

Managing Change in the Warehouse

*a structured change management methodology when
implementing a warehouse management system*

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Managing Change in the Warehouse – *a structured change management methodology when implementing a warehouse management system*

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Abstract

Title: Managing Change in the Warehouse - a structured change management methodology when implementing a warehouse management system

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Research issue: As a consequence of the information society, smart and specialized IT based system, such as Warehouse Management Systems, have been developed to harness the increasing flow of information. While they are designed to increase the efficiency in the warehouse, the implementation of them requires the warehouse implementing it to adjust to the new environment it creates. This adaption have proven hard for the people working there, resulting in that the desired efficiency improvements often have taken longer than expected to achieve. A possible solution to this dilemma might be an increased focus on change management before, during and after the implementation. While there is literature, which has examined the general challenges associated with implementing IT systems such as e.g. ERP, few articles cover the specific challenges when implementing a WMS. Meanwhile, there are many methods and models, which claim to work as guidelines for working with change management, but few (if any) have been tailored to situation of a WMS implementation.

Purpose: The purpose for this master thesis is to develop a change management methodology for efficient, high quality, WMS implementations.

Method: Through interviews with project managers at a company who is developing and implementing a WMS, and with people who is working at different levels within the warehouse, from three companies who have recently implemented a new WMS, the main challenges with a WMS implementation have been identified. Thereafter, an evaluation of some selected change management model was performed where one was selected and modified to fit the context of a WMS implementation.

Conclusions: The evaluation of change management models led to that the ADKAR model, developed by Hiatt (2006), was ultimately selected. The challenges of WMS implementation proved to be quite similar to a general IT implementation and most challenges can be handled through using the ADKAR methodology in its present form. But through appointing roles and responsibility to different people involved in the change process and tie them to specific activities, the authors believe that the developed methodology could be utilized to decrease the time spent from the implementation to that the desired efficiency levels are reached.

Keywords: Change management, Warehouse Management System, WMS implementation, warehouse management, challenges in WMS implementations, change management methodology, change management model, ADKAR

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We would like to take the opportunity to thank Consafe Logistics, and all the helpful people there. We have had a really good time working with you. Moreover, we want to send extra thanks to our steering committee! And we would also like to give a special thank to our supervisor at Consafe Logistics, Johan Krantz, who has supported us with guidance, comments and laughs throughout this spring. Also, we wish you Johan the best of luck with your new job, and hopefully we will see you around. As a last contribution to Consafe Logistics we would like to give the proposal of adding a fourth key word to your value base: “We Care! We Innovate! We Deliver! **We Change**”.

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Thanks to our opponents for burnings us!

Thanks to our examiner for hopefully passing us!

Thank you for this time!

Lund, 2014-05-08



Eric Jonsson



Knut Artman

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1 Introduction

In this chapter the background and underlying problem is presented. It further culminates in this master thesis' purpose. Lastly, the limitations of this study are presented.

1.1 A short introduction to the master thesis

The quest to reach a higher efficiency in the warehouse has led to the development of new, smart and specialized IT based systems, called Warehouse Management Systems (WMS). These systems are designed to harness and utilize the increasing flow of information to create an efficient flow of goods. The implementation of them leads to a changed environment in the warehouse, requiring the people working there to adapt to new working processes. This adaptation has often proved to take longer than expected, and consequently the desired gain in efficiency has been delayed. A possible solution to the problem could be an increased focus on change management before, during and after the implementation. Little research has been made about the challenges associated with implementing a WMS and even less research has linked these challenges with change management to see if a structured change management approach could prove viable.

1.2 Background

A well functioning IT system, such as an enterprise resource planning systems (ERP), is often considered a vital part in any modern organization. The ERP offers a way to plan, control, measure and manage resources. An ERP system makes it possible for different functions within the company to collaborate and work together in the same system. Some of the functions require a more specialized system, which are dedicated to that particular function within the organization. In the warehouse, this system is called Warehouse Management System. The WMS is often a part of the ERP, offering basic warehouse solution. However, if a company requires more sophisticated functions, a separate WMS, developed by an external provider, often needs to be in place. The external WMS can often be connected both to the ERP as well as being run as a stand-alone system, even though the latter is rare.

To define a WMS, a definition from Autry et al. (2005, p.167) is used, "*WMS is a software solution used to plan, optimize, and execute warehouse operations*". The WMS provides support for activities within the warehouse such as order picking, order packing and inventory put-away. It also reports inventory status in real-time and can be used to measure warehouse worker productivity (Autry et al., 2005). A typical warehouse includes many processes with the most general being goods reception, unpacking, put-away, picking, full pallet handling, packing, loading and shipping (Surasto, 2013). The main reason for implementing a WMS is to increase efficiency, gain more control of the inventory or achieve better accuracy (Surasto, 2013).

Nowadays, more companies are realizing the importance of the warehouse and that an efficient warehouse is needed to stay competitive (Autry et al., 2005). Therefore more investments are done to gain increased efficiency and/or quality in the warehouse. The global WMS market size reached 9900 MSEK in 2012 and is growing with a compounded annual growth rate of 6,4 % (Reiser & Banker, 2013). Even though the WMS market is fairly small, emerging markets in Asia and Africa holds future potential.

Consafe Logistics (CL) is one of the largest WMS providers in the world and one of the stakeholders in this master thesis. The company offers a full WMS solution to their clients that cover the entire value chain; development of software, promotion and sales, implementation, and aftersales market with support, maintenance and upgrades. According to Reiser & Banker (2013), CL provides the market with a “best-of-breed” solution. As CL and its clients’ WMS implementations are the subjects for this study, a more detailed presentation will be presented in chapter 4 – introducing the cases.

The WMS market has undergone some changes in the last years, and the price is often the decisive factor when client chooses between WMS providers (Ohm, 2014). In order to offer competitive prices, Consafe Logistics has chosen a strategy to shorten their projects and move towards more standardized solutions. This, in order to cut their costs and offer their customers the most “bang-for-the-buck”. However, standardized solutions often bring other issues. When implementing a new WMS you either have to redesign the system to fit the existing processes, or redesign the processes to fit the system (Ohm, 2014). Redesigning the WMS is considered time consuming, extremely costly and without any scale effects. Today, providers like Consafe Logistics try to avoid modifications from the standard platform due to the extra cost related to it, even though the client would compensate for that extra cost. The use of a standard product and redesign of processes is also considered more cost beneficial for the client, and is something often asked for. Standardized processes gives the clients more control over the warehouse, and is especially beneficial when running the product on multiple sites as it enables benchmarking. Therefore, these standard processes results in radical changes in the current business processes (Ohm, 2014). Consequently, managing this change is a key factor for truly adopting the new WMS and to achieve the intended benefits within a reasonable timeframe (Ohm, 2014).

Today, CL has observed that the success of the project outcome often lies in the clients’ own capabilities or knowledge to handle the pending change. This has become an issue for CL who feels that the success of the project, in some ways, lies out of their control while they are still responsible for the implementation. In the end, the change is assuredly up to the client. However, is it possible for the WMS provider (CL) to use its years of experience in numerous WMS implementation to support the client throughout the change by the use of change management (CM)? Most certainly, first however, the notion “handle change” or “change management” needs to be clarified. In this master thesis, change management will be defined as

“a structured approach to transitioning individuals, teams, and organizations from a current state to a desired future state, to fulfill or implement a vision and strategy.” (Ryerson University, 2011, p. 4).

It can be argued whether the root cause for the change situation is due to how the change is implemented, or if it is the offspring of a bad product. If a product were developed to fit the user's needs and expectations perfectly, then there would hardly be any threshold for the user to embrace the product. Consequently, the need for change management would be negligible. To develop one single WMS solution that fits all clients may be too complex. But if possible, it is arguable that the client organization could spend minimum effort on managing change. The system could be fully adapted to how work is performed today, and no major change efforts would need to take place. But then again, why would a company spend money on a new system if they were going to do everything as they have always done it? And if the solution were to be used on other locations, then the company would need to create a customized WMS for each one of them. As one of the major reasons behind a WMS investment is the need to standardize the business processes, in order to gain better control, to be able to measure the performance and ultimately become more efficient, a standardized solution is needed.

If potential problems with the product are neglected, still the question remains whether change management does matters? According to a report from McKinsey, only one third of the undertaken change initiatives by companies' are deemed as successful (Meaney & Pung, 2008). Further, studies conducted by Beer et al. (1990) concludes that one third of the major resource-intensive change efforts often lead to the opposite effect.

There are multiple interpretations of the notion resistance to change, which is one central assumption of change management. According to a study of the subject by Dent & Goldberg (1999), few or no instance of employees' resisted change. Yet it is a widely accepted mental model in the business community. There are several studies, which aim to explain why, or why not, people presumably resist change (Oreg, 2003; Kotter & Schlesinger, 2008; Goldberg & Dent, 1999; Ford et al., 2009). Most of the studies have different opinions on what and also who is resisting change. Oreg (2003) claims that some people are natural prone of change, while Dent & Goldberg (1999) argue that people resist the consequences and not the change per se, e.g. they do not want to change because they believe that their daily work will take an additional hour as a result.

Resistance to change is not the only assumption in change management where researchers opinions diverge. There are different schools of what foundation change management is based on and consequently different opinions on whom to target (Burnes & Jackson, 2011). One discussion, which divides the community, is whether change management should target the individual, because they are the building blocks of the organization or if it should the target the organization due to that the individual behavior is a function of the group. The traditional approach to change

management usually follows a linear series of steps that enables the manager to introduce new work processes within the company (Graetz & Smith, 2010). Change management literature has at the same time also been criticized for overemphasizing the manager's role in the change process (Todnem By et al., 2011). Furthermore, Kotter (1995) reported that when organizations attempt major changes, the employees often understand why and also want the change to happen, but there are some obstacles. Kotter (1995) states that individual resistance is rare and the obstacles are more often in the organization's structure or in a performance appraisal system that forces people to choose between the new vision and their own self-interest. Moreover, Smith (1982) publishes in his report the findings that managers work to maintain the status quo and not considerably change it. Which is in line with Spreitzer & Quinn (1996) findings that middle managers blamed the executives above them to resist the change. Hence, the ones (e.g. managers) initiating and managing the change often prove to be an obstacle.

Looking into reports of other IT implementations, the need for managing change is often present. For example Robey et al. (2002) states that half of the time an ERP implementation fails to meet the expected benefits is due to manager's underestimation of the efforts involved in managing the change. Consequently, the question arises if the same applies for WMS? And if it does, Ford & Ford (2010) and Ericsson (2011) states that resistance from inside the organization is in fact the largest reason for failing implementations. A senior change and communication manager at Arla, and earlier change management consultant with numerous years of experience in the field, said in an interview that managing change when implementing a WMS or any other IT-system is essentially the same.

However, there are some aspects that make a WMS unique comparing to an ERP, which makes it interesting to investigate further. While an ERP system affects the whole organization the WMS is limited to a special function, the warehouse. Furthermore, the people working in the warehouse generally have very diverse backgrounds and motives for working there, i.e. many lack higher education and many see it as temporary occupation before moving on to further studies or travels. Presumably, the general people working in the warehouse differ from people in other functions within the organization. An additional difference is that the system is directly linked to physical products and locations in the warehouse, comparing to an ERP system, which can be seen as a cooperating system that mostly handles information.

The senior change and communication manager at Arla further emphasized that the most important thing is to educate the user how to work with the new processes and not the new system (Grönlund, 2014). Sousa & Collado (2000) expresses a similar statement saying that too often the focus is on technical and financial aspects of an implementation project, and the soft issues such as company culture and business process changes are overlooked. However, the limited change management research linked to WMS implementations is a fact, and makes it hard

to draw any safe conclusion regarding similarities between WMS and other IT implementations.

Arguably there is a demand to manage change to some extent. Therefore, there are numerous authors who have created change management models to facilitate the process. Some authors have created more general models to be applied in every change situation (Kotter, 1996; Kotter & Schlesinger, 2008; Kanter et al, 1992; Luecke, 2003). Others have created models that are adjusted for a certain situation, such as an ERP implementation (Näslund, 2004; Ahmed et al., 2006; Aladwani, 2001). However, it is a challenge to navigate through the endless number of change management theories and models that exists today. Many of them are contradictory, confusing, lacks empirical evidence and/or are based on unchallenged hypotheses regarding the nature of contemporary organization change management (Todnem By, 2005).

What many researchers emphasize however is the importance of putting change management into the right context (Michel et al., 2013; Kotter & Schlesinger 2008). As a WMS contains some unique features comparing to other systems, e.g. ERP as previously discussed, and few (if any) researchers have connected change management to the specific context of WMS implementations, this needs to be explored. Following the researchers recommendations, the WMS context will initially be empirically investigated in order to put change management in its right situation.

1.3 Purpose

The foundation of this master thesis is based upon creating a common understanding of what change efforts are necessary in a WMS implementation. Therefore the purpose for this master thesis is...

... to develop a change management methodology for efficient, high quality, WMS implementations.

To achieve this purpose the following research questions needs to be answered:

1. What are the challenges when implementing a WMS?
2. Which are the existing change management models, and how can one be chosen to fit the WMS context?
3. How can the chosen change management model be modified to fit WMS implementations?

1.4 Delimitations

There are two prominent delimitations for this master thesis. First, the WMS product is assumed to be "perfect", i.e. not taking into consideration the possibility that the product design could in fact be the source for the need of managing change. What this may implicate is that if the product itself is a major source for the need to manage change, other change efforts might be redundant. The implication of the

product is discussed further in chapter 10.3.2 - Could the WMS product itself be an issue?

The second delimitation is geographical, as this study only target Swedish-based customer. It is highly probable that the result is applicable in countries that share a similar working culture as the one in Sweden. But in other countries where e.g. companies are more hierarchical and less participative by nature, the same issues might be less visible among workers as they are more used to just obeying their superiors. Hence, this methodology could arguably only be used in similar context as the one in Sweden.

2 Method

The research design and procedure is presented in this chapter. The intention is to show how the answers to the research questions were reached, thereby reach the purpose for this thesis. After an initial presentation of the research design, each of its elements will be presented in-depth. Lastly, an evaluation of the method is presented.

2.1 The research design begins from an empirical study

The absence of associated WMS theory made it hard to safely draw any conclusion regarding the situation. This led to an approach where the authors went into the empirical study with an open mind, i.e. without any deeper knowledge about change management or with any theoretical support. By going into the study with limited prior knowledge, the authors intended to find out what really is the challenges associated with implementing a WMS without fitting the research into an existing model. It is however important to acknowledge that a small literature review was initially performed in order to conclude that the needed theory regarding WMS was missing. Therefore, the authors' minds were presumably colored from some previous knowledge regarding change management in IT implementations and ERP implementations. This needs to be taken into consideration when going into the first stage of the research, i.e. there is a possibility that the results were subconsciously fitted to match previous knowledge obtained.

2.1.1 An embedded case study was selected as an appropriate approach

Jacobsen (2002) and Yin (2009) were used to determine the most suitable research design for the study. Both states that case studies are appropriate when seeking deeper understanding of a certain event, making it an appropriate approach since the objective was to develop a methodology to manage change during a WMS implementation. The authors found an embedded case study to be the most suitable among the case study designs.

By using embedded cases, i.e. multiple sources of evidence, the chance to avoid failure of harvesting challenges in WMS implementations, i.e. only to find a small spectrum of challenges, increased. Thus, the research findings should be more robust (Yin, 2009). By having embedded cases the data could be triangulated, and thus, creating an increased validity and understanding of the research findings.

Moreover, by using (multiple) embedded cases, the amount of resources a single client of CL would have put up with decreased. Consequently, it made it easier to find clients who were interested in participating in the study. As the contacted companies could only spare a few hours from their daily work, the clients' availability became a contributing reasoning behind choosing multiple clients instead of searching for one client who could spare enough time. A multiple embedded case study design also allows the authors to compare and contrast the findings, which could be valuable in order to find similar challenges between the cases. Meanwhile,

it brings one major disadvantage, it is time consuming and therefore limits the possibility to go into depth in the cases. This was handled by planning early for all the interviews.

As Consafe Logistics was the stakeholder for this master thesis the authors decided to use Consafe Logistics as a “base case”. This, due to that CL had both experienced consultants and clients, who had implemented a WMS. The term “base case” basically means the context where all the WMS implementations occurred. Consequently, the WMS implementation performed by Consafe Logistics at its clients became embedded cases.

2.1.2 An overview of the research design

The research design was divided into four phases (Figure 2). The first stage was a preparation phase, followed by three stages that intended to answer each of the research questions.

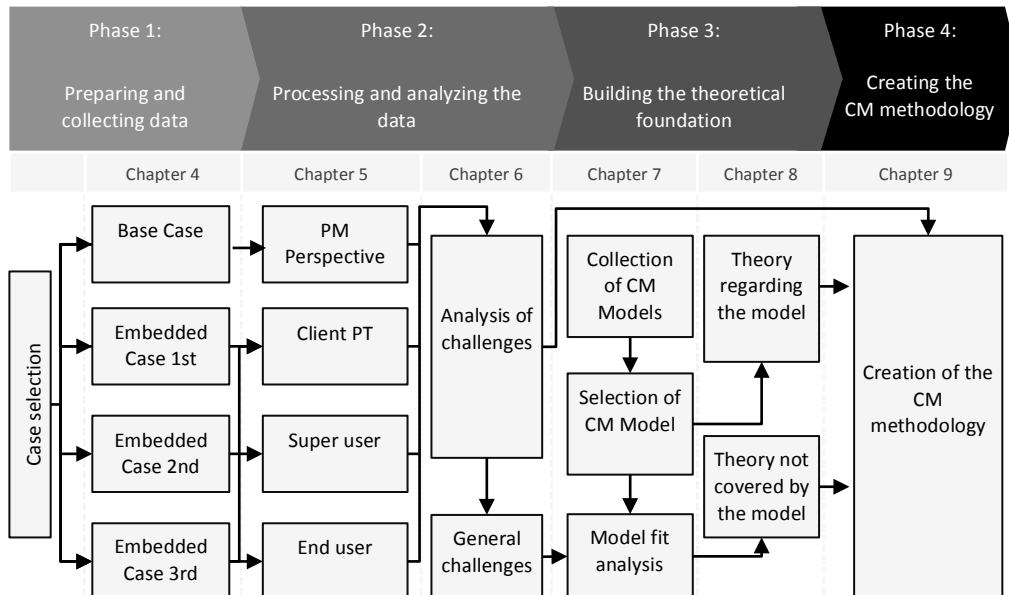


Figure 1: Research Design Process

Phase 1. Was the beginning of the empirical study, and aimed to decide what type of data was needed, which embedded cases to select, and how to collect the data. This phase also included performing the necessary interviews.

