CHALMERS
UNIVERSITY OF TECHNOLOGY

Evaluation of work efficiency in Continuous Improvement projects
Action research focusing on delivery service

Master's Thesis in the Master's Programme
Quality and Operations Management

OSKAR SALONEN

Evaluation of work efficiency in Continuous Improvement projects
Action research focusing on delivery service

OSKAR SALONEN

Tutor, Chalmers: Dan Andersson

Abstract

This study explores different Continuous Improvement projects mainly focusing on increasing deliver service. The master thesis is done at the business area of apparel & gear at a large company within the sporting goods industry. Continuous Improvement is identified as a key factor in operations in order to stay competitive in a business environment that is getting more and more globalized. The main goal is to determine what impacts the quality of work and efficiency, both positively and negatively, in Continuous Improvement projects to increase delivery service at a large company in the sporting goods industry.

A six months internship has been made at the company as well as eight months of work as a supply chain coordinator. During the time at the company the author was involved in the work of two different Continuous Improvement projects as well as day-to-day work. The study uses an action research approach where the data from the company was gathered, then the literature study was made concurrently with the analytical framework and after that the analysis was performed, which resulted in a conclusion and recommendations. The main areas that are identified in the conclusion, for the company to get more efficient in their continuous improvement, work are: Strategy, Involvement and Tools & Methods. These areas are the base for the recommendations for the company and are broken down to a list of suggested actions.

The company has an old tradition of disruptive and game changing product innovations within the sport industry. They are for example operating in the skiing industry where they have introduced new techniques in manufacturing skis, improving functionality of bindings and launching ground braking ski boots. They do not need more improvement culture in product development where there is already a culture of always pushing through new ideas. But the incremental improvements within operations and supply chain in particular are in some cases missing. According to this study the company need to develop the Continuous Improvement work within operations and supply chain in order to stay competitive. In particular the company should work with standardising processes to assure that failures, where the root-cause is found, do not happened again. Managers need to be educated in Continuous Improvement to be able to support their teams in the day-to-day work. When a Continuous Improvement project is initiated all people concerned by the project must be involved from start to feel responsibility and ownership of their part and to understand why the project is needed. These are all recommendations given to the company for them to evolve in their quality of work and efficiency within continuous improvement projects related to delivery service.

Contents

1. Introduction

This chapter presents the background of the master thesis. It also presents its purpose, as well as what is not included in the scope of the research.

1.1 Background

We are moving towards a more global and dynamic world where the competition is gradually getting tougher,. It is becoming more and more crucial to improve continuously (Hutt & Speh, 2012) to stay competitive and survive as a company (Rose, 2005). Extensive studies have been made on the particular subject to evaluate how well a supply chain is performing. In regards of performance Flynn et al. (2010) state that the close relationship between supplier and manufacturer has been seen as important for a long time. But the global competition is changing the way companies need to look at their relationships and evaluation of their processes. There are several ways to improve a company's competitiveness and several tools and methods to use, one of them are to progressively improve the company's supply chain through continuous improvement (Lewis et al., 2010).

The company in this study is working within the sporting goods industry and has several challenges with their supply chain, e.g. 90-95 % of the apparel & gear produced in south east Asia with lead times between 6-12 months from the time order is taking place to point of sale. It is a seasonal business with two seasons per year, most of the products are new for each season so having more stock than sold will result in an out-dated inventory, on the other hand phasing stock out means lost sales and profit. The company is working on improvement and development projects related to these challenges. Progress is made on all ends of the supply chain; work is continuously being developed with supplier as well as actions to enhance the link to customers. These efforts are made to continuously improve the processes and keep on fulfilling the needs of the customers.

There are also specific Continuous Improvement (CI) initiatives, at different levels, with the aim of improving delivery service. It is done to enable customers to receive their products as close as possible to when they request them. However, the company is not evaluating how well the projects for improvements are carried out in this area but are rather looking at the technical aspects. The main subject of this master thesis is to see if the company can improve the actual work from other aspects than the technical ones. That will include studying and analysing the company as a whole in the setting of CI projects related to delivery service.

1.2 Purpose

The purpose of this thesis is to determine what impacts the quality of work and efficiency, both positively and negatively, in Continuous Improvement projects to increase delivery service at a large company in the sporting goods industry.

1.3 Research Questions

In order to conduct a well-organised and structured study a set of research questions have been formulated. The research questions aim to guide the project and avoid it from drifting away from its purpose. The questions are structured to initially gaining information about the company and the system where the improvements are taking place, after that exploring the way Continuous Improvement projects are carried out today and in the end to investigate what affects the work being done.

The research questions are:

- What are the factors impacting delivery service at the company today and what does its related system look like?
- How are the Continuous Improvement projects carried out in order to improve delivery service?
- What are the factors impacting quality of work and efficiency in Continuous Improvement projects in the company?

1.4 Delimitations

This report gives the perspective on CI work in a supply team at a large company in the sporting goods industry at the specific BA of Apparel & Gear. Recommendations will be given on how the projects could improve but implementations of them are not included in the thesis work. The study was performed during a limited period of time at the company. Additional data and information collection after that is limited. This study investigates in several cases related to the company's delivery service but the findings might not be applicable on a case outside of the BA, company and corporation where it is performed.

2. Delivery service system

In this chapter consist of a description of the delivery service system, where the order taking and shipping processes are taking place. It is done for the reader to better understand the different kind of orders, what happens when an order is entered in the system and rules and constrains that follows. This is the fundamental system, which is the basis of the CI projects at the company and corporation described in this thesis. Calculating the KPI measuring delivery service is also based on figures from this system.

2.1 Definitions of delivery service system

- Requested delivery date (RDD): The date the customer wants the products delivered.
- Realistic Good Issue Date (RGID): The date when the products have to leave the warehouse to arrive in time for the customer.

- Pick & Pack: The time it takes from delivery of an order is created until it is shipped.
- Customer/end-customer: Customers are the stores spread out in Europe. End-customers are the user buying the products from the customers.
- Forecast: How many products that will be ordered from the suppliers on size level. On top of the forecast there is also a buffer on the different products.
- Season: The company releases and produce two collections of Apparel & Gear each year. Spring/summer (SS) and fall/winter (FW) which is referred to as season.

2.2 Order types

There are multiple different types of orders but the main ones, that will be studied in this thesis are: pre-orders (VO) and re-orders (OR). Pre-orders stand for the majority (~85%) of the full quantity shipped out to customers and re-order for the remaining part (~15%).

Pre-orders are generally placed far in advance of the season when they are to be shipped and the forecast, which is how much that is bought of each product, is determined depending on these orders. When looking at the delivery service on pre-orders they are allowed to be shipped up to 5 days late, according to RGID, and still be considered as on-time.

Re-orders are orders that are plugged through out the season. For example if an end-customer wants to buy a product that they can't find in a store the store contacts the customer service (CS) in their country or region who checks the free available quantity of the specific product in warehouse and plugs a re-order if it is available. The re-order is only considered to be delivered on time if it is shipped before or on the RGID.

Due to the different kind of calculations made on the two main order types the company is phasing different kind of delivery service issues depending on that. Issues that can be seen and affecting the KPIs are for pre-orders: Late delivery of products from suppliers causing the company to deliver later than promised. All customers demanding their big orders at the same time, causing issues in warehouses. Common issues with re-orders are: Multiple small orders plugged on popular products, causing stock outs. Customers are ordering big orders and the system calculates them to be shipped the day after, causing issues in warehouse. Since the pre-orders stand for the majority of the shipped value they also stand for the highest impact on the delivery service KPI. Since the pre-orders are placed early it is however easier to monitor the pre-orders. Over the years there has been extensive projects streamlining this process to align everyone in the chain from fabric supplier to end-customer. The re-orders have however a much shorter delivery window, of just one day, which makes it more difficult to meet the

requested delivery date. This mean that the re-orders are impacting the delivery service KPI more than its 15% of shipped quantity.

2.3 Order taking process

Pre-orders and re-orders have different calculation systems for pick & pack times in warehouse. It's because a re-order is supposed to be shipped as soon as possible because the customer generally wants it right away and the pre-order is scheduled to be delivered on a specific date since a long time.

When an order is plugged there are some dates, set both from the customer and the system, that are important for the further calculations.

Below are two figures, 1 and 2, describing how the process of order creation and calculations are done.

Figure 1 is describing a pre-order and so-called backward scheduling.

The chronological steps in this case are as follows:

1. Order is created and the customer sets a requested delivery date (when the customer want the products). The requested delivery date in this case is set far in the future compared to when the order is created.
2. Depending on the transit time (the transportation time from warehouse to customer) a realistic good issue date (the date when the goods has to leave the warehouse to arrive at the customer on time) is set.
3. Depending on the realistic goods issue date and the pick and pack time (the time the warehouse is given to pack the orders and make them ready for transport) the material availability date is set (it is the date when the products has to be in warehouse to meet the realistic goods issue date and the requested delivery date).
4. When the material availability date is met the delivery is created. The pick and pack starts and a planned goods issue date (when products are planned to be ready to be shipped) is set.
5. After the products are picked and packed an actual goods issue date is registered. The products are shipped and the transportation starts.
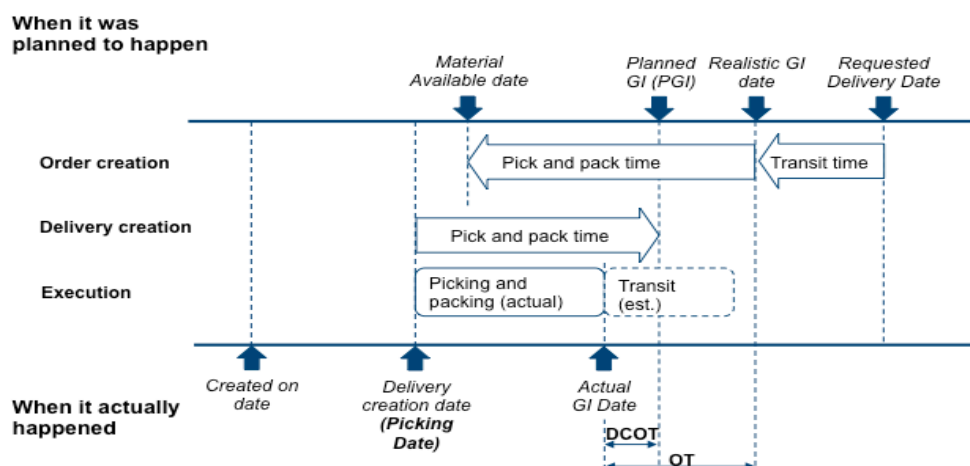
Figure 1 Pre-order, backward scheduling.

Figure 2 below describe the re-order process and the forward scheduling.
The chronological steps in this process are described below:

1. When a re-order is created the customer sets a requested delivery date, usually the same day or just a few days later.
2. Depending on the pick and pack time a realistic goods issue date is set, and depending on the transit time a realistic delivery date is set.
3. When delivery is created planned goods issue date is calculated.
4. After the products are picked and packed an actual goods issue date is met and the products are shipped and transportation starts.
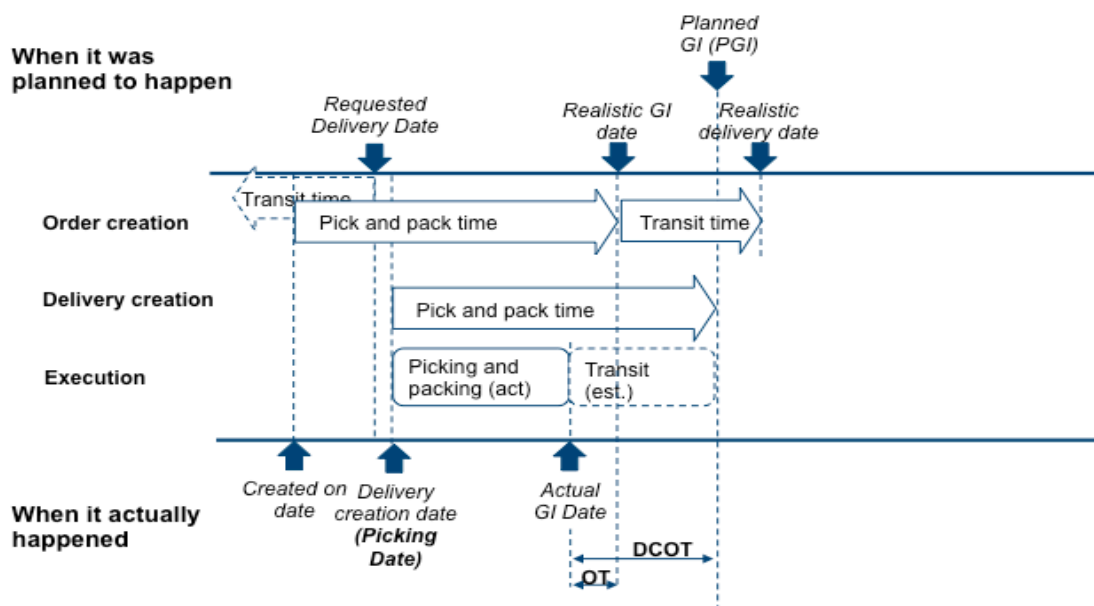
Figure 2 Re-order, forward scheduling

When measuring the KPI of delivery service it is done by comparing the realistic goods issue date with the actual goods issue date. This KPI is called On Time In Full (OTIF) (OT in figures above) and it measures the value of the order, in Euro, that is shipped before the realistic goods issue date, with other words; if the actual goods issue date of the whole order is before realistic goods issue date, then OTIF is 100%. The reason for the OTIF to be measured against the realistic good issue date and not the requested delivery date is because the requested delivery date can be set to an unrealistic date, in the past, by the customer. Instead the OTIF is calculated according to the realistic goods issue date. This does not take the transit time in to consideration either; it depends on the fact that it is taken care of a 3PL and out of direct control by the supply chain team at the company.

