:2015 and ISO 14001:2015?*

This chapter will give an overview of NCS Finland's relevant process for obtaining the ISO 9001 and ISO 14001 certifications. The mapping of key processes is based on data collected from my personal observations as an employee at NCS in combination with internal documentation and meetings regarding said processes as well as an interview with Saarras-Lakso, who is in charge of the ISO certification process within NCS. The interview with Saarras-Lakso as well as the theoretical foundation of this thesis has illuminated what aspects are important for NCS and what is important in general when applying for ISO certification.

The processes that I have chosen to discuss in this chapter are determined to be of the most importance from my standpoint as an employee and for NCS as a company. The processes are what both I and NCS consider to be the key processes while simultaneously being of such nature that external stakeholders can compare the mapping of the processes to their own, going hand in hand with the goal of this thesis.

5.4.1 Getting started

As stated in Chapter 2, quality management is split into four key areas: planning, improvement, control and assurance. First NCS needs to plan what they want to accomplish, make necessary improvements, control the results and assure that everything is kept up to the standards set by NCS in their new QMS.

The first step in obtaining ISO-certification is to do a gap analysis, meaning that the organization lists what processes already meet the ISO requirements and what processes need more work. Moreover, organizations need to define their QMS and EMS, if they already have them. With this comes also some form of document control system. Lastly a team of employees must be assembled to take on the responsibility of obtaining the ISO-certification and to train the rest of the staff in all new procedures. (Citation ISO Certification Limited, 2024)

Like most companies in Europe, and especially in Finland, a large part of the processes and standards within NCS already fulfill most criteria set by legislation and customers. When applying for ISO certification the company mostly just needs to write down these standards and processes so that they are clearly stated and available for any stakeholders. A common requirement by international customers is to have some form of standard or regulation for preventing bribes and the prevention of slavery or child labor. These requirements feel like a natural part of any business in Finland so the thought of writing them down might not occur to everyone.

Another aspect of a company that can be good to have written down and easily accessible by the whole staff and other stakeholders is the company's goals and visions. From the employees' point of view, it can be good to have the goals and visions easily accessible so that employees can easily check in on them and remind themselves of what the company stands for and thus reflect it in their daily work.

So, what is NCS's plan for obtaining ISO certification? Firstly, they plan to define, monitor and communicate their quality and end objectives. Secondly, they plan to define, develop and harmonize company processes, which is especially important with an organization spread over several different locations and countries. Thirdly, NCS plan to implement their best practices while also updating and improving their documentation and operating instructions. (Saarres-Lakso, 2025)

5.4.2 Mapping processes

Mapping all the different processes within a company is a good way to get an overview of it all. By having a thorough mapping done, it is easier to spot any bottlenecks or other areas that need improvement. A well-done mapping can also be helpful for any new employee to get a quick overview of how the company operates.

Each process also needs some form of quality indicator, meaning what the company will look at to determine whether quality is being upheld or not.

In the subchapters below a few processes have been mapped out with the most fundamental and basic steps to give a simple overview of the process in question. Due to confidentiality the process charts have been kept simple and with minimal details. When mapping out processes for real they need to contain significantly more details, every step and reasoning within the process needs to be mapped out to give the best understanding of the process.

Core process

The core process of NCS contains all the subprocesses needed for the business to succeed. As displayed by the process chart it all starts with receiving an order, which comes either from the sales team, transport planners or the customer service team since these are the ones who are in direct contact with new and current customers. NCS has a goal set for the majority of incoming orders to be placed via their booking portal. Via the portal the customers themselves fill out all the order information and they would be able to track the progress of the transport more easily.

After an order is received, it is sent to the transport planning team responsible for the route in question. For example, a transport from Finland to Sweden will be sent to the export team in Vasa while a transport from Italy to Finland will be sent to the import team in Espoo.

As soon as the order is planned and ready for transport all info is sent out to the driver and all other necessary steps are taken, such as pre-advising the loading place and booking the ferry.

The progress of the transport is closely monitored and the transport planners are available for both drivers and customers if they have any questions or problems during transit. As soon as the transport is completed the customer is sent a POD (proof of delivery) and the order is cleared for billing in the operational program.

The next step of the core process is billing, meaning outgoing invoices. This step relies heavily on information gathered from previous steps in the core process, such as agreed price with customers and any conditions of the transport that might alter the agreed price, such as damages or delays.

After billing comes accounting which also includes incoming invoices.