Phase 2. Was tightly connected with phase 1 and was the phase where all the collected data was processed and analyzed. This phase answered the first research question - *What are the challenges when implementing a WMS?*

Phase 3. Was the phase where theory regarding change management models was collected, and then evaluated and analyzed to fit the WMS context. This phase also covered gathering theory to fill the gaps the change management model did not cover. This phase answered the second research question; *Which are the existing change management models, and how can one be chosen to fit the WMS context?*

Phase 4. In the last phase, an analysis and modification of the previous findings in Phase 2 and Phase 3 was performed. This in order to answer the last research question and thereby fulfill our purpose - *How can the chosen change management model be modified to fit WMS implementations?*

After these four phases, i.e. in chapter 10, an evaluation, which sought to thoroughly examine and discuss the developed method, was performed.

2.2 Phase 1 – Preparing and collecting data

The first phase was about clarifying which data was needed, how the embedded cases were selected and how the data was collected.

2.2.1 Qualitative data was desired

Jacobsen (2002) expresses that when you are searching for a nuanced description of how individuals perceive and understands a situation, a qualitative approach can be advantageous. Thus, a qualitative approach was chosen. The data was collected through interviews with individuals who had experienced an implementation of a new WMS.

2.2.2 The embedded cases were selected on a variety of criteria

The embedded cases were selected on a variety of criteria. The first criterion was the size of the company in terms of turnover. This due to that larger company's probably have the ability to spare more resources and has more experience from previous change projects comparing to smaller ones. Another criterion was the size of the warehouse in terms of number of people working there. A third criterion was to have a spread, between the selected clients, of the time the implementation took. As the authors wanted to perform the interviews face-to-face the fourth criterion was that the client should be located close to Lund. The last criterion was to have a mix of both successful and unsuccessful implementation. This was done to avoid embedded cases that were too similar, thus minimizing the risk of investigating the same type of cases. Which is in line with how you conduct an embedded case study, according to Yin (2009). The criteria were developed during the initial interviews with project managers at CL and were deemed credible, by them, to get a representative selection of clients.

CL currently has no standardized measurements to decide if an implementation is successful. Consequently, it is rather arbitrary if a completed implementation should be considered successful or not, and the verdict was therefore given by project the project managers mostly based on their individual opinion. Once the criteria were set they were handed to the key account managers at CL, who selected and initiated the contact with the clients. In the end, due to time constraints, the selection of cases was mainly based on the customers' availability. Even though, a good spread on the selection criteria were achieved, which can be seen in chapter 4.5. With this good range of companies, the authors hoped to get a broader and more comprehensive list of challenges. Hence, make the end result more generalizable.

The main criterion for selecting the units within the embedded cases, i.e. the individuals for the interview, was that he/she had to have been involved during the implementation. Furthermore, to achieve an accurate picture of the situation as possible, the interviewees selected in each case had to have different roles during the implementation, and thereby cover different perspective on the issue. Consequently, the following roles were chosen to be included:

- Logistic officer/manager/project leader
- Super user (more described in the next chapter)
- Shop-floor worker

You can argue that each of the embedded case could be further investigated with additional units. But as previously mentioned, the clients' availability was limited. Therefore the authors and Consafe Logistics agreed that three interviews, for each of the embedded cases, were the maximum number a client would line up for.

2.2.3 Data was collected through interviews

By interviewing three roles in each of the embedded cases, together with the seven project managers from the parent case, the authors' intended to get a nuanced picture of what was challenging during WMS implementations, see Figure 2.

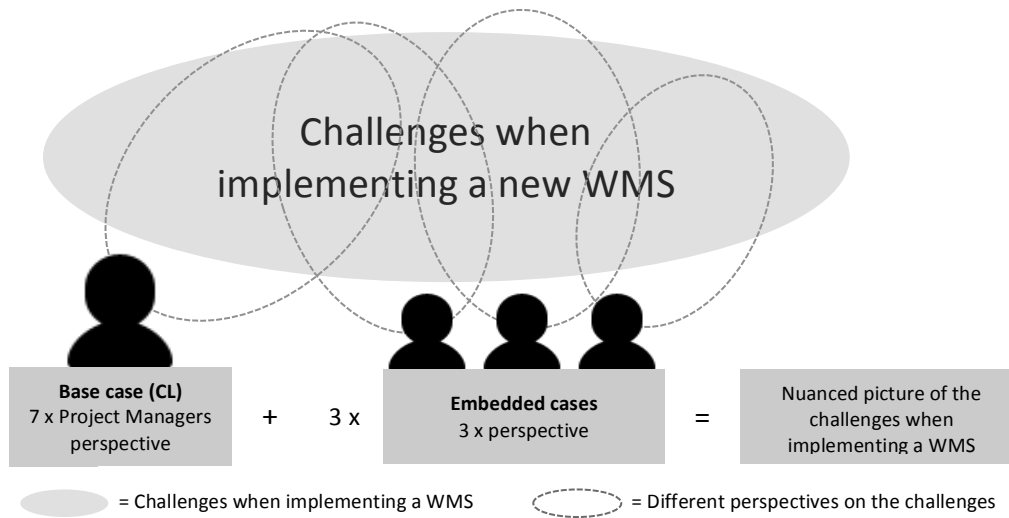


Figure 2: The challenges, from different perspective, when implementing a WMS

Before the interviews, interview guides were created for the different target groups. As mentioned before, the authors went into the data collection stage with an open mind, consequently, open-ended questions were used to harvest information about challenges during WMS implementations. An open-ended interview allows the authors to be slightly structured by following a list of topics that are supposed to be covered (Jacobsen, 2002). The aim of the questions was to cover aspects of what the main challenges were during WMS implementations as well as getting a nuanced picture of the overall WMS context. The interview guides can be found in Appendix A – Interview guide. The questions were developed through an iterative process with the three supervisors and are based on a mix of common sense and attained knowledge after the small initial literature review. Some questions were slightly modified after the initial interviews. In order to avoid possible bias errors by the authors, due to previous interviews and readings, the interview guide was constructed so the first half of questions were open, and once they were answered, slightly more topic-managed question was asked, still in an open-ended way.

The majority of the interviews were made face-to-face at the customers' location. Due to time and money constraint, interviews face-to-face were not always possible, and in those cases video-interviews were conducted instead. The benefits of a face-to-face meeting with the interviewee is it tends to make the interviewee more comfortable, thus creating a more trustful environment which allows the interviewer to dig deep through the layers of problems and thereby reveal the root causes (Jacobsen, 2002). To be able to properly process and analyze the data collected from the interviews, all interviews were recorded alongside with personal notes.

2.3 Phase 2 – Processing and analyzing the data

A qualitative method with open-ended interviews results in a large amount of complex data and is hard to analyze due to its richness in nuance and its complexity (Jacobsen, 2002). Jacobsen (2002) proposes a systematic process to analyze the empirical data and this process, with a few alterations, was followed by the authors. The first phase includes describing, systematizing and categorizing the data. The second phase was about combining the data. By using this process on each case, creating separate case reports, the intention was to be able to draw conclusions and answer the first research question - *Which are the challenges when implementing a WMS?*

2.3.1 Describing, systematizing and categorizing the data

Without influencing the gathered information, it is important to get a thorough and detailed description of the gathered data (Jacobsen, 2002). As mentioned, all interviews were recorded and the interviewers took notes during the session. Transcription was avoided due to the amount of interviews conducted. Instead all interviews were listened to at least one additional time by both authors. This in order to take additional notes and makes remarks regarding interesting information. This was done as soon as possible after the interview. As Jacobsen (2002) proposes, the first step is to create some relevant categories from the data processed through an inductive approach. The categories or as the author choose to call them “tags”, later presented as hash tags (#), were identified from the common areas emerged from the different interviews. The data was processed and “tagged” with different labels, making it easy to map and sort the data into four reports covering the different challenges from each roles perspective. It is important to point out that the authors did not intend to form or interpret the data in this stage. The data was merely “tagged”. However, it is impossible to claim that these reports is not biased, as it is hard for the authors to clarify the perceived challenges without letting their own perception color the outcome. This was handled by feedback loops with the interviewees. By letting the interviewees see the result the authors enabled another potential error, which is that the interviewees could attempt to refine the results. However, no objections from the feedback loops were made, so the potential error was disregarded.

2.3.2 Analyzing the categorized data

The outcome of the previous phases was layers of raw data categorized to the different perspectives. This phase is about connecting categories and the context in order to identify connections between them (Jacobsen, 2002). This boiled down to what the general major challenges in WMS implementations were. From these common challenges, the search for a suitable solution began.

2.4 Phase 3 – Building the theoretical foundation

After the empirical stage, phase 2, the authors needed to build the theoretical foundation which was going to answer the second research question - *Which are the*

existing change management models, and how can one be chosen to fit the WMS context? First, the authors identified the existing change management models. Thereafter, a couple of criteria for how to select one model were developed. Finally, those criteria were applied to a couple of models to select the most suitable. Afterwards, the selected models were analyzed to find out how well it fitted the WMS context and what gaps it did not cover.

2.4.1 The search for change management models

A literature review was performed to find the most recognized and frequently change management models. Hints of models from interviews in phase 2 were also followed. And by using different keywords in numerous sources the result was broader. The different sources used:

- Databases: LUB search, Google scholar and articles published on consulting firms' webpages.
- Interviews: scholars and consultants

After looking into numerous sources, a deeper understanding of the landscape of change management models was gained. With this knowledge, the authors chose to proceed with three models. The first two models were selected because they were among the most frequently cited in articles from different change management journals (Cheung, 2010). Therefore, it can be argued that they have a solid support from scholars worldwide. The third model was mentioned during an interview with Arla as their base in working with change management and was chosen due to them using it with success when implementing their WMS. The initial idea, when all models had been collected, was to combine them in order to cover all the important aspects. However, Cheung already made the comparison in 2010 and due to that the steps were pretty much the same, and the limited timeframe available, the authors therefore decided to only select one model to proceed with to the next step.

2.4.2 Finding criteria to select one change management model

To find the criteria that enabled the authors select one change management model in favor of the others, the authors did another literature review. The literature review followed the same procedure as the previous, but the aim was to gain a deeper understanding of what the academia thought were suitable criteria to use when choosing a change management strategy. The found criteria were supplemented by a criterion based on the stakeholder Consafe Logistics wishes. This, due to their deep understanding of what needs to be in place in order to work in a WMS context. Then the models were evaluated based on the four selected criteria.

2.4.3 Finding theoretical support to cover the challenges

The final step in this phase was to make an analysis of how well the model fitted the WMS context, i.e. how well it covered the challenges during WMS implementations. Before doing the fit analysis the authors needed to acquire extensive knowledge about the model. As expected, the chosen model did not cover all the challenges

and therefore, the parts the model did not cover had to be complemented by appropriate theory. One of the challenges was considered out of the scope of this master thesis by the authors and was disregarded and left to the discussion in the end.

2.5 Phase 4 – Building the change methodology

The methodology explains; who is going to do what, and when. The basic idea to create this final methodology is to put all the pieces, from the previous phases, together and create a change management methodology that fits the context of WMS implementation. Firstly by clarifying the involved roles. Then secondly by matching the empirical data with theory, regarding both the model and missing the gap, the foundation of the methodology was created. Thirdly the methodology had to be adapted to the time frame of implementation process in order to indentify when certain things need to be done. Lastly, combine the previous steps and present an overview over the methodology.

2.6 Evaluating the method in terms of validity and reliability

It is crucial to evaluate how the study was performed in order to discuss how credible the subsequent results and conclusions are. The evaluation was performed, and is presented, in terms of validity and reliability. An evaluation regarding the final methodology will be found later in chapter 10.1.

2.6.1 Validity

The concept is often divided into internal and external validity, where internal validity refers to whether the study measures what it intends to measure (Bryman & Bell, 2011). The external validity refers to what extent the study is transferable and applicable for the whole population (Bryman & Bell, 2011).

Several actions were taken to achieve a high level of internal validity. Firstly, open-ended interviews, as a source for information, is considered a method that often leads to high internal validity as it leads to a nuanced understanding of the situation. Secondly, interviews were performed on multiple sites, from different perspectives, which further enhanced the understanding of the situation and minimized the risk of overlooking important findings. Thirdly, all interviews were recorded and listened to at least once, before they were discussed and analyzed. Fourthly, the whole method process was performed systematically according to recommendations from literature and supervisors. Fourthly, a majority of the interviews were performed face-to-face in the natural environment of the interviewees. This enabled the interviewers to observe the interviewees' body language as well as it is considered an important factor in creating the necessary trust to obtain more detailed and in-depth answers. Lastly, the findings from the interviews were sent back to the interviewees so any misinterpretation could be straightened out.

As for the external validity, single case studies are often accused of not providing a basis for generalization (Yin, 2009). To achieve a higher level of external validity,

multiple cases were studied. The interviewees held different positions, which led to that the information gathered, came from different perspectives. Thus, having higher validity.

Then how applicable is for example the developed methodology for other situations? Does it for example work in other countries with different working cultures? As one of the limitations of this master thesis was the companies' studied were based in Sweden and the interviews were held with Swedish employees. It is highly probable that it is applicable in countries that share a similar working culture as the one in Sweden. But in other countries where companies are more hierarchical and less participative by nature, the same issues might be less visible among workers as they are more used to just obeying their superiors. Hence, this methodology could arguably only be used in similar context as the one in Sweden.

To generalize the result further, to all kinds of IT-implementations, could be hard. It would be naive to claim that the results from this study are applicable for the whole IT-implementation population, since all cases circulated one WMS, from one WMS provider. Even if the selected population would consist of all different WMS, it still is hard to claim that the result would be useful for all WMS providers. Even though the interviewees believed that most WMS nowadays could be considered quite equal. It still is the authors' belief that the results would be applicable for the WMS implementation population. Although further research has to be made in order to confirm this hypothesis.

2.6.2 Reliability

Reliability refers to how replicable a study's results are if someone would follow the same procedure again (Bryman & Bell, 2011). The key to obtaining reliability is transparency and replication (Gibbert et al., 2008). There are measures to take to enhance the transparency such as documentation of the process and clarification of the research procedures (Gibbert et al., 2008). The procedure is clearly clarified starting from chapter 2.1 – Research design, and the questions asked during the interviews can be found in Appendix A – Interview guide.

There are several factors that also could have had an impact on the study's reliability. For example, the initial literature review which led to the approach of doing the empirical study first with a supposedly open mind. However, it is impossible to perform interviews with a completely open mind. The authors' minds were influenced by the basic knowledge already gathered, that influenced the interviews as well. This became quite obvious in the initial interviews with the project managers at CL, where the authors felt influencing the topics to a large extent. The interview guide was thereafter adjusted to be more neutral when talking to the interviewees at the imbedded cases. Additional interviews with three project managers at Consafe Logistics were also performed to ensure the reliability of the previous results. Other actions taken to avoid leading questions were to let all three supervisors give feedback on the interview guide before it was used.

Some practical advices, found in Jacobsen (2002), was written on the interview guide to act as a reminder of how the interviewer could act in order to build trust and create a meaningful conversation. Unnecessary complex words and concepts were also avoided to prevent misinterpretations.

The interviews varied between one and two hours and it resulted in a vast amount of data. Even if a very structured approach was conducted to analyze the data, there is always a possibility that essential data was overlooked. It is however in the authors opinion that the multiple cases, combined with the different positions the interviewees had, led to reliable results.

But what probably affected the empirical study is the time between the implementation and this study. One of the case companies implementation was about four years ago and they have had time to adjust to the system and had probably reaped the intended benefits. Another case company's implementation was completed over a year ago and they have also had had time to adapt and realize the benefits of the system. The last case company had just completed their implementation and had not had time yet to adapt nor see the result of the new system, which could contribute to their view of the current state as a bit more negative than the others. And it would have been interesting to interview them again in a couple of month to see if they still share the same opinion.

Before introducing the cases and the challenges in the WMS implementations, a short introduction to change management will be presented. This in order to give you as a reader a better understanding of change management and what is all about before going through all the cases.

3 An introduction to change management

This chapter will give the reader a short introduction to what change management is before going into the different cases. First is a short introduction in management in general. Then going into the popular expression resistance to change, then finally go thru change management from other perspective.

3.1 The origin of change management

The academic research area of change management has its origin in articles written by social psychologist Kurt Lewin in the 1940's. Lewin (1947) describes in his article "Frontier in Group Dynamics", a three-step model for a successful group change. The three steps: unfreezing, moving and freezing, describes how you move a group of people from a present state to a desired one. The same article explains the phenomenon *resistance to change*, which is an assumption that has dominated many of the succeeding articles about change management. As resistance to change also was commonly mentioned in the first interviews, with project managers from Consafe Logistics, it must be further examined.

3.2 What is resistance to change?

According to Ford & Ford (2010), resistance to change is a common phenomenon in organizational change. The reason for failed change initiatives is often blamed on resistance to change and some claim that resistance inside the company itself is in fact the biggest reason for failing implementations (Ford & Ford, 2010; Ericsson, 2011). People simply do not wish to alter their habits if there is no critical threat present (Garvin & Roberto, 2005). Lewin (1947) was first to mention this fundamental phenomenon behind change management. Several authors after him have used the same term in their work, and along the way the meaning of it has evolved from a system concept to a psychological one (Dent & Goldberg, 1999). It has gone from a force that initially affected both managers and employees equally, to a concept that personalizes the issue between managers and employees. And that concept, or mental model, is still considered universally accepted in organizational life (Dent & Goldberg, 1999).

There are four common reasons why people tend to resist change according to Kotter & Schlesinger (2008). Firstly, parochial self-interest, which means that people are self-centered and if they suspect that they will lose anything from the change, the individual interest supersedes the organizational. Secondly, misunderstanding and lack of trust, which refers to that people resist change when they do not understand the consequences of the change and they suspect they have more to lose than to gain from it. Such situations often arise when there is a lack of trust between the initiator of the change and the recipients. Thirdly, a different assessment, *i.e. people has different views*, and some might not agree with the managers or change initiators. They see that the company will lose more than it will benefit from the change. Fourth and lastly, low tolerance for change. People might believe that they are unable to cope with the new environment, not gaining

the skills and behavior needed. Paton & McCalman (2008) provide additional causes for resistance to change. They argue that it is the fear of the unknown that scares people, because they find comfort in the familiar. Power bases and successes are often found in the past or present, leading to that people are afraid of losing their job, reputation and control as a result of the change (Paton & McCalman, 2008).

Oreg (2003) concluded in a study that even if the organizational benefits were aligned with the individual's there were people who still resisted change. He called this phenomenon dispositional resistance, and claimed that those who held a more dispositional resistance were more distressed by change and consequently reported an increased difficulty to work effectively.