KPI for the reliability of the warehouse and its performance is DC on time (DCOT). It indicates if the warehouse can meet the calculated pick and pack time or not. If the actual goods issue date is before the planned goods issue date then DCOT is 100% otherwise it is 0%.

2.4 Delivery creation process

This is the process that is carried out in SAP when an order is ready to be shipped. It means that the information is sent to the warehouse that they should prepare and ship a specific order. Delivery creation is a cycle, which runs in the background of SAP a specific number of times a day, and at set times. The system then checks off all orders if they are ready to ship or not. If an order is ready its information will be sent to the warehouse and they will prepare it. If an order is not ready to be shipped it will stay in SAP and it will be checked in each delivery cycle until it is ready to be shipped.

2.5 Previous actions and potential failures in the existing system

There have been CI projects prior to this thesis developing the system to become more efficient. These improvements have been focusing on standardising the calculation of transit time to be more accurate, setting up a pick and pack procedure that is efficient enough and works for the warehouse team as well. There have also been projects aiming on educating the supply teams about how the system works in order for them to perform the right analysis of current state and where we have failures. There have also been improvement projects in order to streamline the order taking process and order management.

Today the main issues in this system are related to processes that are failing. Most root causes of delivery failure caused by processes in the system are identified; the matter is rather related to how to solve them in a standardised way.

3. Methodology

This part of the thesis describes the approach of the research in the master thesis. Below are explanations of the research design, methodology and how data collection has been made through observations and document studies. In the end reliability and validity will be discussed.

Maxwell's Interactive Model of Research Design, see figure 3, has been used in the formalisation of this study as well as to guide the author in building the methodology and research design. The iteration between different parts of the model has helped the author construct the thesis. Goals have built the formalisation of the purpose and to understand why the study is worth doing. Conceptual Framework has been the part where the author has gathered information in literature, personal experiences etc. to understand the issues he has been phasing. Research Questions has been formalised specifically to concretise what the author wants to learn in the subject. The Methods part describes what the author has done in order to conduct the study. Validity has guided the author in questioning the result and conclusion of and what is impacting the outcome of the study (Maxwell, 2012).
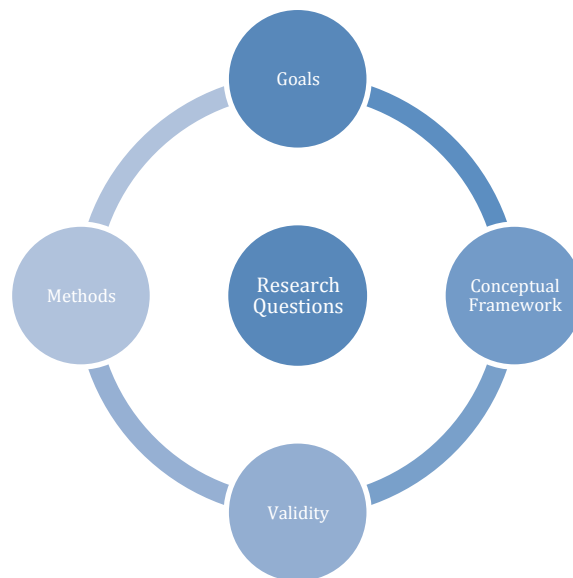
Figure 3 Maxwell's Interactive Model of Research Design (Maxwell, 2012)

3.1 Research design

The thesis has been addressed with an action research approach. Action research deals with real life issues in actual organisations. That means the researcher and the client; the company in this case, work in close collaboration diagnosing a problem (Bryman & Bell, 2015). Depending on de involvement of the subject for the study an action research should result in actions taken to solve the problem. It could also result in new ways of thinking and/or re-education. This means that the company and the author should together develop a solution to the diagnosed problem by an iterative process that contributes both to research theory and practical insights for the company (Bryman & Bell, 2015). There are two types of action researchers:

Inside researcher, who is someone from within the organisation with knowledge regarding culture, norms and general practices, and outside researcher, who is not part of the organisation that will need to explore that as well as the research objective (Bryman & Bell, 2015). When conducting a master thesis, with an action research approach, the researcher is generally seen as an outside researcher but due to the author's long period working for the company, he will be seen as a mix of an inside and outside researcher. It means that the author has both the positive and negative aspects of an inside and outside researcher. Positive aspects include being able to get a deeper understanding for the company and the projects that are analysed, on the other hand the dual positions as researcher and colleague with its connected "politics" can be considered negative and something that the author has to be aware of. This approach has been one of the key factors for the author to get to understand the company.

During the action research an inductive reasoning has been applied. That means the research started with observations and data collection of the company. After the time spent at the company a literature study was conducted, which generated theory. The theory is however specific for the particular business and environment where the research has been performed.

3.2 Research methods used

In order to gather all necessary data and information needed to be able to answer the research questions of this master thesis a set of different research methods have been used. The main ones will be described further in its own paragraph.

Observations have been made on a daily basis while working for the company for 14 months. During this time the author has been participation in the two main CI projects that are analysed in the thesis. This work started in February 2016 and ended April 2017. These observations gave a clear view of how the company works with CI in general as well as specifically towards an increased delivery service. During the time at the company documents, both general information, as well as project specific documents was studied. A literature study within the subjects of supply chain and CI has been performed to expand the author's knowledge in the subject in order to perform a profound analysis.

3.2.1   Observations

The observations were collected during a six months internship as well as regular work that the author did, as a supply chain coordinator, during eight months at the company. The observations have created a general overview of the company and the different projects that were running within the scope of CI. It also created a deep understanding of the employees, company and its culture. The observations have also thought the author aspects of the organisation such as undeclared processes

and behaviours that has been of great use for reflections on improvement opportunities throughout the master thesis work.

During the observations the author was part of the day-to-day work as well as a participant in two of the CI projects in focus for this thesis. It include data from the CI projects within the scope of the thesis, how employees interact, how group dynamics work and other reflections gathered from various occasions within the work that were of interest for this specific research.

The two projects that were observed were chosen to be part of this thesis since they were both CI projects focusing on improving delivery service. They were dealing with CI on different levels, one for the company and the other one on corporation owning the company, which gave different valuable aspects. The author was participating in the projects on the same premises as all other members and was able to get more information than from other projects. The observations gathered will be an important part of the general knowledge of the culture within the company and the corporation as well as the result from the CI projects.

3.2.2 Document study

Internal documents from the company, and the corporation, have been studied to get a greater understanding for the systems and processes within the scope of the thesis.

In order to get a better understanding for the CI projects of this thesis related educational documents have been studied. It was the same documentation all members of the projects were able to get. The documents described the different processes that were to be improved as well as the work expected by the members of the projects. The documents related to these projects also described the initiations and the purpose of them. Documents regarding the technical information on calculations of KPIs have also been deeply studied to understand the actual issues and improvements that are being done. The company communicated its long term strategy through documentation and presentations that the author also took part of to understand the long term purpose of the CI projects and to be able to distinguish if the CI projects supported the strategy of the company or not. In order to conclude if the CI projects have been contributing to an increase in delivery service internal quantitative documentation from the projects linked to the thesis has been studied.

3.2.3 Literature study

Literature search has been made with the help of Google scholar and Chalmers library databases. Key words: Continuous improvement, kaizen, supply chain, delivery service, balanced scorecard, PDCA-cycle, whiteboard.

The goal with the literature study was to collect knowledge related to the observations gathered with different aspects of the company and projects. This process has been developing an understanding for the view literature and previous research has of the way the company and corporation work with CI projects in

supply chain. The emerging theoretical knowledge that was gathered guided the author in search for more literature. The information collected both from the work at the company and the literature study will be used in order to make a more generalizable analysis that can possibly result in recommendations applicable on other similar settings to help evaluate efficiency of work in CI projects.

3.2.4   Analysis

The analysis has been part of an iterative process that is similar to systematic combination (Dubois & Gadde, 2002). Systematic combination means that the iterative combination of theoretical knowledge and observations has been constantly building the framework used for the analysis. Readers that are familiar with the theories of CI and related subjects can read only analytical framework and not the whole theoretical framework.
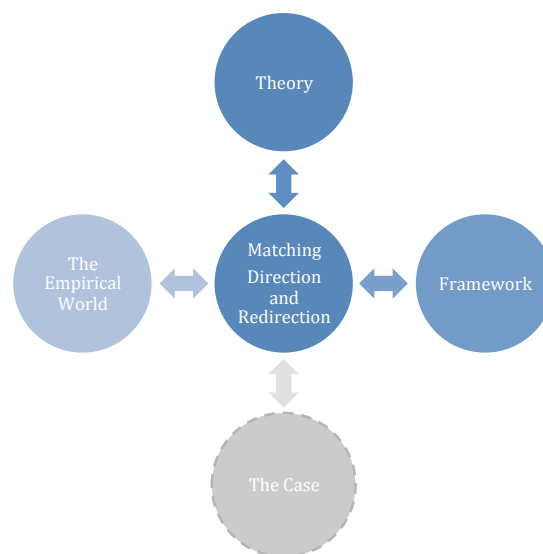
Figure 4 describes model of the process used for building the analytical framework. Since this study is not a case study that part (in grey) of systematic combination described by Dubois & Gadde (2002) is not used.

In the figure 4 above the process of building the analytical framework is described. The matching between theory and observation is unstructured and it can be done in different ways (Dubois & Gadde, 2002). The cornerstones of the process is to go back and forth by matching and combining the data and theory, which simultaneously builds the framework and foundation of the analysis. It is done in this way because the knowledge that is gathered along this process is iterated and matched with previously collected knowledge and data, which guides the author in the next search for new knowledge.

3.3 Reliability and Validity

Literature and observations have been the primarily two sources used for data collection in this thesis. To ensure the quality of literature being used the author has been striving to ensure multiple sources of facts. Articles and books that are peer

reviewed as well as a known record of quotations has primarily been used to confirm its reliability.

The author has been both observing the company from the inside and outside. As an inside observer there are multiple risks with the information collection. The main risk is that the author is going native, which means that the author starts to share the same values and starts to live the same culture as the others within the company (Bryman & Bell, 2015). This might cause the author to be blind to other input and therefore loses his objectivity (Bryman & Bell, 2015). To prevent this from happening the author has been discussing the different projects regularly with people from outside the company and the fact that the author has been aware of this risk has reduced the probability of the phenomenon to occur. The inside observations have given advantages such as the fact that the author was able to get in close contact with key informants and access to information in the company that is difficult to get to otherwise. The author was however not covert and did not have to deal with ethical and political issues that that includes. Even though there is a certain level of objectivity risks with observations, especially inside action research observations, the author has been aware of the risk during the entire research; acting professionally, and with the positive aspects in this regard the observations should be considered reliable.