This step contains all that is required by law regarding accounting as well as NCS's internal accounting relating to statistics and other forms of follow-up.

In the next step hauliers are sent their payments according to their agreements with NCS. These payments are based on information from the different steps in the transport process as well as any separate agreements that might have been made. A risk associated with this step

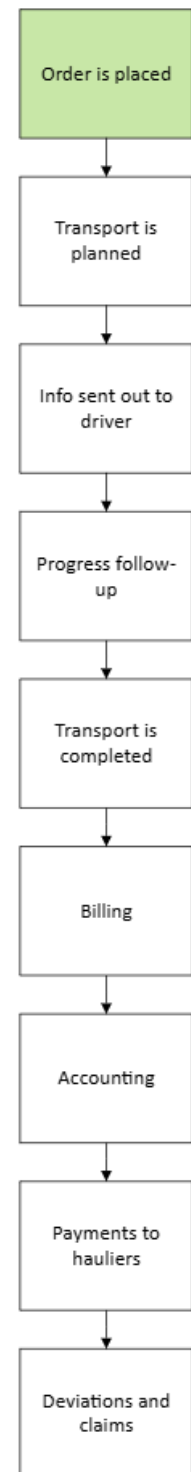


Figure 11 Core processes

is the lack of the right information if there has been some form of special agreement, for example a driver is promised compensation for waiting time, but it has not been noted in the shipment and thus the information is not available when making the payments to the hauliers.

The last step is deviations and claims. All deviations, no matter whose fault, are to be documented in the operational program as soon as possible and they are reviewed each month so that areas of improvement are noticed and adjusted. The deviations are also beneficial when handling claims since there is a paper trail of what has happened and when. Deviations are also beneficial when reviewing hauliers, for example if the same problem keeps happening with the same haulier there are grounds for re-evaluating instructions or communications with the haulier, or in the worst case the deviations can be used as grounds for re-evaluating the agreement with the haulier.

The quality indicators for the core process are the amount of bookings, the amount of deviations compared to the amount of bookings and profitability. The data for these indicators are compiled from other processes and link to those processes' indicators. The indicators for the core process can be seen as quite general in nature and most likely look similar to indicators in other companies for their core process.

Sales

The sales process starts either on the initiation from NCS or from the customer, meaning either the NCS sales department sends out an inquiry to potential customers or potential customers reach out to NCS with a transport request.

Once contact has been established, an offer is made through the operative program NCS uses or the sales department fills out a tender from the customer. When putting in the offer into the operative program it generates an offer number to make tracking easier since most of the contact is via email. In connection with this step the potential customer credit is also checked to ensure that NCS does not take any unnecessary financial risks.

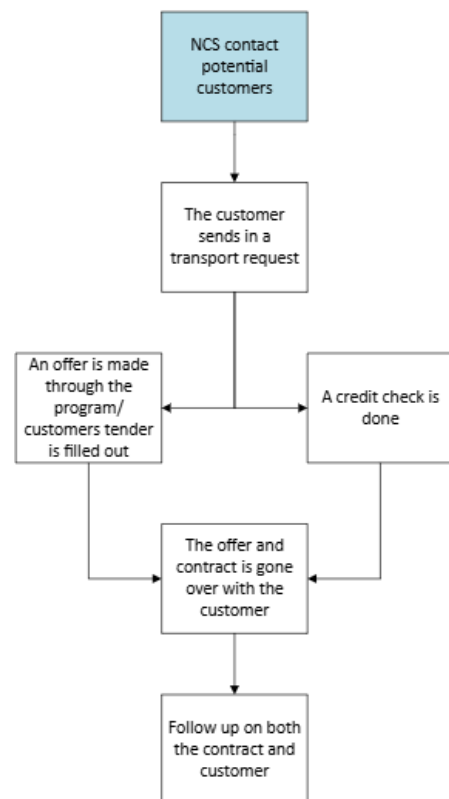


Figure 12 Sales process

Once the offer is made and the credit check comes back with a green light, the offer and a potential sales contract are gone through with the customer to make sure all parts of the transport need are met. In this phase the potential income of the deal is put into the operative program so that the sales department has some form of number to compare to in the next phase.

The last phase of the sales process is the follow-up on the contract and the customer. The real value of the contract is updated in the program and the customer is contacted regarding feedback and to check for a potential need of any more transport solutions. Naturally, the transport process takes place between the last two phases of the sales process.