There is however a strong support from studies which stresses that organizational factors are more important than individual characteristics when it comes to influencing resistance to change (Dent & Goldberg, 1999). Michel et al. (2013) have made further studies in the field of dispositional resistance and claims that the individual's actual level of resistance can differ from their dispositional resistance. What cause this variation are situational factors such as group norms or the way change is managed. Resistance to, or acceptance of, change may therefore emerge from the power of organization or group norms and not the individual's mind (Michel et al., 2013). Paton & McCalman (2008) claims that it does not matter how willing an organization is to change, it will always face a degree of resistance among the employee. An organization may be able reduce the power of the resistance, but it will never be able to eliminate the fear of the unknown.

Ford et al. (2008) claims that studies of change often take the perspective of those whom initiates the change, the change agents. The change literature has a tendency to overemphasize actors over acts (Todnem By et al., 2011). It is also often presumed that the change agents are doing the right thing while the change recipients are preventing the change (Ford et al., 2008). Ford et al. (2008) expands their thoughts by explaining that resistance to change is an attempt of the change agents to make sense of change recipient's reactions to the initiative, instead of the actual objective reality. They continue to point out that change agents' behaviors such as breaking agreements, violating trust, misrepresentation and other communication breakdowns, and their own resistance to change could be the reason for occurrence of resistance. People could in fact be resisting poor management or the consequences of the change and not the change per se (Goldberg & Dent, 1999). Lastly, Ford et al. (2008) stress that the change recipients reaction to change might in fact be a resource. Objections, worries and fears contain valuable information, which can be utilized to accelerate and facilitate the process (Ford & Ford, 2010).

3.3 Different approaches to change management

The research about managing change has expanded since Lewin's first work and there are now many theories and frameworks proclaiming how change should be managed (Paton & McCalman, 2008). Many of them are however contradictory,

confusing, lacks empirical evidence and/or are based on unchallenged hypotheses regarding the nature of contemporary organization change management (Todnem By, 2005). The traditional approach, which follows the original thoughts of Lewin, is that change follows a linear series of steps that enables the managers to introduce new work processes (Graetz & Smith, 2010). Numerous well established models such as Kotter's (1995) "Eight steps to transforming your organization" or Kanter et al.'s (1992) "Ten Commandments" etc. follow this approach and claims that the change process can be controlled and managed by a transformational leader (Graetz & Smith, 2010). In this approach, managers and consultant have been portrayed as change agents while the subordinates have been positioned as the change recipients, leading to that change management has been considered a strategic tool utilized by key actors in the organizational hierarchy (Todnem By et al., 2011).

Change management is further complicated because there are different thoughts on what forms the foundation that change management rest upon. There are three popular schools: the individual perspective, group dynamics or open systems (Burnes & Jackson, 2011). The school of individual perspective points out the significance of targeting individuals in change situation. The group dynamics perspective claims the individual behavior is a function of the group's environment and therefore the group should be targeted. The open systems approach views the organization as an open system, which interacts both internally and externally. Consequently, changes in one area affect another and the overall goal is to reach synergy rather than optimizing one area.

Even though all school claims to be the most effective approach to change, it could be argued that they are complementary and that it is the situation which decides which is most appropriate (Burnes & Jackson, 2011). There are no universally fix or right way to manage change as the success of any approach is to a wide extent dependent on putting it in the right context (Michel et al., 2013; Kotter & Schlesinger 2008).

4 The case companies

In this chapter all case companies and the WMS implementations are more thoroughly introduced. First, are Consafe Logistics presented, followed by the embedded cases at Arla, Stena Line and Mathem, which have all implemented Consafe Logistics' WMS. Lastly an summary over the embedded cases are presented.

4.1 Introducing Consafe Logistics

Consafe Logistics is a WMS provider with its headquarter based in Lund, Sweden. The company has subsidiaries in Norway, Denmark, Netherlands, Poland and the UK. Today, Consafe logistics has roughly 200 employees in Lund, and 350 employees in total.

The company is present on a global market due to its offices in 5 European countries and many international clients. They are a leading supplier in the EMEA (Europe, Middle East, East Asia and Africa) region, where Europe is the most contributing region. Consafe Logistics is considered a best-of-breed WMS supplier and have a 3,3 % market share worldwide (ranked 6th), and a market share of 8,7 % in the EMEA region (ranked 3rd) (ARC, 2013).

Consafe Logistics offers a Supply Chain Execution IT portfolio including a full WMS solution to their clients. The software covers the entire value chain: development of software, promotion and sales, implementation, and the aftersales market with support, maintenance and upgrades.

4.1.1 Defining a WMS implementation project

From Consafe Logistics perspective, the WMS implementation phase starts when the customer has signed the contract and ends when the WMS is up and running at the warehouse. Which means, when the sales phase is finished the project manager from CL takes ownership of the project and starts the implementation process. Once the system is live and working properly the project manager hands over the project to after sales, and that marks the ends of the implementation phase. In Figure 3, CL project model, for WMS implementations, PROMISE is shown. Generally, a WMS implementation takes about 3-12 month depending on the scope of the implementation and the clients' ability to adapt.

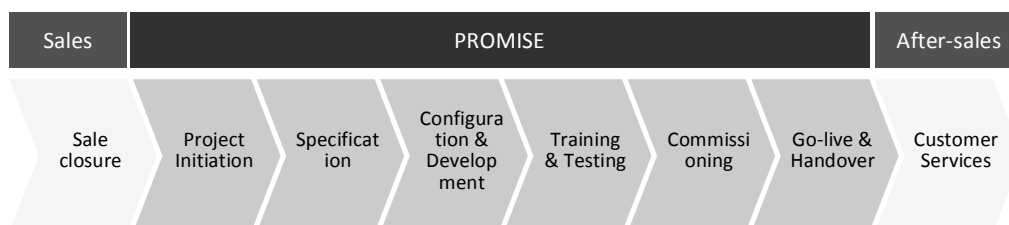


Figure 3: Consafe Logistics WMS implementation project model – PROMISE

The PROMISE project model consists of six steps and are briefly explained below:

- Step 1. Project Initiation** - During initiation a project manager from CL is given the responsibility for the implementation project. The CL project team is formed, and sales inform the project team regarding all the details of the contract as well as of the sale.
- Step 2. Specification** - Once the project plan has been agreed upon, and is in line with the guidelines and conditions of the contract, the project team, together with the client, determine the detailed solution specifications to be delivered upon. Also what will be delivered from the standard solution, as well as what will be covered through customization.
- Step 3. Configuration & Development** - During the configuration stage, based on the pre study deliverables, the standard solutions (software and hardware) are configured. If necessary, further developments of the necessary adjustments according to customer requirements are being carried out.
- Step 4. Testing & Training** – The client employees gets prepared to work with the solution, either by enabling client assigned trainers and/or by training the actual end users (end users will be explained later on). Besides training, different tests are carried out to try the software and hardware. CL performs some tests, other test is carried out in cooperation with the client, and some tests have to be managed by the clients themselves.
- Step 5. Commissioning** - At the commissioning stage the solution is delivered and tested on-site. The stage ends with a formal go/no-go decision.
- Step 6. Go-live & Handover** – At the go-live the system is set into production, 2-6 weeks later the system is handed over. At the hand-over CL receives client acceptance for the delivered solution, closes the project and hands it over to the after sales functions.

4.1.2 The different roles in an implementation project

The WMS implementation project consist of several roles and teams from both Consafe Logistics and its client, see Figure 4. There are six groups that can be distinguished in every project; *steering committee, CL project team, client project group (often including the super user), supervisors and end user.*

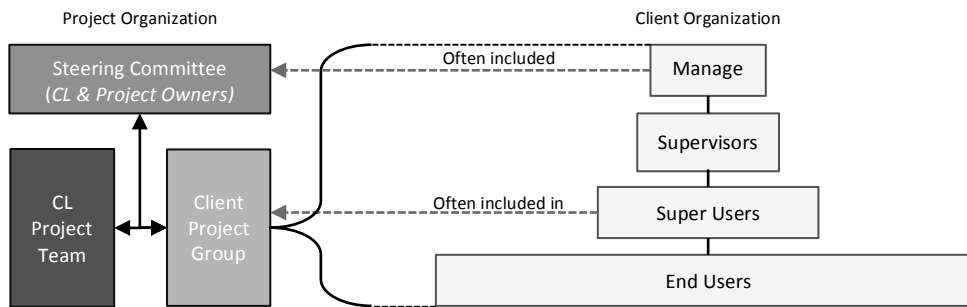


Figure 4: Communication channels for involved parties

4.1.3 The steering committee

CL stresses that all implementation projects should have a steering committee, and its main purpose is to support the project manager and client project group. They have continuous check-up meetings in order to monitor the progress of the project and to strengthen the relationship between the companies. The committee consists of representatives from both CL and its client. Usually CL has one representative, a senior manager, excluding the project manager. The client's representatives are people in senior positions within that company, often project owners.

4.1.4 The Consafe Logistics project team

There are three distinguished roles in CL's project team: *project manager*, *application consultant* and *system developer*.

Project manager – has an overall responsible of the project from CL side, and has tasks such as time scheduling, budget, resources and client communication. They are to ensure that CL deliver and fulfill obligations according to the contract. The project manager is however not responsible for the entire project as he/she is subordinate to the client's project leader. In smaller projects, a project manager can sometimes also have the role as an application consultant while in bigger project they have a pure administrative role.

Application consultant – is responsible for adapting the WMS to the clients operations, and their role is therefore to understand the customer's requirement and flow of goods. They have a more technical role than the project manager. The application consultant is also responsible for the education of the client's super-users (their role are further explained below), and making sure the client is testing the WMS properly before going live.

System developer – has the mission to realize the ideas, functionality and logic specified by project.

4.1.5 The client project group

This group is responsible for the project. The project group varies in size and constellations. Some project managers at CL communicates to the client that 4-5 people are a good-sized group and what roles that needs to be filled. But in the end,

it is the client who decides how many people they want in the project group and who it will be. CL stresses the importance of the project team dedicating almost 100 % of their time to the project during the implementation. The roles that should be filled are:

The project leader - Is responsible for the whole implementation project. The main task for the PL is to coordinate activities for the involved parties.

Super user - Is the person at the client's side that is intended to be the expert on the WMS solution, and is not necessarily always a part of the project team. There are often a couple of super users in an implementation project. The super users play a key role in the project and are essential for a smooth WMS implementation. They should be able to answer questions from end users (same as warehouse workers, explained down below) and handle extraordinary situations. CL suggests that the super user is someone who is expert on the current processes, shows interest in the new WMS, and preferably has IT experience. During the implementation project their main tasks consist of learning the new system, testing it, and educating the end users how they should work with the WMS.

4.1.6 The client organization

In the client organization the general roles are manager, supervisor, super user and end user.

The manager – Is the executive manager in the warehouse, and often included in the steering committee. And often is the project owner.

The supervisors - Are the front line managers, i.e. they are just above the super users in the hierarchy and often they stand outside the project group.

The super user – Explained in the section above (4.1.5).

The end users - Are the ones who are working in the warehouse on a daily basis. They consist of pickers and consignees and are the key to making the warehouse work.

4.2 Introducing Arla Foods AB

Arla Foods is one of the world's largest dairy companies with an annual revenue of 63 114 MDDK. With its base in Denmark, Arla has roughly 7 000 employees in Sweden and Denmark, and 18 000 worldwide. (Arla, 2013)

Arla has production in 12 countries today and their products are sold in over 100 countries. The product portfolio is consisting of mainly fresh milk (43,4 %), cheese products (25,5 %) and butter & spread products (14,4 %) (Arla, 2013). The global presence and nature of dairy products makes efficient warehousing a key component in the supply chain.

Today Arla has CL's WMS solution in 15 of their warehouse sites throughout the world. As Arla is expanding into a global market, they are striving to standardize their IT-systems. Even though most sites at Arla have had an older WMS, the new

WMS from CL was a step towards standardized business processes throughout all sites. The standardization of processes is wanted by Arla to enable more control of the warehouses and to benchmark their operations.

Arla Foods see the change process as an important task for all their projects and works actively with change management. They use the same structured approach in all projects. The change management method is based on the ADKAR model of individual change. The ADKAR model is a five-step model that consists of: *Awareness, Desire, Knowledge, Ability* and *Reinforcement* (The ADKAR-model is explained more in detail in chapter 8.2).

The change manager is a dedicated role for all projects and is a part of the core project team. This role is a support function and works to ensure:

- Commitment and engagement of sponsors, leaders and key stakeholders
- A working communication channel
- Awareness and commitment to support the project
- Organization readiness to take on the project deliverables
- Local ownership
- High quality training to all user-groups and stakeholders

Furthermore, the work includes aligning and adapting project plans, time plans, milestones, etc. so everything is integrated in to the general implementation project. Two addition roles are included in the change management team, the *site champion* and *training coordinator*. The site champion has local awareness of the personal relationships within warehouse and is essential when, for example, executing the local change. The training coordinator is often working for the site champion and has a more administrative role.

4.2.1 The WMS implementation in Arla Götene

The warehouse in Götene has 25 people working in the warehouse and is mainly handling cheese products. The implementation in Götene was one of seventeen other sites running CL's WMS. The implementation was part of Arla's strategy to standardize their warehouses. The WMS implementation at Götene was done in 2010, and replaced an older WMS solution. The implementation took about 12 months. Although some technical issues occurred, the users welcomed the new WMS, mainly due to that the older system was not working in a satisfying way.

4.3 Introducing Stena Line AB

Stena Line is an international transport and travel service company and has one of the most comprehensive sea line networks in northern Europe. (Stena Line, 2014) Stena Line operates 22 ferry routes, which connects nine countries in northern Europe. The fleet consists of 38 vessels, ranging from high-speed ferries to pure freighters. 1.9 million freight units (trucks and trailers) are transported annually and 15 million (and 3 million cars) passengers travel with Stena Line each year. This

results in an annual turnover of 10 billion SEK. Stena Line has approximately 6 000 employees in total.

Stena Lines warehouses supplies the 22 ferries with consumables and retail products etc. In the end these products derives 16 % of the annual revenues. Therefore, the warehouse operation is an important piece in the supply chain. As a step to get more control and increased efficiency Stena Line has invested in a new WMS from CL. They are planning to expand the WMS into more sites in the future.

4.3.1 The WMS implementation in Stena Line Malmö

There were several reasons behind the investment of a new WMS: better control over the warehouse, increased efficiency and to be able to handle seasonal peak with extra personal better. The warehouse in Malmö normally consists of 12 warehouse workers but the workforce increases to 20 during the summer peak season. The implementation took 3 month, and was finished in January 2014. Just before the implementation of the new WMS, Stena Line had gone back to picking with paper lists. The older WMS that were in place was not working as intended and had creating a hard time for the warehouse workers. To introduce a new system was therefore perceived negative by the end users. Furthermore, worth mention is that Stena Line had no deliberate approach of working with change management during the implementation process.

4.4 Introducing Mathem AB

Mathem is an online food store that offers its customers a wide range of food in combination with home delivery to the doorstep. The customers can shop in three different ways: choose of 10 000 different products, shop after recipes', or just shop a pre-determined food bag. Currently Mathem covers the Stockholm region, Gothenburg and western parts of Skåne. They have over 250 employees and 70 food trucks. Mathem have a strong growth and current annual revenue of 80 MSEK.

Today Mathem has two major storage sites, one in Stockholm and one in Gothenburg, which supplies all the current regions. The warehouse is the core of the business. Hence, the efficiency of the warehouse is a key component when providing food to their customers.

In the beginning Mathem was picking their food bags in regular stores. As they grew, the need to invest in an own warehouse arose and Mathem acquired a competitor and its warehouse in the Stockholm region. There were no previous WMS in place, and Mathem quickly realized the need for a WMS to increase its warehouse operation efficiency.

4.4.1 The WMS implementation in Mathem Stockholm

The warehouse in Stockholm consists of approximately 120 pickers. The typical picker is young, and has often this job as a temporary job for a 6-12 month period. The implementation project was supposed to take two months, however due to technical difficulties the go-live date was postponed one month. The

implementation was finished in February 2013. The implementation resulted in large changes of their work processes. Earlier the end users picked one order at the time with a paper list. Now they are divided into picking-zones, picking parts of orders that are consolidated before they are shipped. The majority of the picking is now done by voice picking, e.g. picking with a headset enabling free hands. Earlier the picker were responsible for the whole order, they could determine their routes themselves, or contact the customer if complementary products were needed. Now the WMS manages all that. The pickers just listen to the voice and follow the instructions. These speeds up the picking process but the number of different tasks each picker have to perform have decreased. Furthermore, worth mention is that Mathem had no deliberate approach of working with change management during the implementation process.

4.5 A summary of the embedded cases

The embedded cases are summarized in Table 1 in order to provide a better overview. The chosen are dimensions are only meant to highlight possible similarities and differences between the cases.

Table 1: Summary of embedded cases

	Mathem	Arla	Stena Line
Annual turnover (MSEK)	88	74 772	10 000
Number of employees	350	18 000	6 000
Number of employees in the warehouse	100 - 120	25	12 (20 peak)
Employee turnover	High	Low	Low
Type of warehouse	Retail	Dairy Products	Retail
New warehouse establishment	No	No	No
Multiple sites using WMS from CL	Yes (2)	Yes (17)	No, planning to
Had existing WMS	No	Yes (manual routines)	Yes
Implementation time (month)	3	12	3
Change management strategy	No	Yes	No

5 Challenges according to the different perspectives

This chapter reflects the perceived challenges from the four different perspectives. First, the project managers from Consafe Logistics point of view are presented. Followed by the opinions of the client project group, the super users and lastly the end users.

5.1 Perceived challenges from the project managers from Consafe Logistics

Several issues and insights emerged during the interviews with the seven project managers at Consafe Logistics. Eight areas emerged during the interviews and the following are the perceived challenges from Consafe Logistics project managers' point of view:

- Business process re-engineering
- The client project team
- Resources
- Communication
- Implementation speed
- Education
- Testing
- Size

5.1.1 #Business process re-engineering

The implementation of a WMS often leads to significant changes in the work process. Even though the amplitude of the change depends on what kind of system the client had before, the work processes will be re-engineered to some extent by the new WMS.

The standard version of the WMS can be modified if necessary, but CL tries to keep it as close to the original version as possible. Even though CL stresses the client to re-engineer their old processes, there is a unified view that the client often wants to keep the old processes. The majority believes the reason is that the client project group know what it has, but do not understand what it will get (in terms of new processes and software). Therefore the client project group often demands special functions to meet their old needs, and have a hard time understanding how the new work processes are supposed to work, which creates uncertainty in the clients project group. Every add-on is costly for both the client and CL. For example, according to experience from the project managers, it is not unusual that some of the extra functions developed before going live are never used, and are consequently unnecessary. From CL's side, the extra hours spent developing

unnecessary modules are hours that could be spent on another project. Therefore, to get the client to change their old work processes is perceived as a challenge.