The author had previous knowledge of the general theory within the scope of this thesis, from earlier studies, before starting the work at the company. The data gathered from the company could however have been of higher quality if a deeper pre-literature study would have been made prior to the data collection. To not damage relations and reveal any sources of confidential information, sensitive data is left out of this master thesis.

If it would have been possible to go back to the company more valuable data could have been collected in order to ensure a more solid analysis, which would extend the validity further of this master thesis. In order to make the result more generalizable multiple more projects within the company and corporation could have been included. This was not done due to scope and time limitations.

Since the master thesis is conducted at a specific BA at a company the external validity can be argued. Nevertheless, the company did work in a global environment with employees with different nationalities, and several CI projects with connected results were studied. With that said the outcome could be generalizable to a certain extent.

4 Theoretical Framework

The way we define modern CI today has its start in the end of the 19th century, when programs were introduced to encourage employees to drive improvements. There were also incentives to reward the employees who drove improvements with a positive outcome (Bhuiyan & Baghel, 2005). CI of processes that create products and services are important for companies today to keep customers satisfied (Dean & Bowen, 1994). Generally a satisfied customer is a loyal customer, who will keep a lasting cash flow for the company in the future (Matzler et al., 1996). Even if you have a satisfied customer it is still important to continuously improve, hence according to the well known Kano-model; a customer that was delighted with a product or a service yesterday will only be satisfied with the same one today and it will be a requirement tomorrow (Robinson, 2009). CI is therefore according to Webster (1999) a goal that is worthwhile striving towards, and focusing on "continuous" in continuous improvement can in the long term be very profitable. CI is often linked to using a set of specific tools and techniques, like Total Quality Management (TQM), Lean Production, Six Sigma etc., which by some are included in their definition of CI (Caffyn, 1999; Oakland, 1999).

4.1 Definition and description Continuous Improvement

Deming has, according to Juergensen (2000), stated that CI should be viewed as a philosophy consisting of "Improvement initiatives that increase successes and reduce failures". According to Bhuiyan & Baghel (2005) CI is a culture where improvements are achieved by using different tools and techniques to look for root causes, variations and waste and try to minimize these as much as possible. Lindberg & Berger (1997) define CI as a planned, organised and systematic change program notable for its project based models of change. The earlier CI initiatives were rather work improvement principles where, CI today is rather related to organized and complete methodologies(Bhuiyan & Baghel, 2005). Bhuiyan & Baghel (2005) further states that CI is most likely reached by incremental and evolutionary improvements, which together often lead up to major changes, the two authors continuous by saying that major, radical changes are sometimes also attained by a new technology or a new idea.

A lot of tools and techniques are associated with CI and by some a more modern definition of CI would be to look at it as incremental continuous innovations that are spread through out the whole company (Bessant et al., 1994; Haddas et al. 2014). In this case the approach to become more competitive as a company is more creative than being forced to use a set of specific tools (Oakland, 1999; Caffyn, 1999).

Looking at CI from a quality perspective Bounds et al. (1994) state that CI has evolved from four previous quality eras: Inspection, statistical quality control, quality assurance and strategic quality management. Throughout the first three eras quality was seen as an issue but in the fourth era, strategic quality management, it was

viewed rather as a competitive weapon (Bounds et al., 1994). The era of strategic quality management is however still not flexible and rapid enough to meet requirements from todays fast moving businesses environments (Kaye & Dyason, 1995). Singh & Singh (2012) argues that CI needs to be part of strategic quality management and in any company strategy in general in order for it to be successful. Unfortunately there is no easy way to CI, and each organisation has to customise their approach to CI themselves, which, if it is done properly can show a long-term success (Webster, 1999).

Many refer to CI as KAIZEN (Suzaki, 1987; Terziovski, 2001; Wittenberg, 1994; Deniels, 1995; Singh & Singh, 2012). According to Deniels (1995) KAIZEN means that the experts are on the shop floor and therefore they should be the ones solving the problems with help from directives and strategy. Suzaki (1987) and Lindberg & Berger (1997) continues by stating that KAIZEN is practiced specifically in manufacturing (shop floor) and in quality circles, described in next paragraph. KAIZEN is by Wittenberg (1994) and Terziovski (2001) described as the incremental change that is achieved by taking small steps at the time, and innovation is improvements done in a more abrupt manner, both referred to as continuous improvement.
According to Lindberg & Berger (1997); Webster (1999) there are two forms of CI, the radical/revolutionary and the incremental/evolutionary, which are reached in different ways. Webster (1999) continues to state that revolutionary change often follow a new manufacturing process or a disruptive idea, while the evolutionary change develops through incremental changes. To reach an effective CI both these needs to be present (Kaye & Dyason, 1995; Webster, 1999).

4.2 Working with Continuous improvement

Believing CI is a philosophy and company culture that is about working continuously and incremental towards positive change does not necessarily require huge capital investments but it demand everyone to work together to make improvements (Bhuiyan & Baghel, 2005). And improvements on a fundamental level starts at the shop floor with the operators (Singh & Singh, 2012). With help from top management the operators should determine the measures, which are ought to be aligned with business strategy, and with directions they should create improvements (Singh & Singh, 2012).
According to Bhuiyan & Baghel (2005) CI is performed at three different levels in an organization: Management, group and individual levels. CI on management level are affecting the strategy of the organisation, group level indicates a more problem-solving focus on a broader level and individual level implies CI on a day-to-day, micro scale. To be able to decide what methods and activities that are needed the two authors continues by stating that managers need to evaluate the different situations

at each level, after that CI should be adjusted and implemented to obtain the most out of it.

Lindberg & Berger (1997) states that there are also two different organisations of CI teams, the permanent and the temporary. Historically the permanent approach has been widely used in Japan, included in KAIZEN. It involves a group of people solving problems with the help of statistical tools and the Plan-Do-Check-Act (PDCA) cycle. The temporary approach is more often used when management, to solve a specific problem, puts a group together. The temporary group is split when the problem is solved, while the permanent group continuous to work together (Lindberg & Berger, 1997). It is however important to note that CI as part of KAIZEN does not have to be in a permanent team and is often separated from the ordinary work as a parallel structure (Lillrank & Kano, 1989). Lindberg & Berger (1997) continuous by stating that several firms in Sweden, where the attitudes have changed towards CI from being part of a specific staff's function (e. g. engineers), which have been able to localise the problem solving have experienced a positive outcome.

Lindberg & Berger (1997) has categorised five different models of organisations and support of CI depending on two dimensions: task design and level of integration of tasks. The five models are:

Quality Control Circles (QCC) – Small permanent groups where members are from the same work unit. They meet regularly to discuss problems related to work, solutions to the problems are written as suggestions and given to management, later they are to be implemented in the day-to-day work. The concept of QCC is simple but reality is often complex since the solutions often are brought up by operators on the shop floor, and this should in the end correspond to the strategic goals set by management. (Lillrank, 1995)

Organic continuous improvement – Multi-functional work groups that have CI integrated into its regular and own work. The groups are characterised by taking responsibility for the improvements on its own. Initiation, plan, execution, evaluation and decision-making are done independently. (Lindberg & Berger, 1997)

Expert task force CI – Temporary group of professionals from different staff functions and hierarchal levels to solve a problem together. Usually a more wide-ranging improvement project, with bigger investments and longer time from initiation to actual implementation, compared to organic CI. (Lindberg & Berger, 1997)

Wide-focus CI – Combines process teams in self managed permanent groups. It is a combination of organic CI and expert task force CI to solve a sub-process between adjacent work-groups. It is often used to solve complex situations with constraints depending on time, system and resources. (Lindberg & Berger, 1997)

Individually based improvement work – Individuals propose and initiate improvement in a suggestion system, with or without promoting incentives, then the main responsibility for the implementation is given to a specialist. This has little in

common with principles of CI and should therefore only be considered CI if it is very well managed and monitored. (Lindberg & Berger, 1997)

Independently of what organisation it is or methodology, approach or tool that is intended to be used the selection and combination has to be properly done in the implementation process (Sokovic et al., 2010). Large number of people in most companies can use the tools, methods and approaches since they are simple to understand, e.g. PDCA cycle (Sokovic et al., 2010). Sokovic et al. (2010) continues by stating that more advanced and complex methodologies, tools etc. (e.g. Six Sigma, Lean Sigma, Design for Six Sigma or EFQM excellence model) need more expertise to be implemented in the right way, depending on organisation, team, process, knowledge, understanding etc. According to Bhuiyan & Baghel (2005) there is a need for further research in the field of hybrid CI methodologies where two or more tools are combined to distinguish their capability of being combined and to what kind of organisation.

4.3 Challenges and advantages with continuous improvement

Many organisations think that applying any CI methodology results in improvements, but there is no "magic bullet" or panacea to reach CI (Webster, 1999). There might be improvements by just applying any method, but to be successful each organisation needs to get a tailored approach depending on its history, tradition, values, culture etc. (Anand et al., 2009). To stay competitive in a faster and more global competition it is not enough anymore to just get the easy and quick fixes, improvement has to be done methodically and fast, connected to a long-term strategic plan (Webster, 1999).

4.3.1   Involvement of employees

It is sometimes hard to get people from different levels in an organization to work efficiently together and CI can often be a long battle (Bhuiyan & Baghel, 2005). But having a unified organisation working towards the same goal is key for CI and this cannot be accomplished without required resources and support from top management (Bhuiyan & Baghel, 2005). Having a common goal and language is consequently key as well as communication and education to the people involved in CI especially in the specific tool and methods that are used (Webster, 1999). Members have their loyalty to their closest workgroup, so to get a full organisation to co-operate in CI and it is also important to present the projects to focus on different levels so that everyone have a feeling of self-interest in their work (Webster, 1999). To get inspired group members it is important to have targets that are meaningful for all of them (Webster, 1999). To reach that, the group members should be involved in the target analysis and or benchmarking programme (Webster, 1999).

An issue that some organisations see is that CI projects that has reached its initial goal can be stagnant and does not provide improvements anymore (Jabrouni et al. 2011), this inefficiency can be due to absence of coordination and leadership (Choo et al., 2007). To keep on improving and delivering change these projects sometimes need a re-launched (Jabrouni et al. 2011). Verona & Ravasi (2003) is also stating that the company culture of on-going change is central and needs to be efficiently sustained to keep improvement projects to be fruitful.

4.3.2   Sub optimisation in Continuous Improvement

Sub optimization is a common pit-fall in CI, and is often driven by selecting too few figures from a benchmark. If a group of individuals are given one specific benchmark figure to reach it is likely that they have done a sub optimization (Webster, 1999). Measures that hasn't been used frequently before, or newly invented to measure something can unconsciously be giving a wrong message, especially if it is a complex calculation behind it (Eccles, 1991). That can result in a sub optimisation (Eccles, 1991). By using a set of figures to reach, the probability is higher to attain a more even improvement (Webster, 1999). It is however important to understand what it means to an organisation to improve a specific measure as well (Webster, 1999). By improving a specific division or set of measures within a company and can in some cases result in a total different situation than intended (Webster, 1999). For example cutting down on a division that are performing badly financially, without knowing that the products within this division is supporting sales of the full organisation, can be the end for that company (Webster, 1999).

4.4 Plan-Do-Check-Act cycle (PDCA cycle)

The commonly used Plan-Do-Check-Act (PDCA) cycle can be implemented in any kind of business or organisation to help structuring CI projects (Moen & Norman, 2006; Singh & Singh, 2012). Moen & Norman (2006) state that the cycle enables people to work with ease in teams to make improvements and that the learning part of the continuous cycle makes people take rational decisions towards useful results.
It consists of four steps(Moen & Norman, 2006; Singh & Singh, 2012):
- Plan – Problem description and an idea about probable causes and solutions, studies of present situation and elaboration of development of improvement.
- Do – Model, try, measure and execution.
- Check – Assessing the effects of the change, "study" since this phase stresses its object of building knowledge as well, evaluate if the result correspond to expectations.
- Act – If results are fulfilling its purpose make them consistent and permanent by standardisation. If the outcome is not satisfying the expectations iterate the PDCA cycle again.

In a developed PDCA cycle Moen & Norman (2006) explain how three additional questions are asked in the beginning of each improvement cycle. They are:

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What changes can we make that will result in improvement?

The authors explain that these questions can be asked from a person with additional knowledge in improvement projects to predict the outcome dependent of conditions that the project will face in the future.