The quality indicators for sales are customer activity, value of offers made, value of offers confirmed and operating margin (EBIT %). The indicators for the sales process are heavily focused on the customer and their interaction with NCS, the interactions do not only focus on the monetary impact on NCS but also the individual interactions between the sales representative and the customer.

Transport

Breaking down the process of transport planning into its most basic parts, it would look something like the figure to the right.

The process naturally starts with the customer placing an order. The order goes via pricing if it does not already have an agreed price. After the price is agreed upon the order is sent to the appropriate department, either import, export or domestic.

The order is then taken into planning. During the planning an appropriate truck is selected. This means that the planners take into consideration empty kilometers (=the amount of kilometers a truck has to driver without a load on), weight limit, ADR, the need for any special equipment and any other restrictions (for example if the truck can not go to Norway due to a lack of snow chains).

The driver is informed as soon as possible to ensure that everything runs smoothly and to give the driver enough time to give any feedback, for example if the planner has missed that the driver does not have an ADR-license or if the driver's daily or weekly breaks pose any restrictions on the transport.

A suitable ferry is booked for the transport as soon as possible. Either the whole truck is sent out or just the trailer. Usually, the whole truck is sent over on the ferry in Nordic traffic but when going to or from the Europe mainland it is more common to send just the trailer.

When the planners select a truck and ferry for the transport they also keep in mind both economy and ecology. With transports these topics are often closely related, for example: the fewer kilometers a truck has to drive the smaller the impact both on the environment and the wallet.

During this whole process the planners are in close contact with the driver to ensure that everything runs smoothly. As soon as the cargo is delivered the driver sends in a copy of a

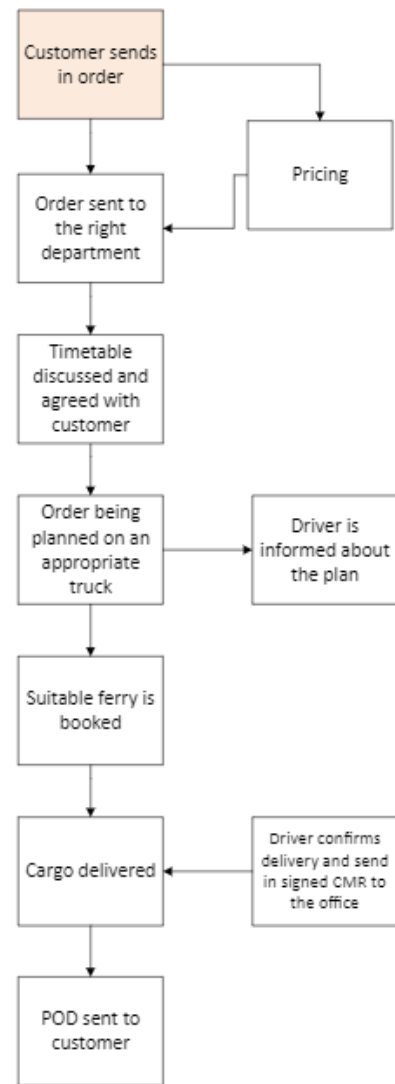


Figure 13 Transport process

signed CMR as proof of delivery (POD). This POD is then sent to the customer and the process regarding the transport is done.

The quality indicators for receiving bookings have been determined to be the amount of automatic and manual bookings as well as the amount of deviations. One of the goals NCS has with bookings is that they all will come in through their automatic portal instead of via email or phone. Automatic booking allows customers to track their shipment to some extent, meaning they can follow along whether the shipment is accepted, loaded or delivered.

The quality indicators for transport planning are the amount of empty kilometers, the degree of filling of the trucks, the amount of huckepack, the profit of each load and possible deviations. Huckepack, meaning trailers and or trucks being transported by train, is most relevant for transport across Europe. In the Nordics this is not a suitable option at the moment due to how NCS's traffic in the Nordics is built up. The indicators for the transport process focus more on the environment than any other process mentioned in this thesis. The indicators with an environmental link (empty kilometers and usage of huckepack) also have a financial link, the less wasteful kilometers driven, the less money is spent wastefully. The filling degree of the trucks could also be seen as an environmental link since its aim is to maximize the usage of the available cargo hold, thus minimizing the need for trucks and therefore minimizing pollution.

Accounting and billing

The processes of accounting and billing are not as linear as for the other processes since not all incoming or outgoing invoices are directly related to one specific transport, for example phone bills. Nevertheless, the main steps of accounting and billing are sales ledger, credit checks, accounts payable, payment appropriation, and accounting and calculation of salaries.