In addition, what some of the PL believed to matter was whether the client was going to implement the system in a warehouse that had been utilized for a time or if it were to be implemented in a completely new warehouse. WMS implementation in new warehouses was perceived easier due to the lack of history, e.g. there are no existing routines or processes to change. Some project managers deemed history as a potential challenge. The thought behind was that resistance grows tougher with the number of years the personnel have spent in the company. The reasons for that is due to the employees have created routines, habits, and knowledge advantages which all can be shattered if status quo is not maintained. One example told by a project manager was when implementing a new WMS in a warehouse in the northern parts of Sweden, and one of the workers just walked out. He was not going to change the way he worked, and especially not start working with an IT-system, ever, thus ended in he quitting his job.

Even though the change often is small, an inevitable consequence of new WMS is organizational changes. The system makes warehousing more efficient, leading to that less people are in general needed to do the same work. Still laying off personnel is not common, and the WMS is more often implemented to increase the capacity. An example of layoffs however, is when CL implemented their WMS into an automatic warehouse (i.e. no humans needed for picking etc.). Then the communication to the warehouse workers was that some of them would be layoff after the implementation. The workforce started to slow down their work and the performance levels in the warehouse decreased. Instead of layoff personnel the client management had to bring in interim personnel, who outperformed the old workforce after just few hours introduction. The result was that the new WMS had a hard time meeting the desired performance levels. Often personnel who have more administrative roles, such as printing paper lists and managing the pickers, becomes less needed because the WMS will do most of those chores automatically. Some tasks usually done by the supervisors are also, to some extent, replaced by the WMS. Due to infrequent issues with organizational changes, it was not considered to be a major challenge even though the PL stresses that generally there is a natural resistance to change for all humans.

5.1.2 #The client project group

The client project group has a large impact of the WMS implementation project. What is challenging is making sure the client has composed the right configuration in terms of number of members, right competences, experience and authority. The CL project team often meets the client's projects group after it is composed and their ability to influence the configuration of the team is therefore limited. Some project managers try to make suggestions of the type of persons needed in the team. As the project group has an important role in handling the project, the skills within the group will be vital to the projects success.

Furthermore, commitment is important for the project. If the group does not support the WMS solution, the project tends to be delayed and the WMS will not meet its intended benefits. As an example one project manager told of a time when the clients project leader resisted the new WMS to such extent that the client's management had him layoff after the implementation.

Also the size of the project team is important; a big project team leads to too many discussions, while a small team may lack essential resources. A project team of 4-5 people is considered optimal. The project team must be knowledgeable about the business and their processes, nonetheless, have an open mind toward changing the current processes and thereby work in a new way. An example of a problematic project group was when a client was so eager to involve all the personnel in the warehouse that they ended up with 25 people in the meeting room discussing the new WMS in a very ineffective way. Even if the intentions were good, the consequences were an ineffective group. And as said before, one major challenge with the project group is to get them to abandon the old way of work. However, within the project group there are two key roles that play an important part in the outcome of the project: the project leader and the super user.

The clients project leader - Has a key role and the project managers from CL stresses the importance of the client project leader has to have authority to make decisions, is dedicated fulltime to the implementation and has strong leadership abilities. If the client project leader has no authority to make decisions it will result in longer lead times making the project run slowly. Furthermore, the project leader is often one from the hierarchical organization, which often leads to an overload of tasks. Regarding the leadership abilities; it is important yet hard to do anything about it.

The super user – Are often the key to communicate with the end users, and also the ones that will educate the end users. They will, in the end, be the ones making sure the new processes is working as intended. They are also the ones maintaining and developing the WMS solution on site.

5.1.3 #Resources

The problem is not only to dispense the right resources to the project team; it is to make sure the client realize that the project team needs to work with the WMS implementation nearly full time. The clients often underestimate the size of the project, both in terms of personnel and time needed. This often leads to increased pressure on the members in the project group as they have additional work beside the WMS project, henceforth, creating pressure on the project group. An example was a project leader who could not handle the pressure and consequently had a breakdown. The resources for this particular project were limited, and the project leader took on almost all tasks himself, including the role of super user. So when he hit the wall, the warehouse became paralyzed. No one could even change the labels in the printer, creating a situation in the warehouse where the performance level sunk drastically.

Some customers believe that once they have bought the system they can lean back and CL will seal the deal. And once the new WMS is in place everything will work perfect. But client involvement is essential for the WMS implementation. This is something the customer often has not thought of when ordering the system. For example, the need of educating the employees, testing, and adaptations of the WMS are tasks that must be handled by the client itself. To get the client to dispense enough resources to the WMS project is therefore often considered a major challenge.

5.1.4 #Communication

Communication is divided into two categories when looking from CL's perspective, *external communication*, i.e. communication between CL and its client, and *internal communication*, i.e. the communication within the client organization.

The external communication – Goes mainly between the CL's project managers and the client's project group. CL often only meets the end-users when going live with the new WMS. The challenge with the external communication was perceived quite differently between the project managers. Some project manager stated that CL need to quantify more accurate what it takes from their clients in form of resources, training, testing, roles and process re-engineering, while some says they already do. As an example, one of the project manager had fully covered role description for the client, while other project managers did not even know of it existence. Some claim that there is sometimes an expectations mismatch between what the sales team has sold and what the WMS can deliver, creating unnecessary friction. However, something that is generally consistent is the importance to communicate the need of change management, which is currently not incorporated in the standard project process. How the project managers communicated the need for managing the change therefore varied from person to person.

The internal communication - Goes through the clients project group to the rest of the organization. The purpose of the internal communication is to engage the organization and it is important to communicate the reason and goal for the new WMS. To communicate through the project was acknowledged as a huge challenge.

Communication is considered an important mean for creating security among the end users, to involve them in the project, and to make them accept the new environment. Involvement is, for example, creating a positive attitude among the end users towards the new system. Some of the project managers told of several stories when the end user first learned about the new WMS the very same day as go-live. Communication is also a necessity to stop ill witted rumors and speculations about what changes the new WMS will bring. The hard part in the communication is often getting the end-user to understand why there is a need for a new WMS and what the consequences will be for each person. If the end user understands why and how they are affected they become more willing to accept the change that is about to come. It is however problematic, and sometimes, the end-users are not informed or do not want to understand. Sometimes even the client project group does not

fully understand why the new WMS is implemented. One reason contributing to why it is hard for CL project managers to communicate is due to the limited time spend with the client and the almost non-existing contact with the end users.

5.1.5 #Implementation speed

From CL's point of view, the implementation speed to get the system in place is not an issue. What stops the implementation from going faster is general the clients' ability to prepare for the implementation. Some project managers says a quick project is easier due to more frequent contact with the customer and they generally accept CL new process proposals without any discussion, while some say the opposite that there must be time to thoroughly discuss the new processes in order to make the client accept the new situation. Anyhow, there is a common understanding that a shorter project makes it harder to anchor the change in the client organization.

5.1.6 #Education

The education is considered utmost important for the outcome of the project. The education is divided into two parts; firstly when CL educates the client super user, and lastly, when the super user educates the end users.

Several project managers states that education to teach the super user is a fairly easy task to solve. Yet, some of the project managers claim deficiencies within the end users knowledge. The issue is often due to underestimation of the amount of education needed. Some of the end users need more training than other, especially if they have less IT experience. If the end user gets any education at all, they often get is very close to go-live, and it is through coaching by the super user.

The end users technical experience was mentioned as a factor that affected the implementation, even if the project managers claimed that the WMS is easy to learn. They also perceived that the technology experience among the end users had increased much the last ten years.

Timing the training is also considered an issue. If the education starts too early, most of end users will forget when it is time to go live and if it starts too late they will not have enough time to truly absorb the new knowledge. The key is to find a balance. If the education is done correctly, the go-live will be much smoother and the client will quicker reach the intended benefits.

CL has recently developed new tests aimed at controlling the knowledge levels for the super users in preparation for going live, to make sure the end users are ready. Some new contracts include a clause, which constitutes that the client must educate the end user to some extent before go-live and if they fail to, CL disclaims itself from the consequences. This clause has however, so far, never been used.

5.1.7 #Testing

Another important task when implementing a new WMS is to perform test cases. A test case is a simulation of the flow in the warehouse and the purpose is to test the

new system properly in order to find potential flaws that can be adjusted before going live. The customers often underestimate it, despite pressure from CL. It is an essential part to avoid future complication and it is the super users responsibility. It is also important to test the interaction and connections with other components, such as the clients ERP system, to make sure it is working. As example of this challenge is that sometimes the super user do not even know what a test case is and consequently have no clue of how to make one.

5.1.8 #Size of the company

There were disagreements whether the size of the clients company had anything to do with the outcome of the project, and whether it affected the change process. What most agreed upon was that a large company had more resources to spare, more defined processes, and acted more proactive with issues regarding the change. A mutual success factor for company's that handled the change process more smoothly was if they had previous experience from change projects.

5.2 Perceived challenges from the clients' project group

Important to notice: this represents one interviewee's opinion and not the whole company's, and this following text combines the perspectives from the involved project groups at Arla, Mathem and Stena Line.

The main challenge all interviewees agreed upon was getting all the end users to fully adopt the new system, and work according to the new processes. This was believed necessary in order to reach the full effectiveness the WMS was intended for. In other words, it means that the users need to learn both the system and the new work processes. The business process re-engineering needed was evident in all cases and what the important factors to take into consideration were fairly consistent, however, how they dealt with them differed. The senior change & communication manager (SCCM) from Arla expressed that "change management is all about being proactive". She continued to stress that it is important to identify where the company stand today, and then what needs to be done to reach the desired stage. Therefore it is important to prepare the receiver so that they are ready to accept and adopt the new system. While the logistic manager at Stena Line expressed that the challenge is not the implementation of the new WMS, it is to get the personnel on track afterwards. The challenges that emerged from the interviews from with the clients' project teams was:

- Top management support
- Resources
- Change management role
- Involvement and why the change is needed
- Communication
- Education

5.2.1 #Top management

Only the SCCM from Arla mentioned top management support as an important piece. All changes start from top management and the managers must therefore support the solution. The managers have a key role in the success of the project, especially when there are many projects simultaneously active. It can be hard for both the project group and the workers to prioritize between the different tasks. When it is hard to assess which one is most important, people usually look to the nearest manager. Therefore, ownership and support from the managers are utterly important to avoid a decrease in engagement and support throughout the organization, which in turn could lead to that even the smallest change becomes hard. Looking back, as an example, one project manager from CL said that one implementation project was very effortless, and he stressed the management support throughout the implementation made everyone engaged.

5.2.2 #Resources

The lack of resources was evident in most cases, and all stressed the importance to allocate enough resources to the implementation. SCCM and the project leader from Arla stressed that it was hard for the project team to have their regular job tasks on top of the implementation project. Furthermore, the SCCM from Arla said the roles in the project team must be well defined. Which both Stena Line and Mathem were positive towards. An initial suggestion from CL on what roles were needed in their project group would have helped them in understanding whom and how many they should appoint to the project team. As an example, none of the clients had received any guidelines regarding the roles or resources needed.

5.2.3 #Change management role

Only Arla stressed the importance of having someone whose role is to manage change during the implementation. When it comes to change projects, a local site champion should always be present. The site champion should be someone from the local organization and be someone who best knows what is going on, who people listen to and who knows how the work is currently performed at the site. The change champion needs to have support in terms of how to handle this role. If someone who is considered "one of us" talks about future changes it is considered more acceptable than if an outsider would do it. The idea of including a change role in the project group was welcomed by all other companies. As an example both the logistic manager from Stena Line and the project leader from Mathem thought that CL should take a bigger role regarding the change the WMS will bring on the organization. They also saw that CL could provide more structure and clarity to what was needed for the project.

5.2.4 #Involvement

There was a unified belief that if the end user understood why the new system was needed, and subsequently why they needed to change their work processes accordingly, their reluctance towards change would decrease. An important but hard

task was therefore to make the end user understand why. How they countered this challenge differed among the managers. Communication, education and trying to involve the right people were tools that all considered important for making the message get through. Although, Stena Line and Mathem did not manage to fully get the message through to the end user and the reason for that was that the WMS itself had higher priority.

To get people involved was altogether a challenge. The project group members thought that many of the end users initially seemed frightened by the notion of implementing a new WMS. There were different opinions on what in particular frightened them, but new technology and new work processes seemed to be two contributing factors. These factors created uncertainty among the end users and thus, made the implementation process harder. In all of the cases, the day-to-day routines of the end user got more controlled by the system. As an example the end users were previously (to a large extent) able to control and plan the orders to pick, and in what order they would do it, but that freedom greatly decreased as a consequence of the new WMS. The working style became more robotic. The WMS will do all the thinking for the workers and create a do-check work routine to follow.

The first step in involving the personnel was to involve the right people, which all three companies talked about to some extent. The SCCM at Arla stressed that this is a key to managing change successfully in projects. It often means making informal leaders pro change. All companies offered some of the informal leaders the role of a super user. They believed that it would lead to more support throughout the shop floor. As an example the SCCM from Arla mentioned another WMS implementation where the informal leader was initially against the new implementation. By working with him and make him understand why, he turned and become pro change. He became one of the best super users, especially at teaching other users, and therefore he is often involved in other WMS implementations at other locations.

Further the SCCM at Arla said that the same applies to bigger warehouses where multiple supervisors are used. They have a key role in the change management process. Often, they do not have much to say about the implementation project, but they are the doers of the organization as they are the ones controlling the end users. They are the ones who can affect the end users and make sure they work correctly according to the new system. In other words they are the gatekeepers in providing the end users with information and therefore needs to be aligned with each other and the project group.

5.2.5 #Communication

All said that communication is essential to involve the end users. However, this was something both the logistic manager at Stena Line and the project leader at Mathem said they underestimated. They stressed that this could had been done much earlier in order to involve the personnel and the communication towards the end user could have been much better. As an example Stena Line prioritize the technical platform than focusing on involving the end users. This due to the tight timeframe

and the system needed to be prioritized or the implementation would be done in time. Consequently focusing on the change issues after the implementation was done.

The SCCM from Arla pointed out the importance to communicate proactively instead of reactively. Awareness among the organization is important to stop rumors spreading which in turn can create uncertainty within the organization. Therefore the communication must be continuous in properly established channels. The communication channels needs to work two-ways in order to create an opportunity to raise questions or other concerns, and above all to involve everyone. In the end, the end-user do not need to read all the information communicated, however, when time comes and the end-user wants to know more about what is coming, he/she should know where to get this information.

5.2.6 #Education

Everyone mentioned education as an important part in the process of adopting the new WMS, and that the big challenge is to make sure the end users are working with the new processes as intended. Even though, both Stena Line and Mathem stated that they had not educated their personnel enough before go-live. When asked how much of the total project budget was spent on education they said that it was so little that it was probably not even included in the budget. If they had the chance to do it once again they claimed that they would spend more resources on it.

At Stena Line, the only ones that received pre-training was the super-user. Meanwhile at Mathem, they educated almost all of the end users, and they expressed that there were a huge difference between those who got education and those who did not, when they went live. The reason that Mathem was able to educate the some end users was mainly due to postponement of the go-live by one month. Arla however, trained all end users before go-live.

The companies had a different view on what should be included in the education comparing to CL. They stressed the importance of educating the user in how they should change their working routines, processes and what their new role was. They saw education as something else than just teaching the user how to work with the new technical tools. The challenge with education was, according to Arla, understanding what, how and whom you are educating. What is being educated, often focuses on learning the super user the new system. Learning the new WMS is indisputably important and should not be underestimated. However, to learn how to click and navigate the system is fairly easy; working right is the big challenge. For the super user to teach the end users how to work with the new processes, and the importance that they follow the procedures are the real challenges. So to teach people how to work in a new way, to fully adopt the new system and truly use the potential in the new tool is the key to a successful education. Mathem stressed the importance of making the end user understand the entire process in order to get an understanding of why they needed to work according to the new processes. If the users still tries to work in the old way, or do not accept the new way of working, the

WMS will not meet its intended benefits. Therefore, the education has to involve the entire process and not only the new system.

How the users are being taught is another important thing to keep in mind according to the SCCM at Arla. It is important to identify who the users of the system are. Arla claims that many educations are constructed in an old classic way, e.g. the school bench, Power Points and a teacher telling you what to do. Sometimes that is enough, however, looking at the characteristics of a warehouse employee this kind of education-setup may not fit the audience. They may for instance have troubles with the language, or just having a hard time for the education format. Thus, to adapt the education after the audience is an important step of making sure that the education has the intended effect.

Who is doing the teaching is another important thing, especially when teaching the end users. As Arla states, to have a person the end users trust and can identify themselves with is a key to get them to approve, acknowledge and adapt the new system. Therefore the super user has an important role when it comes to educate the end users. For the project team it is then very important to support and help the super user in order to educate the end user in the new system in a successful way. As education was frequently mentioned as an area where the companies' wanted more guidance. All companies requested better material for education such as cheat sheets, check lists and more practical tools, which they could utilize when educating their end users.

5.2.7 #Technical issues

All companies mentioned some degree of technical problems with the new system. As an example, Mathem had to postpone the start of the new system with one month after a failed attempt to go-live. The technical issues when go-live, was perceived as ambient noise hindering a smooth transition to the new system.

5.2.8 #Testing

All companies wished they had gotten more guidance when it came to testing the system and hardware according to their warehouse flow. CL told them to perform test cases in order to discover possible flaws, but they got limited guidance on how to do it.

5.3 Perceived challenges from the super users

Important to notice: this represents one interviewee's opinion and not the whole company's, and this following text combines the perspectives from the involved super users at Arla, Mathem and Stena Line.

The super user role, and who shoulders the role, differs among the case companies. Some super users had an IT role in the hierarchical organization, while others held positions closer to the warehouse floor. Either way, the challenges perceived was fairly the same, and the challenges were:

- Role description
- Education
- Test cases
- Technical issues
- Resistance towards the new WMS

5.3.1 #Role description

All super users mentioned that the expectations of them, in the role as super user, were unclear. They got no role description; neither before nor afterwards they accepted the position. Some were told that they were meant to educate the end users and test the system, but few guidelines were provided that told them how to do it. The insufficient role description led to that it was up to the individual to decide what the role included and consequently what the super users have done during the projects differed.

5.3.2 #Communication

All super users expressed a need for a more structured communication channel. Arla and Mathem experienced frequent communication between the super users and CL, while SL thought that the communication left more to wish for. But everyone expressed that the communication with CL was quite unstructured, and according to the super users, CL barely had any contact with the end users except for on the day they went live. As an example, one client had different people to contact if they wanted to talk about the hardware or the software, making CL to feel like two complete different companies. All of them wished that CL could have informed them how, when, and what to communicate to the end users.