Its core purpose is to detect abnormalities and even those out before starting a new improvement circle of itself (Singh & Singh, 2012). According to Moen & Norman (2006) the PDCA cycle supports theory based planning, which also leads to more accurate steps later in the process such as: properly identifying the right data to use and accurate decisions when choosing tools and methods used in the process. The PDCA cycle is used both by temporary and permanent teams and it is effective in both managing a programme and achieving results (Sokovic et al., 2010). The circle in the name indicates the idea that there is no end to the method because it starts all over again when one improvement is done (Singh & Singh, 2012). The PDCA cycle's four steps represent the continuous nature in CI (Sokovic et al., 2010). There is also emphasizes on anticipation in the PDCA cycle, to prevent problems from reoccurring (Moen & Norman, 2006).

4.5 Balanced scorecard

In 1992 Kaplan and Norton developed the balanced scorecard (Hoque, 2014). It was done to make it easier to connect measurements to strategy (Kaplan & Norton, 2000). As with all CI initiative methods and tools, balanced scorecard cannot just be generally implemented to any industry or company. It has to be customised dependent on: Market situation, product strategies and competitive environments (Kaplan & Norton, 2000). Prior to 1992 a lot of measures that were done within companies focused on short-term financial goals (Hoque, 2014), and what is measured is commonly tied to bonuses and rewards within a company, which gives attention to them by executives and managers (Eccles, 1991). To reach a company strategy the measures therefore have to be connected to it, key in this is therefore to be able to quantify things like: Customer satisfaction, quality, market share, human resources, cycle-time etc., which will give a more long-term perspective (Eccles, 1991; Hoque, 2014). An issue is when setting new measurements are usually that the financial measures have been used for a relatively long time and reported frequently, while the non-financial ones has been reported on a quarterly, half-year or yearly basis (Eccles, 1991). Sometimes new measures that are used in balanced scorecards are just taken from an ad hoc process in a company (Kaplan & Norton, 2000). To refine the measures to reflect strategy can take some time but is efficiently done by assigning each of them to an executive and let them implement the use of

them and ensure the connection to the company strategy (Eccles, 1991). Balanced scorecards are now used on a more local level, which makes it important for managers on all levels to be able to connect their operations to the company strategy and refine its measures (Kaplan & Norton, 2000). For a person within an organisation with a good strategic thinking it can be easy to conduct a balanced scorecard (Kaplan & Norton, 2000). To see how Kaplan & Norton (2000) suggests companies to do it see Appendix 1.

4.6 Analytical framework

This part of the thesis aim to shortly explain what and how the literature will be used in depth on the information gathered from the company in order to perform a sufficient analysis and answer the research questions in this thesis.

This is done in order to build a framework customised for the situation in this thesis that is fulfilling all aspects needed. The framework is divided into three categories; Strategy, involvement (of employees), tools & methods, which are seen to be the most important parts of the theory in order to make a sufficient analysis and to answer the research questions. These categories were chosen during the iterative process, when combining knowledge from literature, information gathered at the company and the research questions. The categories are closely related and are in some cases merging into each other.
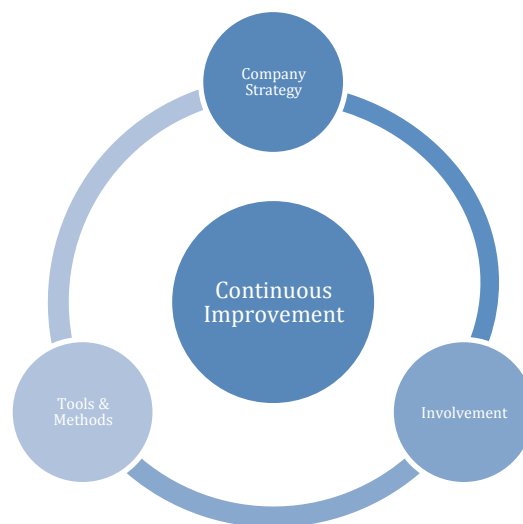
Figure 5 Company Strategy, Tools & Methods and Involvement are chosen as the three main subjects to by part of the analysis.

The company strategy is part of the framework because it is important for the company to understand if the strategy is reflected in the actual work and specifically in the CI projects. It will mainly be analysed in regards of how it is funnelled down in the organisation from top management to be included in the day-to-day work and efforts that are put into the CI projects on BA and team level. This part will, amongst others, use the theory described in chapter 3.6 about balanced scorecard. This part of the analysis should elaborate on what drives efficiency regarding how strategy is communicated and realised in CI projects to improve delivery service. Company hierarchy will also be analysed in this part to understand how that impacts the efficiency and result of CI projects.

From the literature the importance of involvement of employees has been stressed, specifically by Bhuiyan & Bagel (2005) and Webster (1999) in chapter 3.4.1, and to understand how this is affecting the efficiency of the CI projects it will be part of the

analysis. The hypothesis is that company/project culture and hierarchy are main reasons for the level of involvement in a CI project, as well as when in the start up process the members of the CI projects are included. Since the company is working with long-term CI projects the projects are sometimes re-launching and that can be a source of new influences, a time when leaders of projects are changed and new ideas are implemented. It will be part of the analysis to see how this affects the involvement of the employees, and how that correlates with efficiency and quality of work.

Using Tools & Methods is fundamental part of CI as a whole, which is stressed in chapter 3.3 and 3.5 above. In order to get a comprehensive analysis the impact of what Tools & Methods that are used and how they are used will be studied. It will be analysed in regards of how the use of it is affecting the work efficiency. It is done to investigate if introducing a tool or method in the company is impacting the mind-set and involvement of the employees, which in the long run might impact the efficiency. The goal is to see if introducing any tool or method is helpful for the company rather than using a specific one. This can aid the company in deciding what tools or methods to use in the future. The use of the PDCA-cycle will be analysed to see if its ability of standardising processes can be used for the company to improve the processes of delivery service in a long run. The hypothesis is that the company is using a lot of the methods in the PDCA-cycle today and that developing this would help them become more efficient.

5. Continuously Improvement projects at company

During the 14 months at the company two main projects have been on-going specifically focusing on continuously improving delivery service to customer. The On-Time-In-Full (OTIF)-project is a cross functional analysing project with the goal to improve delivery service on EMEA level including several of the other brands in the corporation. Secondly the Whiteboard project is a supply chain KPI monitoring project with the goal to get a higher performing culture as well as funnelling down company strategy within the organisation. The two projects will be further described below.

5.1 On time in full-project (OTIF-project)

In 2015 the delivery and transportation (D&T) department in the corporation had been focusing on getting the warehouses in EMEA up to a certain level of Delivery Center On Time (DCOT). DCOT is calculated by measuring if the DC is managing picking and packing (P&P), which is the time it takes for them to prepare an order, within a certain planned time. When the D&T department reached their targets for DCOT, it was realized that the customers didn't get their product in time anyway. That was when the On-Time-In-Full (OTIF) project was initiated.

The warehouse and DCOT is affecting if an order is delivered on time to customer but it can be one of many reasons. The OTIF project investigates both in DCOT failures as well as all other causes of failure in the delivery service. It started as a six sigma project and the analytical foundation of the detected root causes are based on this. The six sigma analysis were done together with a certified six sigma black belt master. The project has a genuine analytical foundation where the initiator, and previous project manager, had deep knowledge about all parts of the system. Its main focus is to detect issues causing failure in delivery service, bringing attention to them by reporting to a specific "task force" that will evaluate the situation and, if actions are needed, delegate further to the right part of the organization to solve the issue. The OTIF-project is also creating a forum of education and experience development between the participants, this was however not the initial reason for the project. It consists of people through out the whole corporation, which means there are people from different backgrounds and working for and supporting different companies.

5.1.1 Project structure

The OTIF project is led by EMEA go to market operation manager (project leader). The base of the project consists of two groups and the project leader. OTIF- project leader is responsible for the work within the project. The two groups are the data analysing group and the task force. 10 people are in the data analysing group, which consist of project leader, D&T analyst, customer service (CS) managers and supply chain managers/coordinators from different business areas. They have all gone

through a one-day general education to learn about root causes of delivery service failures and how to detect them in SAP, which is the software used by the organisation for all operations. The task force consists of five people from operations on a higher level in the corporation that are able to delegate detected issues from the analysing group to the right supporting part of the organization. They are: Director of operations in EMEA, EMEA CS director, director D&T EMEA operations, D&T analyst (same as in the data analysing group) and EMEA go to market operation manager (project leader). Fact that the task force has mandate to delegate tasks down in the organisation makes it a powerful tool when decisions is made to solve an issue. There were however other aspects within the organisation that had to be considered in some cases, which prevented the task force to move forward on improvements that could easily have been done, e.g. lack of resources. The general work was running according to the set work-flow most of the times but there were some tension between some people in the data analysing group and the task force. The tension was due to that the members of the analysing group and the task force had different opinions on what issues that should be dealt with and how solutions were to be implemented.

5.1.2   Project workflow

On a monthly/bi-monthly (started on a monthly basis but since issues were solved it changed to bi-monthly) basis the project leader gathers data from the internal Business Intelligence (BI) system. The data consists of order lines that are not delivered on time to customer. It is structured in a standardized way and sent out to the data analysing group together with a skype meeting invitation. Each member in the data analysing group has 5-7 lines each to analyse. The project leader decides what lines that will be analysed depending on what problems that has occurred the past month/two months. If there has been a particular issue in one specific DC then all lines will come from that DC. The group analyse the data according to the general
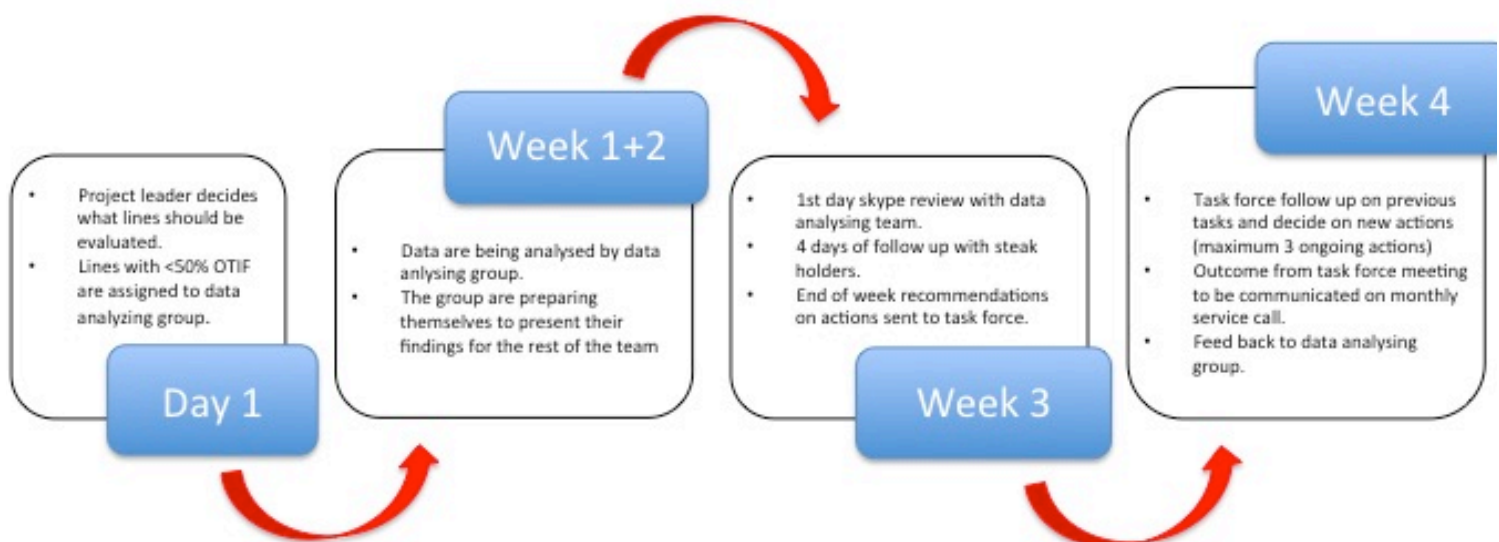
Figure 6 Description of workflow in the OTIF-project

22

approach, that are taught, to find the root cause of the lines not being delivered on time. There are 26 different root causes already identified, they are structured into a set of seven process families and four higher-level groups, see figure 7 below. This is done to easier identify responsible people for next step actions to solve the issues. For example: If the root cause is "delivery block" then the task force can see that it is "order book" related, which helps them to understand the issue and to make a better decision.