The processes can be split into smaller parts of the whole to be able to showcase the individual processes within accounting and billing. As an example the process for sales invoices is showcased to the right.

The process gathers its information from previous processes, that is sales and transport planning, this info is then compiled into a sales invoice in the operational program after which the invoice is then moved to accounting.

The invoice is checked and corrected if needed. Information that is being checked is, for example, dates, invoice number and sum. Reports from the operational program are compared daily to reports from accounting to make sure everything is in order.

After the invoice has been checked it is sent out electronically to the customer. If the customer reports back with any errors in the invoice, the invoice is checked again and corrected.

Invoices that have been checked and sent out to customers are then moved to accounting and reports from both the operational program and accounting are checked again to make sure that everything is in order. Each month the previous period's accounts ledgers are closed once all invoices have been checked and sent to accounting.

The quality indicator for accounting and billing is maintaining good accounting records, meaning they comply with set rules and regulations. By complying with the rules and regulations the need for unnecessary work is eliminated, which is in line with the mentality discussed previously in this thesis: do it right the first time.

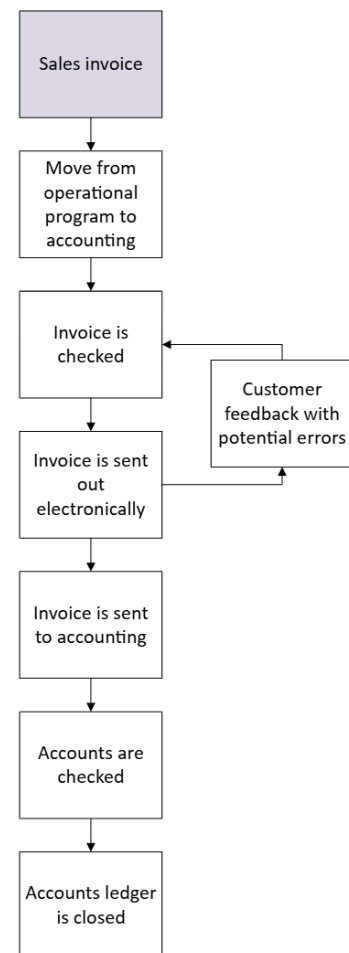


Figure 14 Sales invoice

5.4.3 Hauliers

The main issue for a growing logistics company is the need for more hauliers. With the market having some seasonal changes it is easier said than done to keep a sufficient supply of hauliers.

During the process of mapping NCS's organization and its processes, it was discovered that each office had its own system for gathering information about potential new hauliers. It was then decided that this information would be gathered into a shared database where all offices could access the information.

Moreover, it was decided that a contact questionnaire would be added to NCS's webpage to make the first contact easier for both parties. This would eliminate the need for excessive emailing since the most crucial information would be gathered already in the questionnaire.

Even though there are available hauliers, NCS needs them to meet a set of criteria to comply with the ISO certification. A large portion of the criteria is determined by law, but part of the criteria is required for ISO certification. By law NCS needs to have documentation proving that their hauliers comply with rules and regulations regarding, for example, taxes and health insurance, while ISO 14001 requires documentation of the environmental impact. This information will be gathered initially through a larger questionnaire and then regularly updated via email.

The requirements by law fall under the Contractor's Obligations and Liability law. The purpose of the law is to prevent undeclared, or grey, economy and promote equal competition. In accordance with the law the client needs the following documentation from the supplier to ensure they are following legislations: proof that the company is registered in the prepayment register, extract from the trade register, a certificate on that the company has no unpaid taxes, certificate of pension insurance for all employees, document for the collective agreement, proof that the company offers its employees occupational healthcare and, if needed, proof of insurance for accidents. (Vastuu Group, 2025)

Since the market is dependent on the season, to some extent, there is a varied need for hauliers. Some hauliers work regularly with NCS, while others are contracted only for a short time or for a certain transport. The goal for NCS is to have a written contract with all their hauliers. Before ISO certification only the regular hauliers had contracts but not even all of them had written contracts.

Since NCS is working internationally with several different countries and legislations, it has sometimes been challenging to make a contract suitable for all. During the ISO certification process, it was agreed that all current and future hauliers will need to sign a contract to ensure that all questions about responsibility and payment are clear.

To ensure the level of quality of NCS's services, regular meetings with the hauliers will be held to go through any issues or deviations during the period. All deviations will be marked in NCS's operational program from where it can easily be compiled into a report. These deviations are not only regarding hauliers, but also NCS, their customers and other suppliers.