5.3.3 # Education

All of the super users mentioned that they wished that they had gotten more education before, during and after the implementation. Arla mentioned that the education was too theoretical oriented. As an example all super users claimed that they, to a large extent, had to learn the system by themselves, practicing alone by trying their way forward. Their limited knowledge about the system was challenging because they were meant to be experts on it and consequently be able to help the end user, handle system issues, and simultaneously being able to maintain and optimize the WMS.

They were also responsible for educating the end users, however, there were no guidelines regarding how to perform the education. Often, the super users had no dedicated time to educate the end users before going live. The education that took place was often during go-live. How the super users decided to educate the end users also varied. All super users experienced that they had about three people constantly surrounding them during the first month, asking them questions about the new system, thus, hindering them to perform their other work responsibilities. The super user from Arla experienced that he had troubles coping with all the

questions, which in turn angered the end users. One super user had a different view. He claimed that it merely took 20 minutes to educate an end user enough, thus was able to work with a little support. The key, he expressed, was to have a visual map (or blueprint) of the processes to make the end user understand the overall picture of the work processes. The super users also demanded better education so that they in turn could educate the end users and, if possible, get some aids in form of cheat sheets e.g. Something often mentioned was having access to the right hardware so that the end user could practice in an environment as close to the real one as possible.

Two of the super users had done additional WMS implementations, which went smoother and which they deemed more successful. Two of the implementations included a completely new warehouse and new personnel. They thought that it was easier to do the implementation when there were no existing routines or habits among the end users. But all claimed that previous experience had a huge impact on the success of the implementation.

5.3.4 #Testing

The super users are highly involved in creating the test cases that are supposed to test how the new system will work with the organizations daily flow of goods. The super users thought that CL was quite clear in communicating that it was necessary in order to avoid potential flaws in the system, however, all super users mentioned the tests as problematic. They did not have enough time or knowledge to execute them. But all of them claimed that good tests, using the right hardware, were important for a good implementation. Altogether, the super users wished a more cooperative approach with CL when developing and performing the test cases.

5.3.5 #Technical problems

The companies experienced technical issues during the implementation. These were the same who experienced troubles with performing the test cases with the right hardware. The technical problems led to delays in go live and a stagnant warehouse.

5.3.6 #Resistance

The super users experienced that some of the personnel in the beginning were negative towards the coming change in their working processes. This seemed to be rooted in limited IT experience, and/or changed work routines. In the implementation at Stena Line, the previous bad experience with their earlier WMS, made the end users quite negative towards a new WMS. Meanwhile, Arla also came from a poorly functioning WMS, however in that case the super user thought it made personnel more welcoming towards a new system.

5.4 Perceived challenges from the end users

Important to notice: the company name represents one interviewee's opinion and not the whole company's, and this following text combines the perspectives from the end users at Arla, Mathem and Stena Line.

The end users involvement in the implementation projects was close to nothing. They felt forgotten; nobody asked them about their opinion of how they should work or setup the new work processes. The challenges from an end user perspective were:

- Process re-engineering
- Lack of communication
- Education
- Technical problems
- Uncertainty

5.4.1 #Process re-engineering

The implementation of a new WMS did change the working routines for the end users. All of them described that their routines got more controlled with the new system, but their reactions of getting more controlled varied. The end user at Stena Line said that the new system forced him to take unnecessary routes, it required more clicking and in short he thought working was more tediously with the new system. As an example, the minute CL left, the end users at Stena Line started to override the WMS due to their belief that they better knew suitable places to place the pallets. Even if the WMS was not optimized correctly, this resulted in hindering the WMS to do its work, and created an ineffective way of work in the warehouse.

The end user at Mathem claimed that everything got impersonal and that he missed the customer contact he had before. He said that the system transformed the business to becoming a more refined warehouse. Even if it initially was some tough transitions to adapt to, he would never dream of going back to their previous system. The end user at Arla described the work as becoming much faster and smoother. She gave an example of how she had to spend less time going around with empty pallets than before. Something that was distinct from the cases was the fact that the end user did not understand why they needed to work in a new way; they just knew that they had to follow certain procedures.

5.4.2 #Communication and involvement

Lack of communication was a recurrent challenge according to the end users. They received very little information before, during and after the implementation. What kind of information they desired varied, but getting updates on what was currently happening and why seemed to be most important for them. For example, end users at both Stena Line and Mathem did not really know why they had implemented a new system. To stress the level of involvement of the end users, two of the end users expressed during the interview that “finally someone listens to me!”. Furthermore, the end users thought that by involving them in the process unnecessary errors could be avoided. They are the ones working with the system on a daily basis and they know the flow of goods in the warehouse.

5.4.3 # Education

Both the end user at Mathem and Stena Line said that they and their colleagues received no or very little education prior to go-live, both how to work with the new WMS and how the new work process worked. The end user at Arla, on the contrary, tried the real hardware and performed tests on dummy systems before go-live. All end users expressed a willingness to be self-going as soon as possible and thought education was a key component in reaching that goal. Something they all thought was frustrating was when they got problems or received errors while working in the new system, which they could not resolve by themselves. Both Mathem and Stena Line expressed a desire to know more about how the system worked. Everyone mentioned that a more practical education was preferred to a theoretical one. An example of ineffective education was when the end user at Stena Line was on further education (after the go-live) at CL, where he did not understand anything. The education was more about how the system worked technically and not about how he could resolve the problems he stood before.

Arla was the only company who said that they had access to cheat sheets while the others desired practical aids and tools. Something that also was consistence was that more IT-experienced end users often learned by trial-and-error, while less IT-experienced end users were more afraid to do something wrong, thus asked more frequently for help to solve issues.

5.4.4 # Technical problems

The end users at Mathem and Stena Line mentioned initial technical problem as something that had a large negative impact on the attitude towards the new WMS. The end user at Stena Line said that he had a positive approach towards the new WMS at first, because he was told that it would be superior to the existing one, but the technical issues was a mood killer, which changed his attitude. Technical problems also suppressed their ability to be self-going and forced them to seek help from super users.

5.4.5 # Uncertainty

Everyone described the mood of the end users before the implementation as nervous and tense. They were insecure about what was going to happen and how the implementation would affect them. The insecurity derived from different factors. People who had limited computer habits were unsure if they would be able to handle the new technique. The end user at Stena Line was worried because they had a recent bad experience from another WMS implementation, while Mathem worried about how their new roles would look like. The end user at Arla was mostly worried about how the new system and associated gadget was working. Her worries were largely calmed after the education. All of the end users agreed that communication and education were important keys to counter the insecurity. As an example of uncertainty, was that the end user at Stena Line thought he was "some kind" of super user while the logistic manager said he was an end user.

6 Analyzing the WMS context

This chapter explains what is needed, in terms of theories, in order to cover the challenges from the previous chapter. First, there is an outline of what the challenges were from the different perspectives, followed by a merger of these challenges to general challenges. The general challenges will later be used to evaluate the chosen change management model.

6.1 A summary of the perceived challenges

To get an overview of all the perceived challenges they are summarized in this section, see Table 2. As described in the method chapter, this summary is based on either what the majority saw as a challenge or stressed as really important. If there were some dissent among the interviewees about some challenges, those challenges are still presented in the table. Thereby avoiding undermining some important challenges. Worth mentioning is that this summary is the authors interpretation of the interviews.

Table 2: Outline of the challenges from different perspectives

	Project managers (CL)	The project group (client)	Super users	End users
#Top management	Getting managers to show commitment in order to get support throughout the organization.	Make managers show support.	X	X
#Process re-engineering	Get the client team to abandon old processes, and welcome new processes. History makes people resistance towards new routines.	To get the users to work according to the new processes.	X	Understanding how and why they should work according to the new processes
#The client project group	Get the right capabilities within the clients project team and to appoint the right people as super users. Make sure the client project team is pro change.	Get more guidance on the roles and composition of the client project team.	X	X
#Resources	Important to communicate the need of resources for the client. In terms of hours spent on education, testing and on the implementation in general.	Hard to know how much resources needed in the project group and for education.	X	X

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#Communication	Communicating clearly and quantified to the client. Communicating what, how and also the need for change management is hard. Controlling how the client performs their internal communication is tough.	Often un-clear and un-quantified regarding how to handle the implementation. Inside the organization it was often deficient, especially to end users, due to other prioritizations.	There is no clear role description of what is expected from the super user.	The end users lacked transparency about what was happening in the project. Was initially insecure about what impact the system would have on them.
#Education	The challenge is to make sure the client is educating the end users enough.	The challenges are to teach the end users the new processes. The companies got little guidance on how to educate as well as little material to aid.	Not enough education for the super users, they wanted more education about the system and how to educate the end users.	They did not get enough education to work sufficient.
#Testing	Make the client perform enough test cases.	Wished more guidance when it came to testing the system.	They lacked support and guidance from CL on how to perform the testing in a satisfactory way.	X
#Technical issues	X	All companies mentioned some technical issues in association with the implementation	Handle both technical issues as well as WMS questions from end users when go-live.	Technical problems have a negative impact on the end users attitude towards the new system.
#Involvement	X	Hard to get the end users involved, and pro-change.	X	Did not understand why they had implemented a new system.

6.2 A generalization of the challenges

The challenges shown in the previous table (Table 2) may come from different perspectives, yet they are derived from the same sources. The different roles experience the situations differently, and thus see problems from their own perspective. Therefore, to make the perceived challenges more hands-on and easier to compare, they are combined and generalized to ten challenges. These ten challenges incorporate the most pressing challenges from each perspective. The following challenges are:

- Make management show support for the project.
- Get everyone to welcome and adapt the new working processes.
- Involve all involved groups in the change and make them pro-change. History (e.g. routines, habits) causes people to be more reluctant to change.
- Clarify the roles and what is expected from them.
- Make sure the client project group consists of people with the right capabilities and attitude.
- Assign enough resources for education and testing of the system.
- Make sure education is done properly (for the new processes, the WMS itself, and how to make the tests).
- Provide guidance regarding test, education and communication.
- Establish a well functioning and structured two-way communication channel between all groups.
- Technical issues in association with go-live is demoralizing

From a change perspective these perceived challenges in WMS implementations are quite general. As discussed earlier, the authors suspected that a WMS implementation shared many similarities to general IT-implementations, without being able to really confirm that was the case due to the lack of research. Now, after these interviews, some of the challenges appear to be quite general. However, to actually confirm this challenges is the same as for other IT-implementations, further research is needed, and is left for other researcher to investigate.

Next step is to take these challenges and test which of the challenges that can be eased by using a change management model. Subsequently, a change management model needs to be selected.

7 Choosing a change management model

In this chapter the models that were selected for evaluation is first presented. The subsequent section addresses which criteria were used to evaluate which of the change management models that was best suited to proceed with. The following section presents the evaluation and which model was eventually selected. Lastly, the challenges from the previous chapter are compared with the selected model to see what challenges can be eased and which still remains.

7.1 Choosing models to evaluate

As previously mentioned, there are numerous models that can be used to manage change, and for the interested reader, 26 identified change management models are listed in 11Appendix B - Change management models. Due to the time constraint for this master thesis, three of those models were chosen and compared to see which one fits the four criteria best. The first two models were selected because they were among the top most frequently cited change management models from 13 change management journals (Cheung, 2010). The two models were Kotter's "Eight-stage process for successful organizational transformation" (1996) and Luecke's "Seven steps" (2003). Todnem By (2005) claimed that those two models offered more practical guidance to organizations and managers than many other models. The third model was mentioned during an interview with Arla as their inspiration to working with change management, and it is a model named "ADKAR" created by Hiatt (2006).

7.2 Finding criteria for selecting an appropriate model

As mentioned earlier in this master thesis there is no universal measure to manage change, as the success of any approach is largely dependent on adapting it to the right situation (Michel et al., 2013; Kotter and Schlesinger 2008). Burnes (2009) has created a matrix (see Figure 5), which provides an overview of the range of change situations organizations faces, and approaches that are best suited for the situation. Quadrant 1 and 2 are situations, which requires the organization to make large-scale and organization-wide changes to their culture or structure. Quadrant 3 and 4 signifies situations of minor scale, where local adjustments to attitudes and behaviors or tasks and procedures of individuals and groups, have to be made.

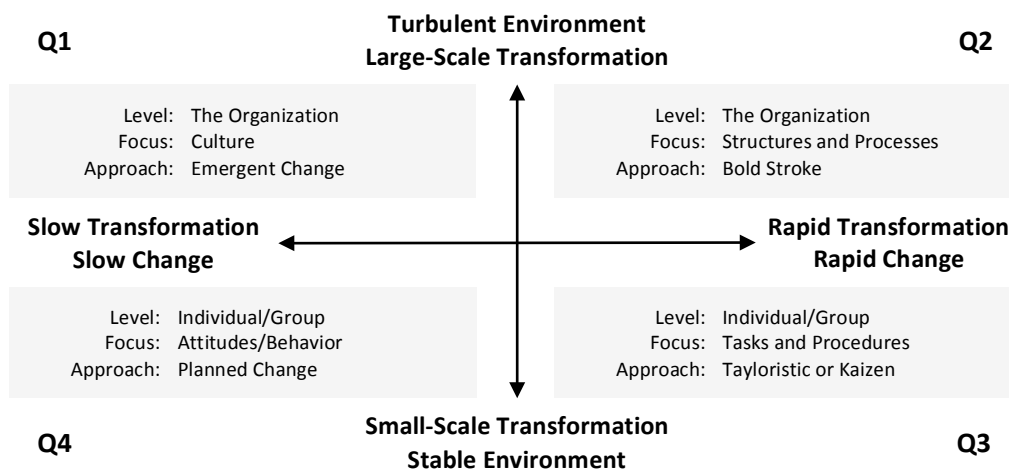


Figure 5: Burnes change matrix (Burnes, 2009)

While Burnes (2009) provides two criteria, pace of the change and scale of the change, which can assist in narrowing down the process of selecting a methodology for change to modify, additional criteria are needed. The purpose of a change management methodology during a WMS implementation is ultimately to make sure that the desired performance levels is reached in the fastest possible way after the implementation and kept at that level or above. Which means that those who am working with the system on a daily basis, i.e. the super users and the end users are those who have to change their behavior. Therefore from Consafe Logistics' perspective the model was desired to be a hands-on, easy to use and straightforward. Which also have to be taken into consideration when choosing a suitable model. Lastly, according to Todnem By (2005), many of the models are lacking empirical evidence and therefore the final criterion is that it should have a strong empirical foundation. Hence, the chosen criteria were:

- Scale of the change
- Speed (pace) of the change
- "Hands-on" and easy to us
- Strong empirical support

7.3 Evaluation of the selected models

The vertical axis in Figure 5 represents whether the change is organization wide or small-scale. Even though a WMS implementation is limited to the warehouse, you can argue that it can be both a small-scale and a big-scale change. An argument for a big-scale change is the amplitude of the change the new WMS will bring on the warehouse and its workers. For organizations as Mathem, where warehousing is the company's core business, implementing a WMS affects the entire organizations. While implementation projects, such as the one at Stena Line, may not affect the organization to the same extent even if it is basically the same change. The authors

made the decision to view WMS implementations more as a small-scale change due to the WMS implementation is done in fairly controlled environment and will often not target the entire organization. Hence, most WMS implementations can be argued to belong at the bottom half of the matrix in Figure 5.

The speed of a WMS implementation could also be both short and long depending on the client, as well as to what you compare the timeframe with. Comparing it to an ERP implementation, which has a general length of three years or more, a WMS implementation can be considered short. However, depending on the client this could be everything from three months to one year. With this in mind, it can be hard to decide whether the WMS implementation should be classified as a rapid or slow change as Burnes (2009) does not provide any clear guidelines where the line is drawn. Burnes (2009) explains that the aim of the situations in Q3 is often to improve performance of the area involved, often through technical changes, which could fit the description of a WMS implementation rather nicely. However, by looking on the approaches in quadrant 3, Burnes (2009) suggests e.g. a Kaizen approach, which means striving for continuous improvement, and not radically changing the processes. Thus, an argument for that the WMS implementation does not really fit in quadrant 3. According to Burnes (2009), quadrant 4 covers relatively small-scale initiatives where the main goal is performance improvement through attitudinal and behavioral change. The focus on behavior and attitudinal changes makes the process rather slow comparing to Q3. Which would fit the WMS implementation context, which requires the end users (and super users) to change their way of working.

Even if it is hard to exactly tell which of the two bottom quadrants fits the WMS implementation best. The common denominator, for quadrant 3 and 4, is that the change situation usually targets the group or individuals and the author would argue that quadrant 4 is more fitting, thus a planned change approach is preferable. Planned change is change that is consciously initiated by the organization, i.e. it is not unintended nor come by accident (Burnes 2009). It means that an organization recognizes an area where a change is required and starts a process to evaluate and, if necessary, bring about change (Burnes 2009).

Kotter (1996) believes that change must be a slow process and his model is more suitable for situations equivalent to Quadrant 1 (Burnes, 2009). Luecke's model is quite similar to Kotter's when compared (Todnem By, 2005; Cheung, 2010). It is therefore arguably more suited for situations in the top half of the matrix as well (Figure 5). The ADKAR model is targeting the individual/groups instead of the organization. The ADKAR model represents a desired state every individual should reach in order embrace the change, which makes it a very goal-oriented model for change management (Adhikari, 2010). As it is targeting the individual it might be better suited for change situations in the bottom half of the matrix (Figure 5), which the authors see as representative for WMS implementations. All models are based on empirical evidence, where Kotter's model is based on dozens of change initiatives over 15 years prior to the publishing, and Luecke's is more of a compilation of other

author's work, while Hiatt's method claims to be based on data from 3400 best practices in change management. When evaluating the criterion set by CL that it should be hands-on, easy to use and straightforward, the authors can conclude that both Luecke's and Hiatt's model are superior to Kotter's, offering more detailed descriptions and hints.

When combining the criteria, the speed and the scope of the change, it points to individual/group focus level, i.e. in favor of the ADKAR model. When it comes to easy to use and hands on, it points in favor of the ADKAR model and Luecke's '7 steps'. Looking at the empirical data, it is hard to say anything due to that all models are based on empirical evidence to some extent. However the authors would argue in benefit for the ADKAR model due to the fact it have already shown its usefulness in several WMS implementations at Arla. In the end it is hard to say which model is more suitable than the other, but as many of the criteria points towards the ADKARS model it is therefore chosen.

More information of Kotter's and Luecke's models, and which steps they include, are enclosed in 11Appendix C - 11Appendix D - .

7.4 Comparing the challenges with the ADKAR model

In order to analyze what impact a change management methodology could have on the challenges addressed earlier (6.2 - A generalization of the challenges), a fit analysis of the ADKAR model was performed to evaluate the models usefulness. ADKAR is an acronym for the five steps used in the methodology and stands for: awareness, desire, knowledge, ability and reinforcement. What the model includes more specifically will be described in depth in the next chapter (8.2 The ADKAR model). Lastly, the challenges the model did not cover are handled in the subsequent section.