High Level	Processes	Failure Mode
Product Availability	Sourcing Performance	Wrong /No / Late planning of supply
		Line Fill Logic hinders order release process
	Products Arrival in DC	Product arrives late
	Products Receipt in DC	Estimated arrival not matching actual arrival
		Provided Data does not match the physical delivery
DC Related	Products Receipt in DC	Planned inbound capacity below needed capacity
	Pick & Pack Process	Orders released exceeding planned DC capacity
		VAS activities take longer than required
		Delayed outbound due to backlog (prioritazation of orders to fullfill target)
Order Book Related	Allocation of Products to Orders/ Delivery Creation	Products are not fixed allocated to order (re-scheduling)
		RDD Changes
		Customer/AS related blocks are not processed correctly or not on time
		NP Blocks ae not processed correctly
		Call-Offs are not processes correctly (considering SLA P&P, Transit Time, etc)
		Customer/AS related blocks are not processed correctly or not on time
		DC cannot ship other customers due to prioritization setting short term
Reporting Related	Processes not included in the OTIF measurement	Customer appointments are not recorded in the system
		delayed pick up
		Orders cancelled after RDD are still included in the OTIF
		Cut-Off Time is not included in the calculation
		FW Calculation of RGI did not work correctly
		Data is not retrieved correctly
		Processing of AGI
		Shipment delay
		OTIF does not consider calculation from confirmed date
		Delivery Document is created too late vs. RGID

Figure 7 The data analysing group uses the above table in order to categorise the different root causes to why delivery service has not been successfully executed. The categories help the task force to make decisions on whom to delegate their changes to in the organisation.

During the meeting every member of the data analysing group present their findings from the analysis. If one member is unable to find a reason for an order line not being on time the rest of the group can help them during the meeting. Sometimes a standardised reason is found together but sometimes a new root cause, that is not predefined, is found as well. Final result from the analysis is uploaded to a shared folder. The result is collected by the project leader and further analysed. The project leader is following up the result with responsible stakeholder for the specific root causes found. Critical root causes, occurring on a regular basis without a sufficient solution, and new root causes, are brought to the meeting with the task force to be further investigated. If they find that action is needed to solve issues they will

delegate the task in the right direction. The result from this meeting is communicated in monthly service calls with the involved parts of the sport corporation organisation. 10 of the root causes identified have been causing enough problems to require change. Below are two examples, "add delivery cycle" and "usage of delivery flag", of root causes described where actions have been taken and improvements have been done.

5.1.3   Examples of improvements

The first example, "add delivery cycle", was a process logic related issue. When an order is about to be delivered the corporation's order-book software, SAP, is creating deliveries by sending the order, with all its information about customer, requested delivery date etc. to the 3PL partner. This action is triggered by a delivery creation cycle in SAP, which is going through all orders, detecting the orders that are fulfilling all requirements to be sent to the 3PL partner in that cycle. These delivery creation cycles are running at specific times every day. During one of the monthly meetings, in the data analysing group, it was realised that re-orders that were plugged after a specific time at night one day did not have any delivery creation cycle running until the day after. Re-orders can be plugged one day and sent from the warehouse to customer the day after. Since delivery wasn't created for these orders that day warehouse did not have time to send the delivery the day after which they were supposed to according to the calculations. The solution to this issue was simply to add a new delivery creation cycle just before midnight every day. That new deliver cycle would send all orders that were fulfilling all requirements to the warehouse.

"Usage of delivery flag" is the second root cause example and it is order book related. When an order is plugged there is a possibility to choose that the order will only be delivered if all the products in the order are available at the same time. This means that delivery will not be created for an order even though everything is available in warehouse and ready to be delivered except one piece. The solution to this is to never use the "delivery flag" but if needed rather use so called "delivery blocks" on the order instead. The delivery blocks then have to be maintained so that they are released on the order when all products are available. Using delivery blocks does not affect the OTIF because it is recalculated from when the block is released. Since the delivery flag and delivery blocks are maintained manually there is still a risk that the error reoccur. If the delivery flag functionality had been fully removed from the system then the issue would not have been possible to replicate.

5.1.4   Outcome of project

The OTIF project has resulted in various different improvement actions, increasing the OTIF from 68% in 2015 to 85% in 2016. There is no outspoken target in figures to the project group except to improve delivery service. Every company and business areas have different targets for their individual supply chain that is highly connected

to the OTIF. The project was very fruitful in the start with a few changes that showed radical improvement results, after that the actions obtained is resulting in rather incremental improvements than radical ones. In the initiation of this project root causes to delivery failures were found by including the analysis in a Six Sigma project. Other than that no other outspoken CI tools were used. This project worked as an efficient source of knowledge especially for the members of the data analysing group. The members got up to a high root cause analysis level, of a complex system, in just a few months time.
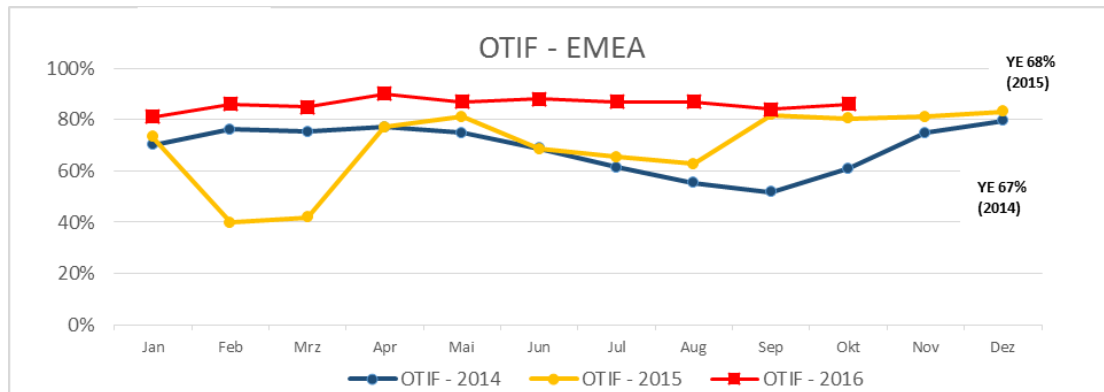

Figure 8 shows how the OTIF has changed over time. The OTIF project started in 2015 and the improvement over time is clear.

5.2 Whiteboard project

The management of the company set up clear quantitative long-term strategy goals, which were boiled down to individual goals for each Business Area (BA) and service within the BAs. To reach those goals each BA had to set their own paths. For the BA where this thesis was done the whiteboard project was one of the operational tools used to monitor KPIs and identify gaps vs. targets. One of the main goals with the whiteboard was to create a higher performing culture within the work force and it also helped the employees, in a visual way, to get a better understanding for how well their service was performing and what and how different actions are connected to the performance. In the supply team's case improving the delivery service was part of the company strategy. When the author arrived at the company in February 2016 there was already a whiteboard set up at the supply chain service since 6 years, but it was not working fully in its intended way; the figures were small and hard to read, it was not structured in a sufficient and logical way and all the right KPIs were not present. To re-launch the whiteboard and develop the work with this tool for the supply team is part of this thesis and described below.
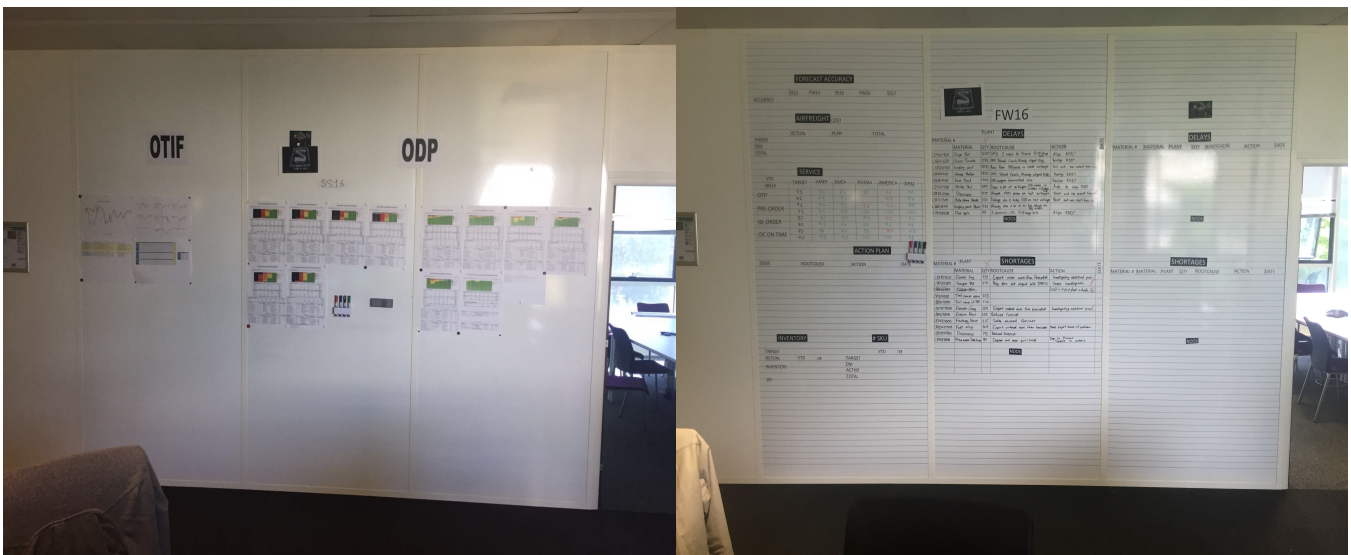
Figure 9 Before (to the left) and after (to the right) the re-launch of the Whiteboard for the supply team at the BA. Some figures are left out due to confidentiality.

5.2.1   Project workflow

The whiteboard re-launch project was started by bringing the whole supply team together and defining the relevant KPIs and creating a model of it in excel with respect to the size of the whiteboard and space that the presentation of the KPIs would require on the board. In the next step an internal Project Management Officer (PMO) was contacted, his task was to drive and help standardise the project of setting up whiteboards for all the teams in the BA. A meeting was set up where the excel model was presented and two different options of how to structure the

whiteboard were discussed. One digital format on a touch-TV and one analogue where figures are written in predesigned tables on an actual whiteboard.
There were a lot of uncertainties in the digital format regarding costs, visual efficiency, software and interface-connections to get it to actually work. Due to its simplicity and rather quick and easy set up the analogue format was chosen.

The final design of the whiteboard is consisting of two bigger sections, one with KPIs presented in 6 tables, including delivery service figures, forecast accuracy, airfreight cost, stock levels and one table listing on-going actions and responsible person. The other bigger section consisted of top products with most delays and shortages for two seasons at the same time, fall/winter (FW) and spring/summer (SS). Tape was used to draw the lines creating the tables which made it very flexible, changes were simple if a new KPI were introduced or other measurements needed to be monitored. Weekly meeting were held to go through the figures every Thursday at 10:00am.

5.2.2   Example of improvement
One of the main improvements that the Whiteboard project resulted in is that it highlighted the importance of accurate measurements of figures. Since the KPIs were on display the calculations of the figures were being questioned. Before the new whiteboard was put in place, the calculation of OTIF, the main KPI, was changed from calculating percentage of orderliness that were delivered on time to percentage of value, in euros, of the order that was delivered on time. This change came from both that the supply team had been questioning the calculations and its relevance for the actual delivery service to customers.

The OTIF is primarily tracked on three levels, OTIF all orders, OTIF pre-orders and OTIF re-orders. When calculating all orders, all orders had to be on time by the day to customer, but while calculating pre-orders on its own they are allowed to be delivered up 5 days late, which is seen as a delivery window (described in deapth in chapter 1.5.2). Due to the size of pre-orders it is standard in the business that they have a delivery window, and for some companies the delivery window can be up to two weeks. It was however very confusing for people to understand because the OTIF all orders could for example be at 70% one week while pre-orders and re-orders on their own were at 95%. This happed when one or more big pre-orders were delivered within the 5 day delivery window and was given 100% when calculated as a pre-order but given 0% when calculated in OTIF all orders.
After the supply team had questioned it to the EMEA HQ of the corporation several times the calculation for the whole corporation changed so that the delivery window was considered in all OTIF calculations.