Lastly, but definitely not least important, there is a need to map the agreed services between NCS and their customers. More specifically, what is asked of the trucks and drivers from NCS's customers. This includes the number of trucks, weight restrictions, equipment and permits.

The quality indicators for hauliers are the amount of deviations and customer satisfaction. These indicators are taken into discussion with the hauliers during their regular check-in meetings with NCS and the indicators are also used as a foundation for evaluating the cooperation with the hauliers. Since customer satisfaction lies in the heart of quality management this indicator is of utmost importance for NCS. Deviations are something that should be limited as much as possible since they do not align with the "do it right the first time"-mentality that is key in quality management.

5.4.4 Audits

In the auditing stage of the ISO process the company goes through all its processes with the people involved in them, first through an internal audit and then through an external audit. For example: everyone in sales is made aware of the proper procedure regarding sales and everyone involved in transport planning is made aware of their roles. This is not supposed to be new information; it is just confirmation that the process is correctly documented so that it aligns with reality.

The internal audit can be conducted by whoever is in charge of the ISO implementation process within the company. The external audit will be done by an external ISO auditor. During the external audit the auditor can ask random employees about their role and what steps they take to complete a task, the answer should align with what has been documented.

5.5 Leadership training

Studies show that well-trained managers are more satisfied with their job and thus are more effective in leading employees towards the set goals. Since managers are responsible for the results of their employees they are closely linked to the success of the employees. A manager who has the tools to effectively lead and assist their employees, also has employees with higher job satisfaction. These tools can be found in the ISO 9001 standard QMS (Rateb, Rawan, Sharairah, & Moarefi, 2019). Leaders who encourage their employees to think outside of the box are suggested to have a larger following of employees who are willing to solve problems in a more innovative way (Walumbwa & Hartnell, 2011). Persico (1991) states that the leader's role is to help the employees do a better job, this is also supported by Dahlgar, Zahll Larsen & Norgaard (1997) and Savolainen (2000) as they point out that leadership commitment is a fundamental part of a total quality management system (TQM).

Research also suggests that leaders who pay attention to the individual employee and their needs have more satisfied employees. This is thought to be linked to the employees' feeling of personal development in the workplace and a greater feeling of power due to having enough resources and access to information (Walumbwa & Hartnell, 2011). Another aspect of successful leadership is the employee's feeling of power, that their role is as important as the highest managers. For the employees to feel empowered they need to build up their self-esteem, this is where a leader can make a great difference (Persico, 1991; Savolainen, 2000; Wells, 1998).

There have been numerous studies done on the link between transformational leadership, which is a part of the ISO standards, and the relationship with their employees. It is suggested that a leader who acts as a role model has a clear vision and can communicate their expectations to their employees, make employees feel more encouraged and enthusiastic about their work (Walumbwa & Hartnell, 2011). Persico (1991) also states that the act of leadership is in the relationship to the employees, rather than the managerial position. Savolainen (2000) also implies that leadership and support are needed for all types of change.

Transformational leadership is also linked to a greater feeling of self-efficacy amongst employees. Self-efficacy is the confidence an individual has in their ability to complete a given task. (Walumbwa & Hartnell, 2011)

With the control and knowledge obtained by following the ISO 9001 standard managers are perceived as more respected and enjoy a greater feeling of team spirit within their team

(Rateb, Rawan, Sharaireh, & Moarefi, 2019). Wells (1998) recommends regularly interacting with the other employees, truly listening to what they tell you and asking them focused questions about how they are doing and how the work is progressing rather than asking them about the weather. It can be perceived as the manager not having anything better to do with their time if they only ask about insignificant stuff. Another great way to understand your employees', their tasks and potential issues is to simply participate in the work for a day, the longer the better. (Wells, 1998)

It is commonly believed that leaders are naturally born that way, but studies have shown that leadership traits can be acquired with some practice and time (Dahlgaard, Zahll Larsen, & Norgaard, 1997; Persico, 1991; Wale, 2025; Wells, 1998). To define an effective leader, it is most commonly linked to leadership traits, or in other words, personality traits that make an effective leader. The following are considered to be good leadership traits: effective communication, accountability and responsibility, long-term thinking, motivating oneself and others, confidence, people-oriented and emotionally stable (Wale, 2025). Or as Persico (1991) put it: they motivate people and get things done.