7.4.1 The challenges covered by the model

This section will take the perceived general challenges and compare them with the ADKAR model to see if the identified challenges are covered in the different phases of the model, see Table 3. This will consequently lead to that potential gaps in the ADKAR model are identified and can be addressed.

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Table 3: ADKAR fit analysis

Challenge description	Covered	In phase
Make management to show support for the project.	✓	Awareness Desire
Get everyone to welcome and adapt the new working processes.	✓	ADKAR
Involve all involved groups in the change and make them pro-change. History (e.g. routines and habits) causes people to be more reluctance to change.	✓	Desire
Make sure the client project group consists of people with the right capabilities and attitude.	✗	✗
Clarify the roles and what is expected from them.	✓	Knowledge
Assign enough resources for education and testing of the system.	✓	Knowledge
Make sure education is done properly (for the new processes, the WMS itself, and how to make the tests).	✓	Knowledge
Provide guidance regarding test, education and communication.	✓	Knowledge Ability
Establish a well functioning and structured two-way communication channel between all groups.	✓	Awareness
Technical issues in association with go-live is demoralizing.	✗	✗

7.4.2 Remaining challenges not covered by the model

As shown in Table 3, the ADKAR model covers most challenges. The parts that the ADKAR model do not cover is; making sure the client project group consists of people with the right capabilities and attitude and technical issues in association with go-live. The challenge of making sure the client project group consists of people with the right capabilities and attitude is considered to be within the scope of managing change when implementing a new WMS and is therefore included, thus, adds on to what theories need to be investigated further. However, technical issues in association with the go-live phase is considered out of the scope of change management and that challenge will therefore not be addressed further. The next step is to go through the theory behind ADKAR and theory that covers the identified gaps.

8 Theory of organizing a change process and the ADKAR model

This chapter will first go through how a change could be organized to cover the missing parts from the fit analysis in the previous chapter. It is followed by a profound presentation of the ADKAR model and its components.

8.1 Organizing the change process

According to Burnes (2009), change always have to be managed, and irrespective of what school of change management you believe in; an individual or group must be responsible for ensuring that the change takes place. What else is important is clarifying commitments, accountability, choosing the team leader and working out the project team's composition (Sirkin et al., 2005).

In a change process there is often a need to define roles on who does what (Cameron & Green, 2012). O'Neill (2007) points out four key roles within a change effort; *target, sponsor, advocate and change agent*.

- **The targets** are those who actually implement the change, they report to the sponsors, and should give feedback on how the change progresses (O'Neill, 2007).
- **The sponsors** are those who control the necessary resources and have the authority to make decisions about the change. Sponsors are the ones that supports and encourages the change in their affected area. Every sponsor needs to be a target before turning into a sponsor of his or her own. To be a sponsor he/she needs to be committed and know what is expected of this change. (O'Neill, 2007)
- **The advocate** is someone who has an idea how the change can happen and who is really motivated to make the change happen, but needs a sponsor to implement it (Cameron & Green, 2012; O'Neill, 2007).
- **The change agent's** main responsible is to facilitate the change process through aligning the sponsors and targets (O'Neill, 2007). The change agent often has no direct authority over the implementer's. He/she is also considered to have ownership of the change process (Paton & McCalman, 2008). The change agent could also have a number of other roles: data gatherer, educator, adviser, meeting facilitator, or coach.

An individual can play several roles but it is important that they stick to the boundaries of the role they are in at one time (O'Neill, 2007). For example, a change agent can often over do his responsibilities by filling in gaps left by the sponsor, which will create a pseudo-sponsoring that is ineffective.

If identification and ownership of the change is done early, it is often considered less threatening and viewed more opportunistic (Paton & McCalman, 2008). Furthermore, according to Paton & McCalman (2008) there are two ways of becoming the problem owner. Either through being the one who discovers the need for a change and thus becoming the initial problem owner, or being delegated the role by some senior manager. In order to make the delegation effective it must include an education program and a marketing exercise specifically designed to pass over the ownership, responsibility and capability for the specific task (Paton & McCalman, 2008). The same authors believe that the original change initiator should always own the change process, despite their position in the hierarchy. If the initiator however lacks the necessary skills, authority or resources to manage the change process they should not be excluded from the process, as they could be useful as change advocates.

8.2 The ADKAR model

The author Jeffrey M. Hiatt, who is also the founder of the Change Management Learning Center as well as president for the company Prosci, introduced the ADKAR Model in 1999 (Hiatt, 2006). The ADKAR model has been continuously improved ever since, and the latest update was published in 2006 with empirical data from 3400 best practices researched by Prosci (Prosci, 2014b). Prosci is as a US research-based company that conducts studies to determine which important factors to take into consideration when undergoing a change. Their research claims to being used by over three quarters of the fortune 100 companies (Prosci, 2014a). The latest research from Prosci included 822 companies' worldwide (115 companies from Europe) and it presents the seven greatest contributors to successful change:

1. Active and visible executive sponsorship
2. Structured change management approach
3. Dedicated change management resources and funding
4. Frequent and open communication about the change and the need for change
5. Employee engagement and participation
6. Engagement and integration with project management
7. Engagement with and support from middle management

The ADKAR model is a structured outcome-oriented approach to facilitate individual change. In Table 4, an overview of its elements is presented. To ensure the likelihood of success, the five elements need to be completed in a sequential order, and no step can be skipped.

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Table 4: An overview of the elements in the ADKAR model

Steps	Elements	Description
A - Step 1	Awareness	The awareness <i>step</i> represents an individual's understanding of the nature of the change; why the change is being made, the risk of not changing and "what is it in for me".
D - Step 2	Desire	The desire <i>step</i> represents an individual's willingness to support and participate in the change.
K - Step 3	Knowledge	The knowledge <i>step</i> represents the information, training and education necessary to understand how to change.
A - Step 4	Ability	The ability <i>step</i> represents the realization of the change, e.g. turning knowledge into action.
R - Step 5	Reinforcement	The reinforcement <i>step</i> represents internal and external factors that sustain the change.

The intended life cycle for the ADKAR model begins after a change has been identified, hence, the change is a fact. The model is a structured process to handle the change for each one of the affected people. All theory presented in chapter 8.3 - 8.7 is taken from Hiatt (2006).

8.3 1st step – Create awareness of the need for change

The first step is to make sure all involved people are aware and understands why the change is needed. People need to know why, and to understand the nature of the change is exceedingly important when managing change. The following components need to be addressed when building awareness of the need to change:

- The nature of the change and how the change aligns with the vision of the company
- Why there is a need for change and consequently the risk associated with not complying with the change
- The impact the change will bring on the company
- The impact the change will bring on the individual
- When in time this change needs to take place

These components can take the form of a message. The purpose of an awareness message is to spread understanding and awareness about the change, and is considered the foundation of the awareness campaign. This message should be thoroughly discussed in order to create a common understanding between the project group and the sponsors before it is communicated. How this communication

is perceived is due to factors influencing how people recognize the need for change. These five factors are:

- **A person's view of the current state** – Describes individuals who favor the current state, and may have invested time, energy and money to reach the current state. Therefore they may deny, or undermine the reasons for the change and are likely to work for maintaining status quo.
- **How a person perceives problems** – Relates to how individuals approach problems and how they internalize and evaluates the reasons for change. Some already see the need for change, while others may be caught of guard.
- **Credibility of the sender of awareness messages** – Describes how the individual embodies the information based on level of trust and respect of the messenger. Messages about why and how this change aligns with the business strategy should be communicated from the top of the organization. While messages as how the change will affect the everyday work are more expected to come from the closest supervisor. If the organization has a history of false alarms or failed change projects, individuals tend to not take the new information seriously even if there is a real threat.
- **Circulation of misinformation or rumors** – Relates to the absence of information, or presence of incorrect information. Rumors can with ease cloud facts regarding the change and therefore create barriers to build awareness. E.g. as a result, an employee can have a hard time navigating through what is correct information and what is distorted information.
- **Contestability of the reasons for change** – Details how the individual perceive the reason for change. External and observable drivers for change are easier arguments for convincing the employee, while internal or debatable reasons tend to be more challenged.

8.3.1 How to build awareness

An awareness message is a good starting point for building awareness. It is spread mainly through three key activities: communication, sponsorship and coaching.

Effective communications – The achievement of awareness is not based on the message sent, it is rather how the message is received and understood by the employee. Therefore, to truly know when people have understood the message, there have to be an established two-way communication channel. So the employees can communicate their feedback and questions regarding the change. As mentioned before, people perceive problems differently. Hence, when it comes to effective communication, multiple communication channels are more effective.

To ease the communication, a communication plan should be made. The following steps could be used to create one.

1. Identify and segment the audience into target groups
2. Determine the message for each of the target groups. Keep in mind that the message needs to be meaningful for the target group, and designed with them in mind. E.g. one size does not fit all.
3. Develop the most effective packaging, timing and channels for the communication. Keep in mind when in time the message is sent. For example, is there time for the target group to internalize and truly understand the message? Also, think of using communication channels that has proved effective in the past.
4. Identify the preferred sender for each message and target group. Broader picture such as “why” the change should be communicated from top management. While messages such as impact on the everyday work should come from the nearest supervisor.

Regarding how many times these messages should be communicated; a rule of thumb is with a factor seven. And there is not something called over communicating. By asking the receivers how they perceived the message, the message can be improved as well as the sender gets an indication whether it has been apprehended.

Examples of communication channels could be: face-to-face meetings, group meetings, newsletters, Intranet, presentations, training, workshops, posters & banners, bulletins, events, flyers & circulars, displays, demonstration etc.

Executive sponsorship – The executive sponsorship needs to be active and visible, and is the most important contribution for a successful change. The executives need to share the nature of the change, and how it aligns with the company’s vision. They are also responsible for creating an understanding of why, as the employees want to hear the reasons why to change, and risk associated not doing so from the one with the broadest perspective and deepest understanding. Also, they are the ones deciding the priority of the change and the urgency should match the priority of the change. It also requires the executive sponsorship to be engaged, and participate actively and visibly through the entire change process. For example, building sponsorship coalitions with peers and managers and communicate directly with the employees.

Coaching by managers and supervisors – Managers and supervisors are engaged at all levels with the employees and are responsible for reinforcing the message sent from the executive sponsorship. A supervisor is in the best situation to translate the why in meaningful terms for each individual, and makes sure the employee know how the change will impact him or her personally. The project team and the one responsible for the change needs to make sure managers and supervisors communicate the right message, and that they are aligned with each other in order to successfully support the change.

Readily access to business information – Many companies underestimate the role of readily access information. This information helps building awareness on an ongoing basis and can be used to support the ongoing change as well as future ones. Instead of the employees being surprised of the change, they can anticipate the change from the readily access information.

When the awareness stage is reached, i.e. the employee understands why and what impact the change will bring, the next step is to create a desire for the change.

8.4 2nd step – Create desire to support and participate in the change

The second step is to create a desire to support and a willingness to participate in the change. In contrast to the previous step, building awareness and creating a desire is more elusive and is at its very essence up to each individual, thus by definition hard to control for a manager. A common mistake made by business managers is the assumption that building awareness automatically creates a desire, but having an understanding for the change does not mean you desire to change. As a principle, the focus should be on creating desire, and not managing resistance. Management that handles resistance tends quickly to lead to reactive actions. Therefore, to create desire, proactive actions are needed. The objective is to create energy and engagement about the change, and not to drag along the minority resistance. There are four factors that will influence the success of the desire to change, and these are:

- **Nature of the change and the impact on each person** – Often describes the expression “What’s in it for me?”. Employees will determine if the change will pose a threat or an opportunity. Perceived inequities between groups when the change is deployed can also result in a failure of creating a desire.
- **Organizational or environmental context for the change** – Relates to how an individual or group interprets the environment subjected to the change. Company culture and history plays a key role, as well as other undertaken change programs competing for time and priority.
- **Each person’s individual situation** – Relates to each personal context; e.g. family situation, mobility, age, career goals, education, and relationships. An individual’s personal situation plays a key role in their decision-making process, and thereby can decisions sometimes seem to be illogical, however could make perfect senses knowing the reason behind.
- **Intrinsic motivation** – Describes how motivated the individual is to undertake the change including the expectation on the employee to be successful and realize the change.

8.4.1 How to create desire

To desire the wanted change is up to each individual. However, there are five main activities to influence the desire.

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Effectively sponsor the change with employees – This part is similar to how to build awareness. The executive sponsor needs to be engaged, and participate actively and visibly through the entire change process, e.g. showing personal commitment and devotion to the change. They need to build sponsorship coalitions with peers and managers through the organization to make sure the middle managers and key personnel are pro change. An effective way of communicating with employees and managers is often through a conversation as it is a good way to make people feel involved and where they can speak their minds freely. They also need to communicate and establish specific goals or objective that define success. For example show roadmaps that outlines how to make this change a reality.

Equip managers and supervisors to be change leaders – As employees turn to the nearest supervisor for direction, they are the key to create desire for the change. They need to conduct effective communications regarding the change at both an individual and a group level. They must also manage persistent resistance and demonstrate commitment to the change through their behavior.

When looking into managing resistance to change, the five most common reasons for resistance among employees and managers are shown in Table 5.

Table 5: The top 5 reasons for resisting the change (Prosci, 2005)

	For employees	For managers
1	The employee was not aware of the underlying need for change	Loss of power, responsibilities or resources
2	Layoffs were announced or feared due to the change	Overload with current responsibilities and workload
3	The need for new skills they currently lacked	Lacked awareness of the need for change
4	Maintaining the status quo	Lacked skills to manage the change
5	Perceived a need to do more with less, or more with the same pay	Were anxious or unsure about the change

By identifying where in ADKAR the barrier point is for the individual, reduction measures can be used in the right area. If the barrier point is desire, the following techniques can be used.

- **Listen and understand objections** – A first step is to start listening to the employees. To understand the objection is critical, and often the resistance is not about the change, but rather how the change will impact them on a personal level.
- **Remove obstacles** – Are objects that may relate to e.g. family issues, personal issue, physical limitation, money. Once the obstacles are clearly

identified then the manager can determine how the company can support and remove the barrier.

- **Make a personal appeal** – managers can, by leveraging their relationship, communicate that the change is important, that they believe in the change and would like the employees to support it as well.
- **Negotiation** – is just what it sounds like and is common in mergers and acquisitions.
- **Choices and consequences** – By providing clear choices and consequences of making the change or not, managers can put the ownership back in the hands of the employee.
- **Employee accountability** – The manager could hold the employee accountable for their performance related to the change.
- **Converting** – A prominent dissenter could be the strongest advocate for the change. By converting these advocates, they could become the critical point in conversations and remove barriers for the rest of the group.

Readiness assessments – Readiness assessments does not only help with identifying potential problems, assessing risks, anticipating resistance and finding out how to deal with them. The major contribution is that it helps to gain an understanding of the current situation, and the magnitude of the task to handle the change. By using a change assessment and an organizational readiness assessment possible problem areas and unique challenges can be identified.

Change assessment evaluates the nature of the change from a group perspective. This assessment should include the following components:

- How big the scope of the change is (e.g. affected workgroups, departments etc.)
- Number of impacted people in these groups
- If there is variation in the experience of the change within the groups
- If the change is complex or simple
- To what degree the process, technology and job role changes
- To what degree the organization needs restructuring and change in staffing levels
- If there is an impact on employee compensation
- Time frame of the change
- The alignment of the change with the business strategy

Organizational readiness assessment evaluates the overall readiness for the organization. This assessment should include the following components:

- The Impact from past changes

- The change capacity available (are there simultaneously changes being prioritized and thus taking energy)
- Success of past changes regarding how the project was managed
- Has the organization an unified shared vision and direction
- The availability of resources and funding
- Organization's culture and responsiveness to change
- Organizational reinforcement (is there encouragement for the changes)

Engage employees in the change process – To engage employees and create ownership for them in the change process is the far most effective method to build a desire for change. This could be done through letting the employee participate in designing, testing, developing and/or implementing the final solution. For some changes it is more effective to simply communicate what needs to be changed, and not how to change. Therefore let the employees themselves figure out how to change.

Align incentive programs – How people are measured and rewarded influence their behavior strongly. Therefore, potential programs needs to be aligned and supportive with the change.

When being aware, and have the desire to change the next step is to develop knowledge about how to implement the change.

8.5 3rd step – Develop knowledge of how to change

The third step of the ADKAR model is about developing knowledge of how to change. Unlike the previous step, creating a desire to change, this step is easier to manage due to its nature. The knowledge element consist of three major components:

- Training and education on the skills and behaviors needed to change
- Information on how to use new processes, systems and tools
- Gain an understanding of the new roles and associated responsibilities

In many cases the needed knowledge to implement the change is quite clear. When implementing a new IT-system (e.g. ERP) there are mainly three parts that needs to be covered; how to operate and maintain the system, how to work with the new processes and finally gain knowledge about the new roles associated with the change. There are four factors that will influence the success of achieving the required knowledge for realizing the change, and these are:

- **Current knowledge base of an individual** – Relates to the potential knowledge gap of an individual. Sometimes the individual already have the required knowledge, other times this gap will make it harder for the individual to succeed with the change.

- **Capability of this person to gain additional knowledge** – Describes a person's capacity to acquire knowledge in order to fill the potential gap. Each individual has a unique learning capability, and learns best through different kinds of mediums.
- **Resources available for education and training** – Relates to what extent an organization can provide structure and support for education and training.
- **Access to or existence of the required knowledge** – Relates to learning barriers hindering the change. Some knowledge can be hard to access or may not exist due to geographical location, technical knowledge, laws, infrastructure etc.

8.5.1 How to develop knowledge

For a change to be successful, the required knowledge needs to be in place. However, project teams and change leaders are often neither skilled trainers nor educators. Anyhow, there are mainly four activates for how to develop the necessary knowledge.

Effective training and education programs – Training programs is the primary activity to develop knowledge. When designing training programs in business settings, focus should be on hands-on activities and demonstrations rather than lecture time and reading. This due to adults only remembers a fraction of what they read, slightly more what they hear, roughly half of what is demonstrated while they learn most from hands-on training.

When determining the knowledge gap, a good starting point is to write a new role description. The new role description needs to be detailed so it is possible to compare it with the current knowledge level. And the timing of the training should be as close to the implementation as possible due to the retention of the knowledge will decrease as time passes.

Job aids – Job aids (e.g. checklists and other templates) make it easier for an employee to work with complex processes that can be hard to remember.

One-on-one coaching – People vary in of how easy they can attain knowledge, therefore, one-on-one coaching offers a customized education that can meet the need of the receiver. Sometimes the learning barrier is not related to the content and one-on-one coaching is more likely to spot these kinds of challenges. The coach in turn needs to have in-depth training or previous experience with the change in order to teach in a successful way.