5.2.3   Outcome from project

There are no figures proving clear statistically reliable improvements of delivery service since the whiteboard project was initiated. Main goal with the whiteboard initiative is to get a higher performing culture within the supply team. It is also there to monitor performance KPIs to, for the supply team, reach yearly targets. The project has been very fruitful in giving a more performance driven culture proven by more ownership of the figures by all the members of the team and more involvement during the weekly meetings. The interest for the figures has increased which is shown by the fact that people from other BA asking and commenting the whiteboard. By putting them on display the other teams in the business area can with ease see how the supply team is performing on a weekly and yearly basis, and they got a lot more interested in the figures and started to ask about the performance, participating in weekly meetings to learn the workflow etc. Before the new whiteboard was put on display one member of the supply chain team did not show any interest in the weekly meetings nor the figures on the wall. After the person had been involved in putting the new figures up she took a much more leading role in the project, which made the others in the group get more involved in the work as well. Since the work to implement the new whiteboard started people from other BAs came by, asked about KPIs, how they were calculated etc. The sales director for one other BA wanted clarification on several KPIs and soon he implemented a similar whiteboard in his team. The KPIs did however not work very well in the beginning but the KPIs were adjusted and in the end they were satisfied with the set up.

No outspoken tools or methods are used during the whiteboard project. The whole whiteboard can however be seen as a balanced scorecard where the company strategy is funnelled down to business area level and after that supply team level. There is a continuous discussion about improvements that can be done during the weekly whiteboard meetings, which is easily connected to the higher strategic goals of the BA and company to become more performance driven.

5.3 Other observations

When other teams in the BA were to install their whiteboards they had issues. Product management team did not think their KPIs were as easy to interpret as the ones in the supply team. Rather thought the supply team's whiteboard "had created whiteboard mania". The product managers were responsible for different product categories that worked differently to each other. Some with a category existing of a lot of smaller product and others with fewer and bigger products. One KPI were for example to evaluate the efficiency of their category, which only measures number of products. So obviously the one with a lot of products would have a worse KPI than the one with fewer regardless of the type of category. This made the person with a worse KPI feel that the whiteboard just put more pressure from the organisation on

her. The figures that were put on the whiteboards were not evaluated enough in order to make sure it was measuring what was intended to measure. This made the organisation have to change measures multiple times in different teams. During the implementations the message for why the different changes were to be implemented was not communicated clear enough to the whole team affected, which build a resistance to the change already from the beginning. Some people in the organisation also felt that they got more tasks on their responsibility but not the reward for doing the work.

All managers of the company had weekly/bi-weekly meetings with both their teams and each individual. It was done to develop the individuals, their work as well as projects they were working on, and working processes. The managers were responsible for the meetings and their mind-set and focus mirrored how well the team and its individuals were performing. The manager for the supply team had a strong CI focus, with a driven personality to always develop each and every process. This incremental work was clearly annoying some employees at times but gave a strong loyalty within the ones who liked it. In the supply team 4/6 members thought their weekly meetings were productive, contributing to a better delivery service by identifying problems, coming up with solutions and taking action on them. But members of other teams, like the clothing design team, did think it was waste of time.

6. Analysis

The analysis and synthesis is the result of a systematic combination of literature and observation where the analytical framework, purpose and research questions has been guiding the author. It will include both areas of improvements and areas where work is carried out in a successful way. Below analysis will be divided into Strategy, Involvement and Tools Methods with further descriptions of those categories from a deeper perspective.

6.1 Strategy and its role in the projects

The first part will analyse the company's strategy and how it is connected to the CI work being done to improve the delivery service and how company structure, reflection of strategy and hierarchy play its role in the relationship in between strategy and CI.

6.1.1   Company Structure

CI is driven on three different levels in the organisation: Management, group and individual levels (Bhuiyan & Baghel, 2005), where it effects the organisation in different ways. The management level driven projects like the whiteboard project aim to canalise the strategy down in every part of the company. In this case the management used a way of balanced scorecards, driven from top management down to the whiteboard where the company strategy goals were monitored in each team. In the supply team the delivery service was one of the strategy goals set from the company executives, funnelled down to the manager who were responsible for the figures to improve. The company managed to funnel down the strategy in an efficient way through the use of whiteboards, but if a team were struggling with the whiteboard the strategy had to be reflected in other ways, which was not as transparent and clear. On a group level the problem solving focus were shown in the OTIF project. The group effort was key in taking in a wide range of data, analysing it and setting root causes solved by them together with the task force.

Using Quality Control Circles (QCC), which is similar to KAIZEN, can be complex in the sense of strategy. Instead of letting the strategy be communicated from the top in the company the CI work being done at a lower level in the organisation is supposed to reflect the strategy bottom up instead of top down. In the company structure where all managers were to have weekly or bi-weekly meetings not only with their whole team but also with each individual member of the team the complexity was clearly shown. Driving CI work within each team was very efficient in some cases but more of a burden in others. The reason it was a burden to the design team compared to the supply team seemed to be mainly due to the way the different teams worked and the way the managers approached CI.

The OTIF project was a combination of an Organic CI and Expert task force group (Lindberg & Berger, 1997). The data analysing group that met on a monthly basis was the Organic part, which is characterised by its multi-functional group with CI

integrated, reporting issues and possible solutions to the task force, with and mandate to initiate change with a bigger budget, who then executed and solved the problems. The combination of Organic CI and Expert task force got the best out of both of them, which mean the incremental part and the power to change when it is needed. The project was seen as a successful project within the organisation and it was improving delivery service. There was enough time for analysis and work to let the improvements become incremental and when that was done the task force, with rather big mandates to change the organisation, was efficient in executing changes that was needed.

6.1.2　Strategy reflected

To get measurements and KPIs, that are easy to monitor on a daily basis, on all levels in an organisation and to synchronise with company strategy, Kaplan and Norton developed the balanced scorecard (Hoque, 2014). In this case the company strategy was channelled down to almost all parts of the organisation and reflected by KPIs that were monitored on a weekly basis through the whiteboard project. The way this was done by refining the strategy to figures to be monitored can be seen as a balanced scorecard. There was however a risk in this due to the fact that many of the KPIs were originating from financial targets, and those figures needed to be developed which was taking time due the complexity of the figures and bureaucracy within the organisation. It is unclear if the KPIs were tied to bonuses of executives or not which can be an efficient way to get the organisation to work efficiently to reach improvements (Hoque, 2014). But the lack of connection to e.g. customer satisfaction, quality and market shares were clear since the company did not work with investigating the measures enough before putting them on the whiteboard. In this case the most important part in regards of supply chain should be delivery service, which is impacting customer satisfaction.

To have measures reflecting strategy is according to Eccles (1991) and Hoque (2014) important for long-term success instead of a short-term financial improvement which gives the executives a bonus. But to translate the financial driven targets to reflect the strategy of the company and improve customer satisfaction can take time (Eccles, 1991). The corporation in this study had clear financial targets that were communicated to each executive, responsible for each BA. The financial targets were later refined into targets both regarding economical goals and strategic goals which were to fulfil the financial targets in the long run. Kaplan & Norton (2000) states that measures can be taken from an ad hoc process in an organisation and that make it irrelevant according to the strategy the organisation wants to follow. The measures in the whiteboard project were in some cases complex and had underlying calculations that weren't always clear and easy for everyone in the organisation to understand. When the figures were put on the wall and assigned to a group or person to track, more through reflections and questions were raised towards the figures. This made the calculation of OTIF in the supply team change and resulted in

31

that the strategy was reflected more and more in the KPIs that were tracked on a weekly basis, rather than following up on figures that did not serve any purpose to the team. Even though the KPI measuring OTIF was updated from measuring percentage of order lines being on time, to calculating value of the full order, there was no evidence that the customer became more satisfied by that. However, bringing this change up to discussion with the director of operation as well as director of customer service in EMEA made it clear that the KPIs needed adjustments, since they could not give clear evidence that the change was improving customer satisfaction.

To get an organisation to strive towards the same goal, resources are required from top management (Bhuiyan & Baghel, 2005). In this case management put emphasis on the whiteboard project because they believed that the organisation needed a high performing company culture. The employees did not always appreciate this and some resistance was seen within different groups of the BA where the thesis was carried out. Outspoken reason was that putting performance figures on the wall would put a higher pressure on the employees and create unhealthy internal competition. In the supply team all members were involved in the creation of the whiteboard as well as it was made flexible to be adjusted for future changes. This created a high sense of ownership and a lower level of resistance.

6.1.3   Hierarchy

There was a certain level of resistance to change in some groups within the BA where the thesis was carried out. Getting the executives, managers and officials on the same page and understanding the fundamental principle could have eliminated the tension that was created between the decision-maker and the ones monitoring the measures on the whiteboard. And getting everyone aligned with a common goal is key for success within an organisation working with CI (Webster, 1999). If this is not clear and the organisation is lacking in communication and education of the specific tools that are used the organisation might phase a long battle to align people from different hierarchy levels (Bhuiyan & Baghel, 2005). To overcome the initial resistance to change the company could have put more emphasis on involving the employees in the first phase to inspire them instead.

Within the corporation owning the company there was a clear hierarchy and the OTIF project structure was no exception from that. The hierarchy was however not as obvious in the company and BA where the thesis was carried out but if changes in operations, especially then in supply chain was to be carried out it could be rather bureaucratic and slow. As a result of this all CI work that was done was performed in a relatively slow manner, and according to Bhuiyan & Baghel (2005) CI is more likely to result in major changes due to incremental work rather than pushing through radical ideas. During the whiteboard project the supply team over time realised that the figures that were monitored and tracked did not always reflect reality and what was actually meant to be measured. The work that followed was based on

influencing the operations organisation on EMEA level in the hierarchic corporation. This resulted in an incremental work where the supply team discussed possible changes over time within the organisation and everyone had time to get used to the change, follow up on calculations of the new figures and aligning the whole work force. Taking time and performing the change in a step-by-step progress, due to the hierarchy, limited the risk of implementing a new KPI not fulfilling its purpose. So the hierarchy between the supply team and the operations organisation on EMEA level worked as a filter of ideas that prevented radical and in some cases unnecessary changes to be implemented and slowed down the change process to become more incremental. However, there were more to be done to the KPI, which was highlighted by the supply team manager as well, but changes were being done in a controlled and gradual manner.

As stated earlier both of the CI projects described in this thesis can be closely related to KAIZEN. It is a way of working that requires hierarchy to some extent and described by Deniels (1995) as a work that should be driven by the experts on the shop floor. In this case that would be the members in the OTIF group analysing the data, and the ones monitoring the KPIs on the whiteboard in the whiteboard project. In KAIZEN the issues detected should be solved at the shop floor. In the OTIF project the issue is brought up in the hierarchy to the task force, who then would delegate it down the hierarchy again to the appropriate people on the shop floor solving the issues. The members in the supply team using the whiteboard were, in most cases, much more independent solving their own issues but to get resources and support they often had to seek that up in the hierarchy. This resulted in a rather efficient way of using the hierarchy to execute needed changes. This way of working was not mentioned as a KAIZEN approach in the organisation. If it would have been outspoken and people would have attended training it could possibly have helped the organisation get more efficient in these tasks.

6.2 Involvement of employees

To be able to reach expected goals in CI projects it is crucial to get people involved. The level of involvement in the projects analysed in this thesis was different. Webster (1999) argues that everyone in the organisation should be involved and that it is achieved by making CI projects focus on different levels in the organisation so that the targets are meaningful for everyone. While looking holistically at the company they really reached that involvement by funnelling the strategy down and getting each team to manage their figures they perceived as important for their performance. Already after a relatively short period of time within the company the performance of each team and individual were measured, as far as it was possible, and it affected the individual's yearly rise in salary.

The teams were to some extent responsible for the processes that affected the KPIs that were measured in the Whiteboard project. This way involvement was necessary in order to move forward and reach set up goals. Since the Whiteboard project was a

monitoring and follow up action, which per se did not create desire for involvement, this put emphasis on the fact that the figures needed to be owned by an individual or a group who are actively participating in the CI work. The difference in set up that was seen, between successfully implemented whiteboards and the ones where teams struggled, were the level of responsibility that was put on the individuals. In the supply team all members were, to some extent, involved in the design of the whiteboard as well as deciding what figures that were to be displayed. This early involvement in the CI project was carried through to the weekly meetings as well. Same kind of interest was not seen in the teams where there were struggles in the set up.