Taking a quick look at the meaning of each of these traits gives further explanation to why these traits are considered to be key. Effective communication ensures that employees and other partners are fully aware of problems and solutions. This also includes the ability to communicate in several different ways, for example one-on-one, e-mail and phone calls. The ability to communicate also includes the ability to know when to listen, and to listen effectively (Wale, 2025). Wells (1998) points out the need for actively taking into consideration the input from employees to ensure better quality of work and policies.

Dahlgaard, Zahll Larsen & Norgaard (1997) suggest that the best types of leaders for an organization wanting to implement TQM are the captain, the creative, the strategist and the team-builder. Savolainen (2000) also backs up this claim by stating that two successful forms of leadership strategies are coach-leadership and leadership-expertise. The captain is qualified in their profession, open to their employees, listens to the employees and tries to be as fair as possible. The creative leader is inspiring, full of ideas for continuous improvement and problem-solving, they have a clear vision of the future as well as a plan on how to get there. The strategist has a good overview, focuses on the greater picture rather than the details, manages their time efficiently and has clear goals. The team-builder works as a coach and has a broad understanding of the organization's processes, they give feedback and are tolerant.

An effective leader knows the meaning of accountability and responsibility. Holding themselves and their employees accountable and responsible for their actions. Long-term thinking is closely linked to a clear vision of the future and a plan on how to get there while simultaneously following the goals and standards set by the organization. The ability to motivate oneself and others could also be linked to long-term thinking, as motivating oneself and others through setbacks ensures that the long-term plan stays on track. (Wale, 2025)

Confidence is key for any successful leader; confidence reassures and inspires others, and confidence is needed whenever making a difficult decision. Good leaders are people oriented and therefore team players. Since a successful organization needs all its people working towards the same goals this trait is immensely important. To tie these traits together we have the trait of emotional stability. Any great leader needs to be able to regulate their own emotions to be able to withstand any changes or setbacks. (Wale, 2025)

To shed some light on traits that are often represented among bad leaders, here is a short list of traits to look out for: too bossy, unable to communicate effectively, dismissive of others' ideas, fearful of change, inconsistent, blames others, lack of empathy and indecisive (Wale, 2025). These traits are also supported by Wells (1998) as he states that a common wrongdoing of elder managers is their inability to listen to those beneath them and their refusal to share knowledge while also having an inflated view of their own achievements.

Persico (1991) and Wells (1998) both point out that the traditional view of leaders can be what is holding back true leadership. Especially Persico (1991) highlights the need for updated and more inclusive views on leadership, stating that the traditional view that only men can be leaders hinders the exploration of other forms of leadership than the traditional one.

A helpful tool to identify one's own strengths and weaknesses when it comes to leadership is to do a leadership traits personality test. These tests could also be helpful in training new managers or team leaders within an organization. The most used test is the Myers Briggs Type Indicator (MBTI) but there are also other available tests such as DISC profile, wealth dynamics profile and strength finder. (Wale, 2025)

Persico (1991) refers to Deming's theory of profound knowledge when he lists seven main elements of the leadership role in a total quality organization (as seen in Figure 15). These elements are considered to be crucial to develop in order to gain leadership and empowerment.