User groups and forums – Is a channel for the employees to share experience and teach each other. When implementing new systems the concept of super users is employees who have mastered the implementation of the system and can teach others. Typically the super users have a forum of their own to share knowledge and experiences.

When the individual has awareness, desire and knowledge of the change, the next step is fostering ability to implement the change.

8.6 4th step – Foster ability to implement the change

The fourth step in the ADKAR model is about fostering ability to implement the change with required skills and behaviors to reach the intended performance level. Business managers often make the assumption that knowledge automatically leads to ability. However, this is not always the case, as Artman and Jonsson (2014) expresses “Even if you just received your first basket ball lesson from Michal Jordan, you probably know how to make a slam dunk, but you may still be/or jump too short to actually perform it.” The same applies for the employee, who may have the knowledge about the new processes but could still have a hard time reaching the required performance levels. And if the employee is not aware that the change is needed the training will loose its desired effects. There are five factors to take into consideration that influence the success of reaching the necessary ability for change, and these are:

- **Psychological blocks** – Details the psychological barriers to proceed with the change. The individual may have a fear of not being able to develop the new skills and behavior that will be required of them.
- **Physical abilities** – Describes physical limitations, i.e. how fast and well someone can perform the given tasks. Sometimes this change can be outside an individual’s capability. For example heavy lifting or pounding fast enough on a keyboard.
- **Intellectual capability** – Relates to an individual’s intellectual capacity. The change may require new ways of thinking, understanding or approaching the work. Even though the employee can handle the new task, the timeframe allowed for the work can be too narrow.
- **Time available to develop the needed skills** – Relates to the timeframe available to develop the necessary skillset related to the change. Even if an individual has the potential to develop the necessary skills, the timeframe does not allow it. Often in business situations the timeframe available is driven by external factors, which managers and supervisors cannot influence.
- **Availability of resources** - Describes the support and structure available for the development of new abilities. Resources could include: e.g. financial support, tools and materials, coaching, mentors, experts and training facilities. The presence of a support structure will enhance the process of acquiring the abilities needed for the change.

8.6.1 How to foster ability

Some of the employees will have the ability for the change straight away, while others need more time. There are mainly four ways to facilitate the process of fostering ability.

Day-to-day involvement of supervisors – The involvement of supervisors (or super users in a system case) is needed to develop the necessary abilities. Developing these abilities takes time and they need to have knowledge to demonstrate and make corrections, e.g. provide one-on-one coaching. Providing a safe environment that allows the employee to practice, without any consequences of making an error, can also be useful. Also, making sure that there are feedback channels in order to identify gaps in the processes, or the tools, are important.

Access to subject matter experts – Many employees do not learn until the task is in front of them. It is therefore important to have established access channels to subject matter experts (e.g. super users) who can assist them in when they need help.

Performance monitoring – Monitoring and measuring the performance during and after the change is implemented allows the employees and managers to know what things are going well and what needs to be improved. Absence of performance monitoring may lead to that you never know if the employees develop the needed ability to reach the intended performance levels.

Hands-on exercise during training – Role-plays, simulations and hands-on work with the new processes in a controlled environment will foster the employee's ability.

When the awareness, desire, knowledge and ability to change are reached, the change is by definition done, the employees have the ability to work in the new way. However, the last step reinforcement is to make sure the change is sustainable.

8.7 5th step - Reinforce the change

The fifth and final step of the ADKAR model is reinforcement. This step is not as the previous steps, which focus on enabling the change. This reinforcement step is about any action or event to strengthen and reinforce the change for the individual as well as for the organization, i.e. to make the change sustainable. This could be anything from a simple appreciation such as "thank you", to public recognition, award or group celebration. If the change is not reinforced, it could result in that the employee or group reverts back to the old way of working. Old habits and norms could return, making the change effort a failure, i.e. building a negative history regarding change. When successfully reinforcing the change there are mainly four factors influencing the outcome, and these are:

- **Meaningful reinforcements** – Describes which degree the reinforcement is meaningful and specific to the person impacted by the change. In general, recognition and acknowledgement from someone the receiver respects reinforces the change.

- **Association of the reinforcement with accomplishment** – Relates to identifying opportunities to celebrate both small and big steps in order to reinforce the change. The moments of celebration could be the turning point in challenging times. However, it could also backfire if the celebrations are made without any accomplishments. Individuals are often well aware of the accomplishments, and recognition simply lets them know that the change is still important.
- **The absence of negative consequences** - Relates to when negative consequences for demonstrating the desired behavior occur. This can be shown through peer pressure from colleagues who oppose the change.
- **Accountability system** – Describes an ongoing mechanism to reinforce the change. This could be tied to the performance of the workforce, and that they follow the intended procedures.

8.7.1 How to reinforce the change

With an effective reinforcement it is possible to withstand momentum and anchor the change in the organization. There are mainly five activities that can be used to reinforce the change.

Celebrations and recognition – Is something that is identified by supervisors and managers and the biggest mistake is simply to forget this step. This involves short-term success, e.g. quick wins during the change process, and will create a momentum if celebrated and recognized properly. This also refers to small events, celebrating milestones.

When it comes to recognition of employees, they can come in form of a directly “thank you”, public recognition and/or group recognition. But be aware of that giving recognitions can easily backfire if someone is missed or feel misjudged. The aim of the recognition is to make the employees who worked hard feel genuine appreciated for their efforts.

Rewards – Just as to build desire, rewards can be used to reinforce the change. E.g. if the employee does as expected from the new change they get a bonus. Thus, using incentive systems to make sure the work performed is in alignment with the change.

Feedback from employees – Is to make sure the change carries through as expected. A pitfall many project teams does is never asking the employee about the change after the initial implementation. Through this feedback an understanding of what is holding back the change can be developed.

Audits and performance measurement systems – Is a tool to determine the adoption rate of the change. These audits should not be seen as a negative activity on the part of the project team. It should focus on finding the root cause for the low adoption rates and lead to implementations of corrective actions.

Accountability systems – Creating accountability is a way of making sure managers in the business takes responsibility for the change. The responsibility needs to be transferred from the project team back to the business.

When the intended levels of awareness, desire, knowledge, ability and reinforcement is reached the change will ultimate turn into the regularly working ways with the intended performance levels.

9 ADKAR modification and adaption to fit WMS context

This chapter answers the last research question - how can the chosen change management model be modified to fit WMS implementations. And hence, fulfills the purpose of this master thesis; to develop a change management methodology for efficient, high quality, WMS implementations.

9.1 An outline over the modification and adaptation

The first step (see Figure 6) is to define the roles and clarify their associated responsibilities during the implementation. The second step displays what activities that needs to be carried out before and during each of the ADKAR phases. The third and final step is to map the implementation process against ADKAR the model. An overview of the methodology is presented in Figure 6.

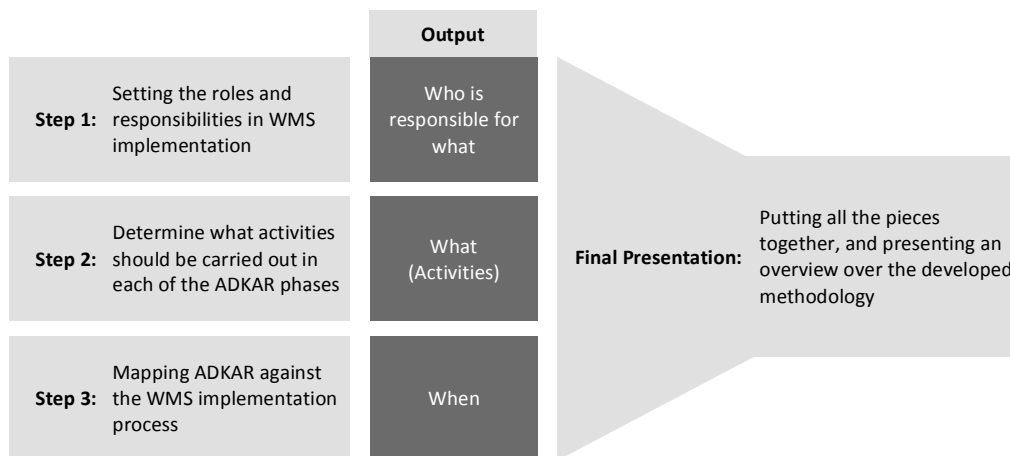


Figure 6: An outline of the modification and adaption to the developed methodology

9.2 Setting roles and responsibilities in a WMS implementation

The first step is to sort out which roles, during a WMS implementation, corresponds to the roles needed in a change management process. Thus, clarifying their responsibility from a change perspective. From the previous chapter, theory claims a need for all roles in a change process to be clear and well defined. Someone needs to have ownership of the change process, i.e. have to be the change agent. Other roles, such as sponsors, target group and advocate, who also have an impact on the outcome of the project, must also be filled.

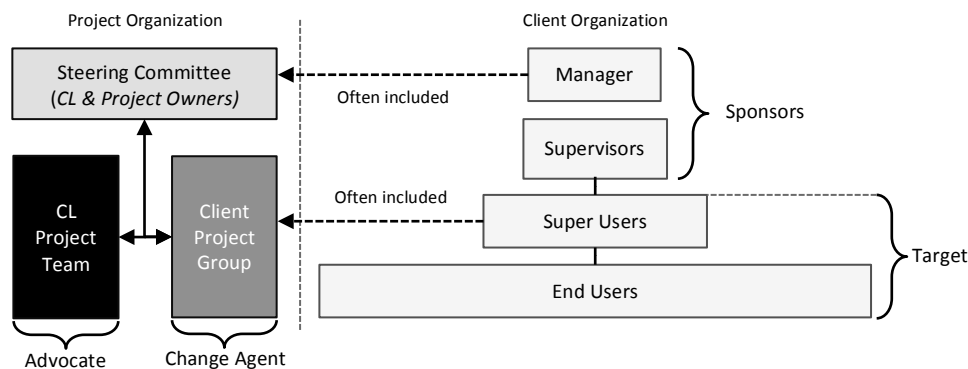


Figure 7: Change roles in a WMS context

The roles in a WMS implementation and the equivalent change roles are presented in Figure 7. The target group is referred to as the ones that need to change, i.e. the super user and end users. The client project group corresponds to the change agent, as they are the ones facilitating the change. The managers are the sponsors of the project as they are the ones in charge. Depending on the size and organizational structure, there could be supervisors, and they also correspond to the role as sponsors. Lastly, the WMS provider is the advocate of the project. As theory stresses the importance to have clear distinct roles and associated responsibilities, consequently, the next step is to sort up who is responsible for what.

9.2.1 WMS provider (Advocate)

As O’Niell (2007, p. 92) says “An advocate develops an idea about how a change can happen but needs a sponsor for her idea to be implemented”. In addition to the WMS provider’s traditional task of transferring their systems expertise to the super user, the WMS provider should also point out the need to manage change (depending on the client). When they point out the need for managing change in conjunction with the WMS implementation, they become the initial problem owner. However, the WMS provider has neither authority nor control over the projects resources. Therefore they will need to delegate the responsibility, i.e. the ownership of the change process or become a part of the client’s project group as a consultant. However, according to theory, delegating the ownership does not come without complication, and it has to be managed properly. It should include an education program and a marketing exercise specifically designed to pass over the ownership, responsibility and capability for the specific task. The WMS provider should therefore, as advocates, act as support and advice the change agent of how tasks can be performed and/or how to act as change leaders for the process. It is therefore also important that the WMS provider’s project manager understand what change a new WMS entails and how the ADKAR process works. The role of the WMS provider should therefore include:

- Training of the super user
- Making the client conscious of the need to manage change

- Transfer the responsibility of the change process to the client
- Support the change agent in managing the change

9.2.2 The client project group (Change agent)

In the WMS context, the change agent refers to the entire client project group, as they are the ones who must facilitate the WMS implementation. Even though the entire project group can be seen as change agent, let us limit the change agent to be one person in the project group to ease the reasoning. Surely, certain tasks or responsibilities may be divided into other roles in the project group, yet it is important that all tasks have distinct ownership. The change agent is very dependent of the people in the organization, especially the managers, supervisors and the super user, in order to manage the change successfully. The role as change agent is about facilitating the change process, therefore, the role of the change agent must:

- Have ownership of the change
- Have ability to manage the change process

9.2.3 Managers and supervisors (Sponsors)

The managers and supervisors (and the steering committee) correspond to the role of the sponsor. They have the highest authority within the project and are responsible for allocating resources. Even if they may not be directly involved in the project organization, they are essential for the outcome of the implementation project. As described in chapter 8.4.1, they must become change leaders through displaying and coaching a pro change attitude. Often, they also need to be the messenger of the communication, dedicate resources, signify the projects importance, and deal with authority issues the project group cannot (e.g. resistance from the employee). Once the implementation process is finished it is also the sponsors' responsibility to make sure the changes are maintained. The role of the sponsors must therefore:

- Support and sponsor the project
- Signify the projects importance
- Be change leaders
- Reinforce the change

9.2.4 Super users (targets)

The target group refers to both the super user and the end user, as they are the ones who must change their work routines. The super user is often a part of the project group and could therefore, theoretically, also be change agents. According to theory, having two roles is not an obstacle as long as they are aware of it. The super users hold a key role during WMS implementations, as they are supposed to be the experts on the new system and teach the new system to the end users. As they will be the ones working close to the end users they also need to act as change leaders. The role of the super user should therefore:

- Be WMS experts
- Be experts on the new processes
- Educate/coach the end users
- Be change leaders

9.2.5 End users (Targets)

The other part of the target group is the end users. The end users must be able to work with the new system before go-live to make sure the plunge in performance level is minimized and the timeframe to reach the desired performance level is minimized. Thus, the end users must:

- Be able to work according to the new processes
- Have the required knowledge and ability to work with the WMS

9.3 Determining what activities must be carried out in each of the ADKAR phases

After the roles are set, the next step is to determine what activities must be engaged to guide the super users and end users through the ADKAR phases. The methodology is mainly deducted from the ADKAR model but inherits insights from other theories and findings from the interviews. It also includes a “safety check” in form of a feedback loop, i.e. a question to make sure the super users and end users have reached the desired goal before moving on to the next phase. Every phase also includes tasks that needs to have been completed prior the phase. The following abbreviations are used, to tell who is responsible, in the tables: WMS provider (WP), change agent (CA), managers (M), supervisor (S), super user (SU) and end user (EU). Also the references column in the following tables shows in what theory section the activity has been covered so it can easily be revisited. If an activity is not covered by the original ADKAR theory, it is considered an extension and is marked with a “+”symbol in the tables.

9.3.1 Activities and tasks to build awareness

To build awareness is to make sure everyone, affected by the change, agrees why the implementation is being made and understands the impact the WMS will bring on the organization and on the individual level. People need time to apprehend what consequences the new WMS will bring. Also, it is important to not assume that the super user and end user have understood the message sent. Feedback is the only way to determine how they have perceived the message. Activities to build awareness are presented in Table 6 together with who is responsible to execute them.

Managing Change in the Warehouse

Table 6: Activates to build awareness

Key Activities	Sub Activities	Who	Ref.
Execute communication plan	Spread the awareness message (why, risk with no compliance, alignment with vision)	M	8.3.2
	Spread the awareness message (impact on the organization, and each individual)	S	
	Launch marketing campaign	CA	
Execute sponsorship	Active and visible sponsorship throughout the WMS implementation until the change is indoctrinated in the organization	M, S, SU	
	Reinforce the awareness message to prevent misinterpretations and rumors	M, S	
Initiate coaching	Discussion and dialogue with the SU and EU regarding the WMS implementation	M, S	
	Reinforce the awareness message and prevent misinterpretations and rumors	M, S, SU	
Awareness check	Collect feedback, and ask the EU/SU why the implementation are being made, and how if they have understood the pending consequences	CA	+

To avoid going into an awareness campaign spreading unclear and faulty messages, there are some tasks that need to be performed in advance. These tasks are presented in Table 7.

Table 7: Tasks prior to start building awareness

Task	Clarification	Who	Ref.
Appoint roles and responsibilities	Ownership of the change	WP, M	+
Stakeholder analysis	Everyone affected by the implementation	CA	
Communication plan	What, who, how and when to communicate 'the key message'. Including enablement of a two-way communication as well as multiple communication channels (e.g. marketing campaign). Alignment of the "why" for the implementation with the project group and managers.	CA	8.3.2

9.3.2 Activities and tasks to create desire

To create desire is to make sure all of the people affected by the WMS implementation is motivated and have a desire to adapt to the changes it will bring. One of the roadblocks, to build awareness in WMS implementation, is that the end users often are cut out of the loop, and therefore it is important to involve them in the change process. Those who are able to influence the end users desire to the largest extent are supervisors, managers and super users. Therefore, it is important to equip them, in order for them to act as change leaders. Activities to create desire are presented in Table 8.

Table 8: Activities to create desire

Key Activities	Sub Activities	Who	Ref.
Engagement	Engage the target group in the change process	CA	8.4.2
Sponsorship	Active and visible sponsorship throughout the WMS implementation, and until the change indoctrinated in the organization	M, S, SU	
	Build a collation with peers and managers	M, S	
Resist management	Only if people do not desire to adapt to the forthcoming changes, use resistance management tactics.	M, S	
Desire Check	Ask the EU and the SU if they support and desire to adapt to the new WMS	CA	+

Before starting to create desire among the targets to adopt the new WMS, there are certain tasks that can be done in advance to facilitate the stage. These tasks are found in Table 9.

Table 9: Task to do prior creating desire

Task	Clarification	Who	Ref.
Readiness Assessment	Including change readiness assessment, organizational readiness assessment, enablement of being proactive about identifying potential problems, assessing risks, anticipating resistance, plan how to deal with such resistance, create an understanding of the current situation and the magnitude of the tasks to handle the change.	CA	8.4.2
Align incentives program	How people are measured and rewarded influence their behavior strongly. Therefore, potential incentive programs needs to be aligned and supportive with the change.	CA	
Train M, S, SU to be change leaders	Equip managers and supervisors to be change leaders. I.e. create a collision of pro-change key personnel using their status and peers to spread the desire and commitment for changing according to the new WMS.	CA	

9.3.3 Activities and tasks to develop knowledge

Developing knowledge is to secure that the super user and the end user have developed the required knowledge to work with their new responsibilities. One roadblock for developing knowledge during a WMS implementation is the super user himself. As he/she have a key role for making the WMS work properly, teaching the end user and making sure that end users are working accordingly to the new process.

Another roadblock is the education method. There is broad range of people working in a warehouse and therefore the education methodology exerted needs to fit both the end users and super users. Teaching and coaching one new end user may be fairly easy, and could be done in a few hours. But teaching and coaching all end user at the same time, during go-live, is much harder. Partly, due to that the super users are still uncertain of many things, and the system may have some technical bugs requiring the super user to work with technical issues instead of educating. Consequently, the change agent and super user might be overwhelmed during go-live if they are not prepared well enough. In Table 10, activities to develop knowledge are presented.