The OTIF project was, compared to the whiteboard project, driven by higher executives from the corporation. There were no clear incentives for the members of the group to be part of this project except that if they had an issue in their day-to-day work it could have been highlighted in this forum and potentially be brought to the task force and later on be solved.. For new employees this project created a forum for them to learn from more experienced people which was mainly an incentive for them to join.

Both projects in the thesis is or was affected by the theory Jabrouni et al. (2011) presents where he states that CI projects can be stagnant after they have reached their initial goals and sometimes they need a re-launch.

The Whiteboard project was re-launched as part of this thesis. It gave it a much more clear function to the team and it inspired other teams in the BA to move ahead and set up their own whiteboards. When all members in the team were part of the set up and included in decisions regarding some of the figures and information to put on the whiteboard everyone had a sense of owning the displayed numbers. The result was higher KPIs and that everyone got more involved in the work, not just regarding the whiteboard but the whole team.

The biggest difference this made in the long run was that the calculations of the KPIs were clarified and questioned which resulted in changes of the actual calculation of some of them that impacted all companies in the corporation.

While the whiteboard project were re-launched during this thesis it could be argued that it was time for the OTIF project to be re-launched as well. The project had been on-going for about two years and had delivered very good result but was, during the time of the thesis, not improving the delivery service significantly anymore. There were clearly issues still to take care of and they were discussed but not solved. During the time of the thesis the project leader was changed. It meant that the person who were the initiator and had most knowledge of the processes, data and the root-causes left the group. Verona & Ravasi (2003) argues that to keep improvement projects successful there is a need for a company culture within on-going change. It means that when there were a leader change that could have been

the perfect timing for a re-launch of the project where all the members were brought together to set up a new structure and excel the project together.

6.3 Tools and Methods

When CI incentives started to evolve they were general work improvement principles, and today it is rather a culture where different sets of tools are used to eventually eliminate waste in all systems and processes of the organisation (Bhuiyan & Baghel, 2005). The company is clearly using different tools and techniques and have in big parts of the organisation a strong CI culture. The tools and methods used are however not always clearly stated. To get a more efficient use of the tools used there could have been more clear communication from the initiators, what they were for, how to use them and how people were to get involved in the process. Doing so could have merged the company culture together with the tools and methods.

Sokovic et al. (2010) states that more advanced tools and methods, e.g. Six Sigma, Lean Sigma, EFQM excellence model etc., need extensive training before it can be used efficiently within an organization, while some of the more simple tools can be used by most people in any organisation. The authors continues however to state that the implementation is crucial regardless of tool or technique used and that the more complex ones need more expertise and understanding of the organization. The company in this thesis are using a lot of the methods from CI tools and methods; KAIZEN, PDCA-cycle etc. and by stating that they were using them could have gotten around some issues they were phasing. That could have been a bridge to get over some implementation issues that were seen when the whiteboard project was introduced in some teams.

The whiteboard was also important for the organization strategically to be able to reach out with the company strategy through balanced scorecards down to the figures on the boards. It is according to Kaplan & Norton (2000) important to customize balanced scorecards in the right way depending on: Market situation, Product strategies and competitive environments etc. During the set up of the whiteboards discussions were held with top management and it was done to reflect the balanced scorecard. There are still financial goals on the whiteboard which, according to Eccles (1991), is not preferable due to its often short-term focus. But in this case it was about tracking the budgets for needed airfreight, to ship products from supplier to warehouse in order to deliver on time. The other measures besides OTIF measuring delivery service it was strictly figures that in some way supports delivery service such as inventory levels and forecast accuracy. In a proactive work the Whiteboard was also set up so that it would be easy to change to be able to adapt it to external or internal changes.

6.3.1 Mind-set of workforce

The sporting goods company where this thesis was performed has a long company culture of improving and developing disruptive products for sport. That same strong culture of improvement was very present in a lot of the teams outside of product development. CI should be seen as a philosophy creating improvements that builds long-term achievement and decreases failures (Juergensen, 2000). At the company this philosophy was heavily impacted by the mind-set of the managers within the different teams. The Supply team had a clear goal of improving delivery service, which the manager pushed for through different unspoken tools and methods. Each weekly meeting with the manager included a typical KAIZEN approach where the question was asked if there were any significant issues? If there were, how could they be solved, and then the team would take action. The mind-set of this particular manager was not unique but it did not exist in all teams. Having a more unified way of working together improving this kind of mind-set within all managers could have made it easier for all teams to improve on a more daily basis. To stress the importance of this mind-set it could, according to Anand et al. (2009) help to all teams to implement a tool or method in order to get the same culture of CI. It is however according to Webster (1999) not just to implement the same kind of tools or methods to all teams and expect success. To make this work all teams need to work on customised long-term solutions to make their teams efficient.

Using outspoken tools and techniques, e.g. KAIZEN could possibly have been helping getting people to understand different issues better in the company, and to help both to structure the work and get people together striving towards the same goal. Bessant et al. (1994) and Haddas et al (2014) are however arguing that the tools and methods used for reaching the CI goal are irrelevant as long as you reach the goal. Oakland (1999) and Caffyn (1999) also state that applying ways of working can also inhibit creative solutions helping the company be more creative. For the company this means they have to test by implementing and trying out what works for them in each individual situation. This might take time but it is crucial to get the CI projects successful.

6.3.2 Plan-Do-Check-Act (PDCA) -cycle

Characteristics from the PDCA-cycle can be found in both the OTIF- and the whiteboard project even though it is not outspoken that it is used in any of them. The OTIF project can be seen as one big cycle improving delivery service, with each monthly meeting as a small independent cycle in the Do-phase solving sub-problems to reach the holistic goal, see figure 10.
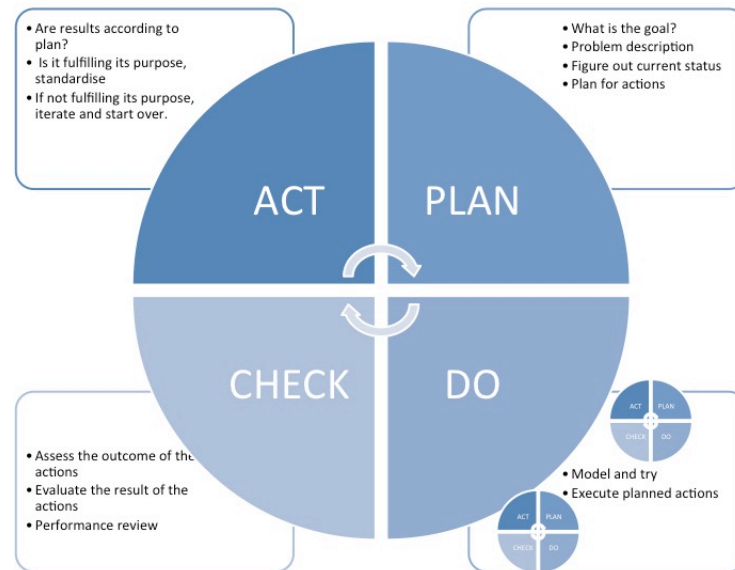
36

Figure 10 The Plan-Do-Check-Act-cycle with small independent cycles in the Do-phase.

Each week and its meeting in the whiteboard project can be considered as its own PDCA-cycle as well. Problems are identified, solutions are developed and actions are taken to be followed up the next week.

By clarifying that the projects are using the PDCA-cycle, and utilising it more in depth, these different steps that are taken in both the two CI projects could possibly have been more efficient. Specifically the Act phase where the performed improvements are to be standardised. There are several examples at the company and the corporation where the improvement projects have been lacking in standardising solutions to identified problems properly. In this thesis the "usage of delivery flag" example described in the OTIF project (chapter 4.1.3) is an obvious matter where the organisation could have removed the option completely from the software used for order book management to prevent the problem from reoccurring but they did not. To be able to keep on improving in the projects the standardisation must work. Otherwise the teams will keep working on the same issues over and over again.

7. Conclusion and recommendations

This part of the thesis aim to bring the previous chapters together and formulate the conclusion by the author as well as the recommendations. Figure 11 show how the different parts of the analytical framework is connected by the parts of the conclusion. The conclusion will be presented with the three main categories: Strategy, Involvement and Tools & Method. The six sub-categories, Hierarchy, Include affected employees, Re-launching, Customisation, PDCA-cycle and Balanced Scorecard, will be discussed within the three main categories. The sub-categories are bridging between these as shown in Figure 11 and will be discussed in accordance to that.
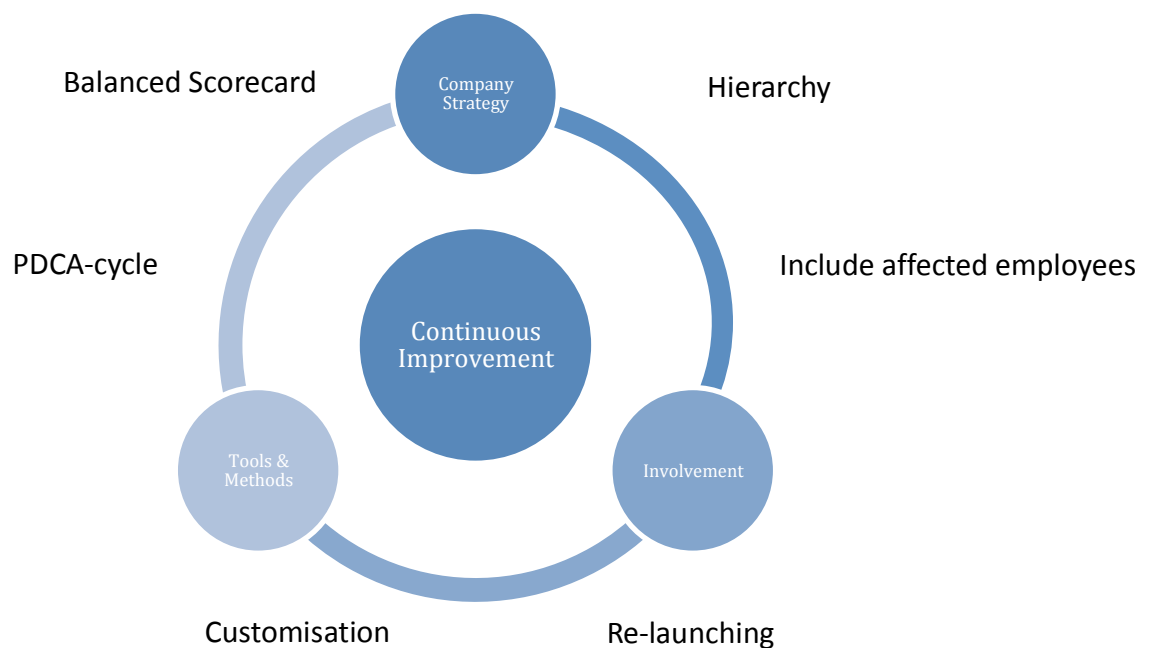

Figure 11 shows how the different parts from the analytical framework are connected with theory and collected data, which formulates the conclusion.

7.1 Strategy

The company and corporation are working with different ways of getting their strategy to become reflected in the work that is done in the supply chain. One way is the balanced scorecard that is executed through the whiteboard project with a top down approach. Another approach is the continuous work that is being done in each team on a weekly basis through follow up meetings.

The use of balanced scorecard in the whiteboards is efficient as long as the whiteboards are used in its intended way. Strategy is reflected in the OTIF project by the task force deciding what actions to take depending on the company strategy and that should also be considered done efficiently. The strategy approach to continuous improvement in the day-to-day work is however heavily dependent on the

managers' knowledge which can vary. The efficiency on team level can therefore be questioned.

In the whiteboard project at the supply team a lot of emphasis was put on the strategy to improve delivery service. This has to be seen as an efficient way of funnelling down the strategy with the help of balanced scorecard. For the teams where the whiteboard set up did not work the strategy did not reach out in the same way. It is therefore very important that this kind of implementation is done in the right way for all teams in the company.

In order to make the actual strategy become reflected in the KPIs that are put on display on the whiteboard it is also highly important that the figures that are on display actually represent what the strategy wants to accomplish. This is one of the reasons the calculation of OTIF changed in two different ways, even though it has to be further improved. There is no clear evidence that the OTIF, measuring delivery service, used today is actually making the customer more satisfied.