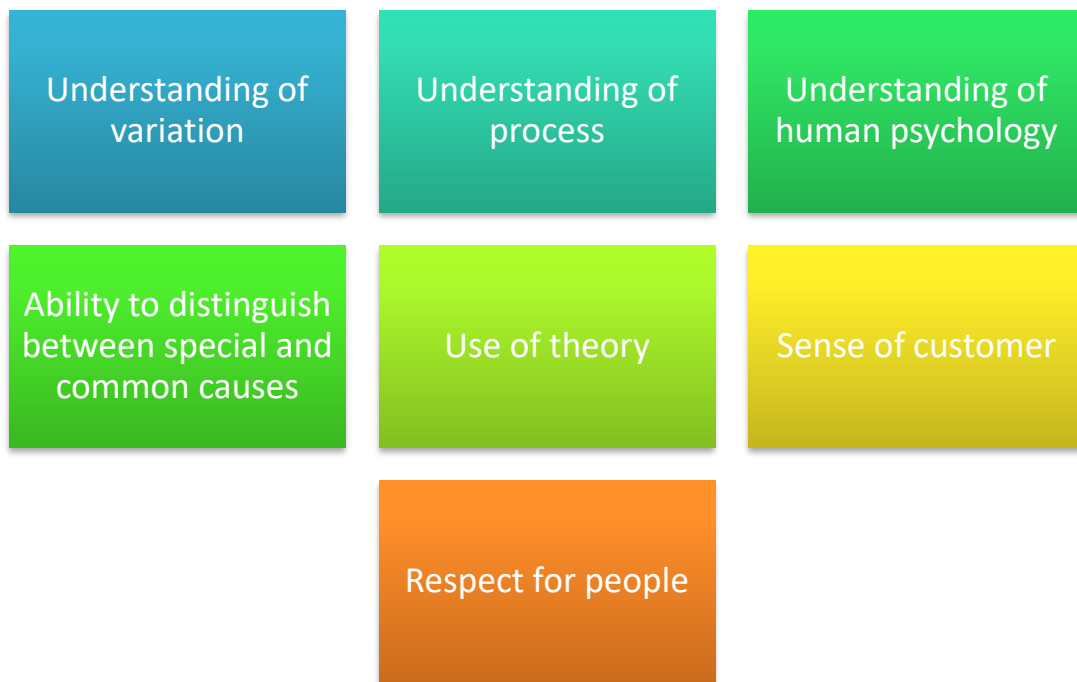


Figure 15 Seven elements of profound knowledge (Persico, 1991)

The understanding of variation points to the need to change the perception of products being purely good or bad, to understand the reality of the situation and its outcomes. This is then linked to understanding of process; if you understand the process, you understand the variations and the capabilities of the process. The ability to distinguish between special and common causes is explained by Persico (1991) as traffic accidents in an intersection: it is a waste of time and money to examine every accident in an accident-prone intersection as something special, it would probably be more efficient to put up a traffic light. Or put the other way, if a single accident happens in the intersection for the first time in 10 years, it is probably a waste of resources to treat it as a common thing and place traffic lights in the intersection rather than examine if the driver was at fault. Use of theory means that you take the time to understand the process and its outcome, rather than simply putting out the fires without understanding why they occur in the first place. (Persico, 1991)

Sense of customer means that the traditional hierarchical pyramid is reversed, meaning that instead of pleasing the boss with your output you should focus on pleasing the next person down the line, that is the person using your output as their input. This is believed to greatly lower the amount of waste and improve relations between departments. For a successful organization of work, leaders need to understand human psychology and how it affects their employees. Some examples of work organization that is developed with the human aspect

in mind are AI, ergonomics and flextime (Persico, 1991). Respect for people points to the need for employees to feel dignity and joy in their work, which is also something that Wells (1998) as well as Walumbwa & Hartnell (2011) point out.

Persico (1991) lists a few examples of how an organization should proceed if they want to offer their employees great leadership: training and education with a focus on Demings seven elements of profound knowledge, implement a system for identifying and controlling all processes within the organization, and lastly, create a system for continuously empowering more and more employees.

Before starting the process of obtaining ISO certification NCS chose to implement a plan to train their team leaders and managers. A cornerstone of this training is the annual “team leader days” that gathers all team leaders and managers within NCS for a full day of training and brainstorming. These days are filled with different topics, and a speaker is hired from outside of the company to talk about current matters or the theme of the day. This speech, or lecture, is then followed by discussions, first in smaller groups and then together with all participants.

NCS also offers their managers and team leaders online training. This is done by watching a video and then later discussing it with other team leaders and managers in an online meeting.

Furthermore, all managers and team leaders within NCS have regular check-in meetings with their supervisor to ensure that any potential issues or questions get handled efficiently. The check-in meetings follow the same basic principle as for any other employee, they offer a channel for open discussion and brainstorming while also ensuring that any feedback gets given to both the employee in question as well as the supervisor.

6 Discussion and findings

This chapter will contain a discussion of the thesis results and methodology as well as suggestions for further research. The result discussion will contain the writer’s own reflections on the thesis result, the method discussion will contain reflections on the choice of method and lastly, the chapter on further research will contain suggestions for further research. The last chapter is especially interesting since the field of quality management is

vast and there is an almost never-ending flow of questions to be answered from several different viewpoints.

6.1 Result discussion

As discussed in the previous chapter, the research questions were answered with the material gathered for this thesis. The answers and the overall process NCS has followed were in line with the theoretical framework. All this suggests that NCS has done their research before starting their certification process. Ample research is always recommended before venturing into the unknown or unfamiliar territory, especially when you are running a business.