Resistance for change was seen in a few different cases when implementing new ways of working. These were in some cases related to hierarchical matters. To bridge over these issues each new project must start by including all levels of the hierarchy in the planning work so that everyone sees the purpose of them being there contributing to the project.

7.2 Involvement

Efficiency and success was seen at a much higher level in the CI projects where the members were involved to a wider extent. This meant that they were participating in all parts of the projects. In the re-launch of the whiteboard project in the supply team the members were responsible for different figures from the start, which made them design the display together. This resulted in higher contribution level all over the team and a higher efficiency on improving the delivery service. When the new project leader was assigned for the OTIF project the involvement level of the members stayed the same. In order to develop the project and get more enthusiasm back in the work a re-launch of this project could have been the right thing to do. Summarising the already reached success with the team and management and evaluating where to set the next goal could have excelled the project further.

7.3 Tools and Methods

During the different project's planning phases tools and methods should be evaluated as well. It is important for the organisation to understand that one tool is not to be implemented the same way through out the whole organisation. The Whiteboard project was a clear example of that where it worked well for the supply chain team but not for others. For the other teams it is more important that they implement a tool or method that they believe in rather than looking at what exactly they are implementing.

The organisation in the company also uses a philosophy of always pushing change on all the different levels through their managers. The efficiency and outcome was however highly dependant on the mind-set of the specific managers. In most cases this philosophy was fruitful and the teams were able to build incremental change on a local level in their own team, but some teams were missing the mind-set and therefore also the change.

Since the basic characteristics of the PDCA-cycle are already used in some parts of the organisation the company and the corporation should investigate in further use of this tool to excel its documented improvement advantages.

7.4 Recommendations

Since the different teams are phasing widely different problems in their day-to-day work there is not a set of tools or methods that will work for every team. Therefore the organisation should introduce continuous improvement in general to all managers and employees in a structured way where tools and methods are presented for them to use the ones they find suitable for their purposes.

When implementing new ways of working the organisation must include all affected members in each new project to link them to the purpose of it. Let the members that are most affected by the change build the processes that are to be used as well as believe in their solutions. Including all members in early stages or re-launches of projects will help the company to get people involved in the work from start as well. The management should set a plan for the evolvement of each project. That way a plan can be set for projects to be re-launched or re-organised to keep the improvements to be done. To get mind-set of constant incremental improvement culture in the team all managers should be taught the basics of KAIZEN and the PDCA-cycle to be used on weekly/bi-weekly meetings with teams and employees. This way these tools and methods would be outspoken and used in their intended way, which would give different perspectives on them compared to today. The PDCA-cycle should also be used as an outspoken tool in both the whiteboard project and the OTIF project. This will help the organisation reach standardised solutions. Evaluate the use of new KPIs and targets for them. Make sure that the KPI that is used is fulfilling its purpose. Otherwise improving it can be contra productive. For the supply team this means make a through investigation asking the customers what they believe is delivery service and use that as a base line for the calculations of OTIF.

Action list for recommendations	
What?	**How?**
Education in Continuous Improvement	Set up educations for members of project teams to learn about tools and methods.
Include all team members early in projects	Get the whole group together and set up goals for everyone in the group.
Plan for project evolution	Plan for the projects to evolve and set up time plans when evaluations and re-launches should take place.
Teach Managers about KAIZEN and PDCA-cycle	Customise an education for the management teams in order to get them to work professionally with the tools.
Evaluate the use of the right KPIs	Go through deeper analysis and evaluations regarding the KPIs that are measured in order to improve the right things.

Table 1 Action list of the most fundamental actions the company and corporation need to take to get a more efficient CI work especially improving delivery service.

8. Limitations and Future research

As discussed in the methodology there are a few limiting aspects of the quality of this study. If the author would have been able to go back to the company to gather further data after the literature study was done that could have given a broader aspects for the analysis. Going back to the organisation could also have given more specific recommendations compared to the rather general recommendations today. The Education could for example have been specified on how it should have been executed, and an example could have been given on how the project evaluation plan could have looked like. The fact that the author has been limited to one organisation and industry also gives a narrow scope and result according to that, which however has given a deeper understanding for the specific setting.

This study gives an aspect of what can be done regarding efficiency in CI projects but it is based on the findings from one company and a corporation analysing two projects. It is generalizable in this setting but the field of study needs to be broadening in order to get to conclusions that are generalizable and less bias in a wider spectrum. That would help to make it applicable to any industry and organisation. As part of a future research and to be able to draw conclusions on how accurate the analysis and recommendations are they should be applied to the company, or a company in a similar situation. That result should thereafter be examined in order to verify the result of this study. The study should verify the different recommendations one by one and as a whole to also compare the combination of applying them, which is something that is missing in the literature in the subject today. There are multiple studies on how one tool, method or philosophy is applied to an organisation but few that combines different ones.

The result from applying the recommendation from this study could then be applied in a broader context e.g. in another organisation within the same country or similar organisation but other country with different culture. That would help to build theory that can later be applied in a broader setting than today as well.

References

Anand, G., Ward, P.T., Tatikonda, M.V. and Schilling, D.A., 2009. Dynamic capabilities through continuous improvement infrastructure. Journal of Operations Management, 27(6), pp.444-461.

Berger, A., 1997. Continuous improvement and kaizen: standardization and organizational designs. Integrated manufacturing systems, 8(2), pp.110-117.

Bessant, J., Caffyn, S., Gilbert, J., Harding, R. and Webb, S. (1994), "Rediscovering continuous improvement", Technovation, Vol. 14 No. 1, pp. 17-29.

Bounds, G.M., 1994. Beyond total quality management: Toward the emerging paradigm. McGraw-Hill College.

Bryman, A., & Bell, E. (2015). Business research methods. Oxford University Press, USA.

Caffyn, S. (1999), "Development of a continuous improvement self- assessment tools", International Journal of Operations & Production Management, Vol. 19 No. 11, pp. 1138-53.

Choo, A.S., Linderman, K.W. and Schroeder, R.G., 2007. Method and context perspectives on learning and knowledge creation in quality management. Journal of Operations Management, 25(4), pp.918-931.

Dean J. W. and Bowen D. E. (1994) Management Theory and Total Quality: Improving Research and Practice through Theory Development", The Academy of Management Review, vol. 19, no. 3, pp. 392-418. URL: http://www.jstor.org.proxy.lib.chalmers.se/stable/258933

Deniels, R.C. (1995), "Performance measurement at sharp and driving continuous improvement on the shop floor", Engineering Management Journal, Vol. 5 No. 5, pp. 211-18.

Dubois, A., & Gadde, L. E. (2002). Systematic combining: an abductive approach to case research. Journal of business research, 55(7), 553-560.

Eccles, R., 1991. The performance measurennent manifesto. Harvard business review, 69(1), pp.131-137.

Fisher, M., & Raman, A. (1996). Reducing the cost of demand uncertainty through accurate response to early sales. Operations research, 44(1), 87-99.

Flynn, B. B., Huo, B., & Zhao, X. (2010). The impact of supply chain integration on performance: A contingency and configuration approach. Journal of operations management, 28(1), 58-71.

Frohlich, M. T., & Westbrook, R. (2001). Arcs of integration: an international study of supply chain strategies. Journal of operations management, 19(2), 185-200.

Hoque, Z., 2014. 20 years of studies on the balanced scorecard: Trends, accomplishments, gaps and opportunities for future research. The British accounting review, 46(1), pp.33-59.

Hutt, M. and Speh, T. (2012), Business Marketing Management:b2b, Cengage Learning; South- Western, 11th edition.

Juergensen, T. (2000), Continuous Improvement: Mindsets, Capability, Process, Tools and Results, The Juergensen Consulting Group, Inc., Indianapolis, IN.

Kaplan, R.S. and Norton, D.P., 2000. Putting the Balanced Scorecard to work. Focusing Your Organization on Strategy—with the Balanced Scorecard, 2, pp.2-18.

Kaye, M.M. and Dyason, M.D., 1995. The fifth era. The TQM Magazine, 7(1), pp.33-37.

Lewis, M., Brandon-Jones, A., Slack, N., & Howard, M. (2010). Competing through operations and supply: the role of classic and extended resource-based advantage. International Journal of Operations & Production Management, 30(10), 1032-1058.

Lillrank, P.M. and Kanō, N., 1989. Continuous improvement: quality control circles in Japanese industry (No. 19). Center for Japanese Studies University of Michigan.

Lillrank, P., 1995. The transfer of management innovations from Japan. Organization studies, 16(6), pp.971-989.

Lindberg, P. and Berger, A. (1997) ' Continuous improvement: design, organization and management' , Int. J. Technology Management, Vol. 14, No. 1, pp. 86—101.

Mashael Ali Haddas, Mona Hasan Asiri, Reham Faya Mukhalid, Salha Saeed Alahmari, Shatha Ali Al-Qathtani, Syed Hamid Hasan (2014) "Continuous Improvement – Development with Time", International Journal of Computer Applications (0975 – 8887) Volume 108 – No. 8, pp. 35-39.

Matzler, K., Hinterhuber, H., Bailom, F., and Sauerwein, E. 2014. How to delight your customers. Journal of Product and Brand Management, 5(2): 6-18.

Maxwell, J. A. (2012). Qualitative research design: An interactive approach (Vol. 41). Sage publications.

Moen, R. and Norman, C., 2006. Evolution of the PDCA cycle.

Oakland, J. (1999), Total Organizational Excellence – Achieving World-Class Performance, 771 Butterworth-Heinemann, Oxford.

Robinson C. (2009) Kano on Customers, The Journal for Quality and Participation, vol. 32, no. 2, pp. 23-25, 38.
URL:http://proxy.lib.chalmers.se/login?url=http://search.proquest.com.proxy.lib.chalmers.se/docvie w/219159494?accountid=10041

Rose K. H. (July, 2005). Project QM: Why, What and How. Fort Lauderdale, Florida: J. Ross Publishing. p. 41. ISBN 1-932159-48-7.

Singh, J. and Singh, H., 2012. Continuous improvement approach: state-of-art review and future implications. International Journal of Lean Six Sigma, 3(2), pp.88-111.

Sokovic, M., Pavletic, D. and Pipan, K.K., 2010. Quality improvement methodologies– PDCA cycle, RADAR matrix, DMAIC and DFSS. Journal of Achievements in Materials and Manufacturing Engineering, 43(1), pp.476-483.

Suzaki, K., 1987. New manufacturing challenge: Techniques for continuous improvement. Simon and Schuster.

Terziovski, M., 2001. The effects of continuous improvement and innovation management practice on small to medium enterprise (SME) performance. Faculty of Economics and Commerce, The University of Melbourne, Australia.

Verona, G. and Ravasi, D., 2003. Unbundling dynamic capabilities: an exploratory study of continuous product innovation. Industrial and corporate change, 12(3), pp.577-606.

Webster, A., 1999. Continuous improvement improved. Work Study, 48(4), pp.142-146.

Wittenberg, G., 1994. Kaizen—The many ways of getting better. Assembly Automation, 14(4), pp.12-17.

Wruck, K.H. and Jensen, M.C., 1998. The two key principles behind effective TQM programs. European Financial Management, 4(3), pp.401-423.

Appendix

Appendix 1
To get the balanced scorecard to work in its intended way the executives for a company can work and follow a set of steps:

1. Preparations
   a. Identify business unit that is appropriate for the balanced scorecard.
2. Interviews: First round
   a. Trough interviews with executives of the business unit, principal shareholders and key customers. This is to get a clear view of their expectations on the strategy, hat it looks like etc.
3. Executives workshop: First round
   a. Get executives/top management together to discuss missions and strategy until a consensus is reached to strive towards together.
4. Interviews: Second round
   a. For facilitator of the balanced score card operations to seek potential issues for implementation within executives.
5. Executives workshop: Second round
   a. With executives but also including middle management. To narrow targets and strategies down. Should also start planning implementation.
6. Executives workshop: Third round
   a. Executives meet again to conclude the final scorecard. Including stretch targets for measurements and preliminary actions to reach the targets. Implementation program should be agreed as well as an information system to support the program.
7. Implementation
   a. Implementation plan should be formed. It should contain the connection between the measures and databases, as well as a communication plan through the organisation.
8. Periodic review
   a. Should be done each quarter or month, as well as the targets should be revised each year as part of the strategic planning.