The previous statement holds especially true when it comes to quality management and QMS. There are almost an unlimited amount of theories on the subject and most likely a similar amount of approaches on how to obtain a QMS that works for the company at hand. NCS has analyzed their own and their customers' needs and decided on the QMS that is best fitted for them, in this case it was the ISO standards.

When it comes to the choice of important processes, NCS has chosen the same processes as I would have chosen. The core process, aka the overview of the whole company, is in line with the picture I had in mind before starting this thesis as well as being supported by the data gathered during the writing process. The key processes, that is a step down from the core process, also align with the general picture of the company's view from the inside. As stated by Citation ISO Certification Limited (2024) the organization needs to recognize what internal and external factors affect their quality output as well as identifying their stakeholders' and customers' needs. See chapter 3.3.1. ISO 9001 under the segment "key areas" for a better description of the reasoning behind the processes.

The processes related to accounting and billing are still a bit fuzzy for me but then again, the point of the process charts is not for every employee to understand each detail of them but for the relevant employees to know how they are supposed to properly execute their work. With a better understanding of how accounting and billing work in general, as well as the rules and regulations to apply, one would also better understand NCS's process charts for said processes.

Another aspect that came up in the theoretical framework but was not part of the research questions for this thesis was the need to focus on employee satisfaction and the role that managers play in that (see chapter 5.5 Leadership training). The theoretical framework

suggests that happy employees create happy customers. Happy employees can be made by including them in the goals and visions of the company as well as keeping the employees informed about what is happening with the company, meaning that the employees should be informed of things both inside and outside of the company that can affect them. This is especially highlighted by Rateb, Rawan, Sharaireh & Moarefi (2019) as well as Wells (1998)

As a natural part of implementing the ISO standard at NCS there has been a larger focus on internal communication and leadership training, the importance of communication and leadership training is something that Rateb, Rawan, Sharaireh & Moarefi (2019) and Walumba & Hartnell (2011) note in their research. This has shown a noticeable positive effect with the communication working better between the different offices, teams, customers and managers. Employees regularly get internal newsletters about what is going on in the company and on the market as well as information on what this all means for the company.

6.2 Method discussion

The method for data gathering of this thesis is something that came quite naturally. With the aim of compiling an easily understandable overview of quality management, QMS and the ISO certification process, the best choice was to do a qualitative study.

Another aspect of this thesis that made qualitative study more appropriate was the fact that I work at NCS and therefore have a deeper understanding of the day-to-day tasks and motions of the company. Being an employee at NCS also gave me greater access to and a better understanding of internal documents and meetings, this data is not something that would have been easily translated into numerical values.

With the combination of different sources of data within NCS, the validity and reliability of the data were ensured. To be able to get a clear understanding of the matter at hand, it was necessary to use different sources for the data. Relying solely on just one of the sources within NCS would not have offered a clear enough picture of the whole process and the resulting process charts.

Even though the majority of the data used was collected from the internal documentation, the participation in the meetings and the interview with Saarres-Lakso gave me a deeper understanding of why the processes are mapped the way they are, what processes are most important as well as what the thought process behind it all. It was also greatly beneficial to

be able to listen in on the other employees explaining their processes and what they consider to be crucial points in their processes.

The thesis, or at least something similar, could have been done as a quantitative study or a combination of quantitative and qualitative but then the research questions would have had to be different from the ones presented in this thesis.

6.3 Further research

Since this thesis only looked at the process within one specific company, a suggestion for further research could be to look at a wider range of companies to be able to compare processes between them. It could also be interesting to compare companies from different fields.

Another suggestion for further research is to revisit NCS in a few years to see how everything is going and to gather further experiences of the ISO certification. This could be especially interesting since this thesis did not include the final result of the ISO certification.

A similar thesis could also be done using a more quantitative method. I feel that this is something that could generate interesting results to compare to since one would be more technical and the other more theoretical. Technical in my mind is quantitative study that results in numerical values that are easily compared to each other while qualitative study is more theoretical, and the results are not as black and white and offer more room for interpretation.

It could also be interesting to take a closer look at the leadership aspect relating to ISO certification and QMS in general, both within a specific company and with a wider view. This thesis lightly discussed the subject, but it has had a tremendous impact on the company in how it now operates.

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8 Appendix

Interview questions:

1. What was the plan/goal regarding quality and environment before ISO?
2. Why ISO and not any other QMS?
3. Why does NCS want ISO certification?
4. What is the plan to obtain ISO certification (how)?
5. What does NCS hope to gain from certification?