Table 10: Activities to develop knowledge

Key Activities	Sub Activities	Who	Ref.
Training	Training program EU	SU, CA	8.5.2
	Training program SU	WP	
	Forums for the SU to share knowledge	WP	
Knowledge Test	Perform tests to ensure the SU/EU have the required knowledge	WP, CA	+

To complete these activities, certain tasks need to be carried out prior the execution. These tasks are presented in Table 11.

Table 11: Tasks to do before developing knowledge

Task	Clarification	Who	Ref.
Specify and create role descriptions for the EU/SU	The new role description needs to be detailed so it is possible to compare with the current knowledge level of the users.	CA	8.5.2
Knowledge gap analysis	Consciousness about the amount of training needed for each group.	CA, WP	
Plan and design training	When, how and what have to be included in the training. Also, how to make it suitable for the SU/EU to reach the required knowledge levels. Includes visual process map to understand the new working process.	CA	
Create job aids	Readily access cheat sheets as a complement to the training	WP, SU	
Create cross-company SU forum (e.g. online)	Knowledge sharing cross-companies.	WP	+

9.3.4 Activities and tasks to foster ability

To foster ability is to make sure the super user and end user have the ability to cope with their new work responsibilities at the desired performance levels. The ability to work according to the new processes, for the end user, is perceived quite easy to achieve, as long as they have the required knowledge. There might be some instances of end user who will be struggling to learn the equipment and

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consequently will not reach the required performance levels in the desired pace. However, the roadblock for this phase is also the super user. The super user needs to have the ability to learn to work with and maintain the new system, be able to coach the end user, and also learn how to make test cases during the implementation. What is required of the super user can be deemed as rather demanding. In order to secure that the super user meets the required performance levels they need to get a proper education. They also need support throughout the implementation, from both the WMS provider and change agent, to manage this role. In Table 12, the activities to foster ability are presented.

Table 12: Activities to foster ability

Key Activities	Sub Activities	Who	Ref.
Training	One-to-one / small groups coaching how the SU should teach the EU	CA	8.6.2
	One-to-one / small groups coaching for the EU	SU	
	Hands-on exercises for the SU/EU in a non-stressful environment (not live)	CA	
Ability Test	Performance monitoring so the EU/SU works accordingly to the new work process, at the desired performance levels	WP, SU	

To be successful in fostering ability, certain tasks should be carried out prior, just like the other phases. But its close similarity to the previous step leads to that the tasks to perform prior is incorporated in Table 11: Tasks to do before developing knowledge.

9.3.5 Activities and tasks to reinforce the change

Reinforcing the change means to secure that the change is sustainable and incorporated into the organization. Even if the WMS implementation is managed successfully, it must be reinforced to insure the intended performance levels are kept at the desired level. Activities to reinforce the change are presented In Table 13.

Table 13: Activities to reinforce the change

Key Activities	Sub Activities	Who.	Ref.
Sponsorship	Hand-over of the change responsibility to the organization	CA	8.7.2
	Celebrate success and give rewards for the successful implementation	M, S	
Training	Follow-up training and further advanced training	WP, SU	
Audit, Feedback	Perform an audit of the work processes and performance level of the WMS; take corrective action if needed. Gather general feedback from SU and EU regarding the entire implementation project	CA	

As with the other phases, there are some activities that can be performed in advance and these are presented in Table 14 below.

Table 14: Tasks to do prior to reinforcing the change

Task	Clarification	Who	Ref.
Plan for celebration	Make preparations for large celebrations once important milestones are reached in order to reinforce the implementation.	CA	8.7.2
Reinforcement plan	In order to be able to measure that the desired performance levels of the WMS implementation is reached.	CA	
	Include accountability, to certain degree, in the new roles, i.e. for the SU and EU.	CA	
Hand-over plan	Plan and prepare for the hand-over of the responsibility to the supervisors (or manager)	CA	+

9.4 Mapping ADKAR against WMS implementation

This part will describe when in time, given the implementation process PROMISE, certain stages in the ADKAR model should be reached. This, due to the importance of that the methodology is aligned with the stages in the project process, in order to ensure that the targets are ready in time for go-live. Thus, four points are identified to map ADKAR against the WMS implementation (see Figure 8).

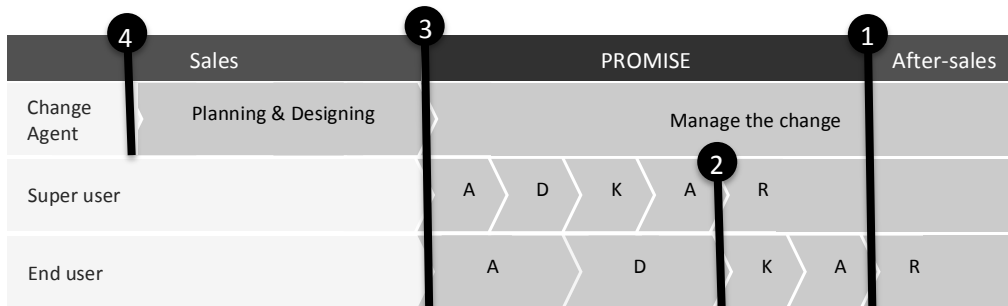


Figure 8: Points to map PROMISE against ADKAR

- Point 1.** Is based on that the end users need to have reached the ability stage (ability to work with their intended work tasks) in time for go-live. Thus when go-live the end users are able to handle the workload at acceptable performance levels.
- Point 2.** As the super user has the responsible to teach/coach the end user, the super user needs to have reached the second point. Hence to have the ability to educate the end users before the end users knowledge phase starts.
- Point 3.** The third point is prior the super users (as well as the end user) awareness phase, the change agent must have gained the ability to act their role and started planning the change process. Before the project team can start to spread awareness in the organization they should know how to do so. If the super user is a part of the project team they will consequently begin at the same point as the project team.
- Point 4.** The last and fourth point is when the client project group is appointed, and it is something that should happen during the sale stage, before starting the implementation of the WMS. This marks the starting point of the change process. These four points determine the constraint of when in time certain stages of the ADKAR model needs to have been reached. Also points 1 to 3 tie the change process to the implementation phase, PROMISE.

9.5 Final presentation of the methodology

In the Figure 9, you will find the final presentation of the developed WMS change management methodology. This methodology answers who does what, when during an implementation.

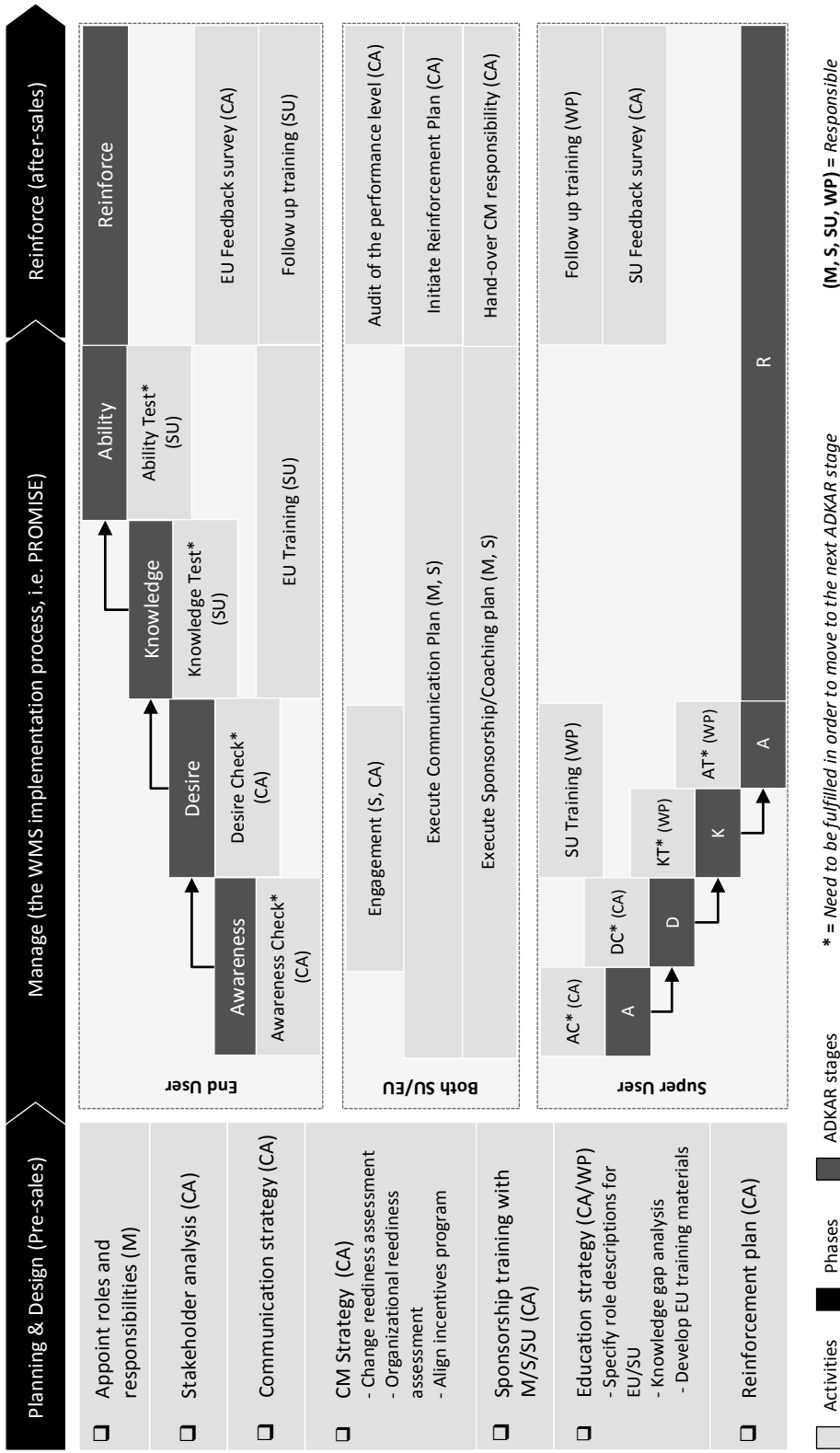


Figure 9: The developed WMS change methodology

10 Discussion and conclusions

This chapter will discuss the developed methodology, contribution to the change management research and highlight relevant areas that have been touched upon but have not been further examined. It also provides reasoning that could act as basis for further research.

10.1 Evaluation of the developed methodology

The authors believe this methodology could be useful for general WMS implementations. Looking back to the interviews, the authors first thought about presenting the different perspective case by case. But the challenges that emerged during the interviews were rather role specific, and not company specific. This could be an argument for an increased generalizability of the methodology. Thus, this general WMS change management methodology can be helpful to address these and similar challenges for other WMS implementations.

However, the choice to only pick one change management model and modify it to the situation can be questioned. Another possibility would have been to combine some models and then adjust it to the situation. But as the ADKAR fit analysis in chapter 7.2.1 shows, the model covered most of the identified challenges, and also the time constraint for this master thesis made it hard to include more models.

Furthermore, many models were identified (see 11Appendix B - Change management models) but only three models were ultimately compared in depth and there is a slight possibility that some extraordinary model could therefore have been missed. But it is the authors' opinion that a majority of the models consist of similar steps but with different labels.

Moving on to the developed methodology, it is hard to tell how intuitive the methodology, as it has not yet been tested. It is important to emphasize that the methodology provides guidelines and hints for easing the change process during WMS implementations, and is not a guarantee for success. Change management is ultimately about dealing with unique individuals and there are no bulletproof ways of predicting the outcome.

Much of the success with the developed methodology is attributed to who ultimately shoulders the role of the change agent. Therefore this methodology requires the change agent to have knowledge of change management and the ADKAR model. It is demanded by the change agent to have the ability to facilitate the change, and as one of the issues when implementing a WMS was to have the right people at the right place, this issue may still remain. However, to provide the client with a clear role description and requirements (including the change agent) may be sufficient to facilitate the issues regarding having the right people in the project group. What attributes and knowledge the involved people (e.g. change agent, sponsor and super user) should possess to cope with their roles is another area to be researched further.

As for the WMS providers' part in this methodology, they will need to have a supporting role for the change agent, and could arguably also be the ones managing the change, i.e. be the change agent. However, it is very important to point out that the external WMS provider cannot act as change leaders due to that they lack the authority and trust within the client organization, and they would then only become ineffective pseudo-sponsors.

Many of the steps in the methodology can be taken down another meta-level. There are a lot of guides and theories that more thoroughly addresses, for example, communication, education, coaching, marketing, leadership, project management. Due to limited time and resources this master thesis was forced to stop at the current level, but further research could lead to more insightful hints of how the different activities can be performed.

The next step is to actually try the methodology, and for the WMS provider to include it as a natural part in their project process. The only way to ensure having an efficient and high quality methodology is to take lessons from every additional implementation and constantly seek to improve the methodology. Thus, what goes for the "efficient and high quality" part in the change management methodology, the future will have to tell.

It is the authors' belief that this master thesis will contribute, to both Consafe Logistics as well as the academia, by shedding some light on WMS implementations in relation to change management. Also, it is the authors' opinion that this methodology will help ease the identified challenges found from all perspectives.

10.2 Contribution to the change management research

As mentioned earlier in chapter 3, many of the current change management theories are contradictory, confusing, lacks empirical evidence and/or are based on unchallenged hypotheses regarding the nature of contemporary organization change management. By linking the observations made in this master thesis to the different views mentioned in chapter 3, further clarity could be achieved.

Regarding resistance to change, it seems to be prevalent in WMS implementations. But the observations made in this thesis supports the fact that people do not resist change per se, or that some individuals would have a dispositional resistance toward change. They rather resist the consequences a new WMS might bring, or not knowing what those consequences are, or simply just reacting to poor management. A structured communication and activities that facilitates involvement in the implementation is believed to help ease issues related to this.

The developed methodology follows the traditional approach, which follows a linear series of steps that enables the manager to implement new working processes. It is in the author's belief that such an approach is best suited for the WMS context and that someone must have ownership of the process in order to make sure it actually happens. But one person alone cannot secure a successful change, he/she is dependent on many actors within the organization, especially super users and

change leaders. The interviews shows that many of the interviewees demands structure in the change process and that soft values such as training are often down prioritized in favor of getting the system in place. The appointment of a change agent and other roles in a WMS implementation, in combination with clear role descriptions is considered necessary to facilitate the change process.

There are many stakeholders in a change process, it is the author's opinion that ownership, structure, transparency and creating a unified picture of what is expected from everyone is the key to a successful change process in WMS implementations. What differ the developed methodology from many other models is that it explains who does what and when during a WMS implementation to facilitate the change process. Hence, the methodology is customized for the WMS context.

10.3 Other areas touched upon during this study

In this section the authors discusses other issues this master thesis has touched upon but has chosen to not investigate any further.

10.3.1 Do the involved people have the right competences?

During this master thesis the need for several competences emerged. These competences often tend to be deficient, both in the WMS provider and the client. For example, the WMS implementation contains several steps of education and the WMS providers must ask themselves if they are doing it in the best possible way. As teaching is not a core competence, they should therefore contemplate outsourcing this part to professionals or seek external help to create education programs, templates and other useful aids. And as many things are generic these can be reused for most projects.

Also looking to the nature of the warehouse workers background, filling the role as super user can be hard. If doing a broad generalization it is either youths who, for example, consider it as a short-term-job between high school and further studies, travels or people lacking higher education. And as the super users have more responsibilities than the end user they have a much more narrow timeframe to apprehend the change. Nevertheless, the super user holds a key role when implementing, using and maintaining the WMS. Yet, according to the interviews, some given the role might be somewhat inexperienced in working and maintaining computer system, and at teaching other users. And as the project group, according to Hiatt (2006), is not the most suitable for education and teaching, it is hard to think the super users would have any higher capabilities to perform this required knowledge transfer. Hence, having the right people may be a potential roadblock when implementing a WMS. Another example of this is the role of the change agent, who needs to have the necessary skills and knowledge of change management once the implementation starts.

10.3.2 Could the WMS product itself be an issue?

One interesting discussion is the one previously mentioned in the introduction chapter, whether the issues related to the product (i.e. the WMS). Thus being a major contributor to the need to manage change. The authors have not worked with the product per se and therefore cannot give their opinion about its user-friendliness. Although, after the interviews, the authors got the impression that it is a fairly simple product to learn. However, what has been quite clear is that technical issues, such as bugs, are demoralizing and causes a risk for increased resistance among the users. Technical issues will inferior any kind of success, and the technical implementers must understand that these issues will make it harder for the users to apprehend the new system. Therefore it is the authors' belief that more technical problems lead to more excessive work relating to change management.

10.3.3 Is the implementation speed enough to anchor the change?

Looking back to the embedded cases in this study, another thing to discuss is whether the speed of the implementation affected the outcome. The Arla implementation took one year comparing with the others, who only took three month. Is that short timeframe enough to anchor a change? Many authors claim that time is an essential factor for allowing people to embrace a change and it is not something you achieve overnight. If the trend of shorter project continues, it will be challenging for the people involved to perform the necessary change management activities in time. Especially if the change agent is inexperienced and need time to initially learn the role.

10.3.4 The clients internal implementation cost

The authors got the impression that the client often overlooks the internal cost when implementing the WMS. The consequence of the client pushing for having the WMS solution as cheap as possible is that it will hinder the WMS provider to include necessary elements such as change management. The client often does not realize that there is a cost attributed to not reaching the desired performance levels. The questions arises, what is more beneficial, a fast implementation without any change management or a slower process which includes managing change? And maybe the WMS provider would gain in terms of customer satisfaction, if they could help the client realizing this dilemma. By looking at Arla, who have made 17 WMS implementations (as well as many other IT-implementations), they have clearly realized the benefits of managing change. Otherwise they would not have dedicated change management resources for each implementation. And if that is not clear evidence, future research could cover quantification of change management, e.g. to calculate a return of investment for utilizing change management, to stress its importance further.

10.3.5 Contribution to IT implementations in general

Something else to discuss is whether the methodology works in other IT implementation, such as ERP implementations etc. It is in the authors' opinion that it

probably, with some minor adjustments, will work in similar IT implementations, as the roles and project phases are often general for IT implementations and the methodology is built upon a general model.

10.4 Final conclusions

This master thesis has developed a methodology for working with change management when implementing a new WMS through exploring the most distinguish challenges and how they can be prevented or countered. Several change management models have been identified and three was further selected to see how they met the four chosen criteria. The ADKAR model was ultimately selected as the most appropriate and by modifying it to the context the authors fulfilled the purpose of this master thesis and created a change management methodology for efficient and high quality WMS implementations. While creating the methodology, the authors have also brought some clarifications in the WMS research area.

One final question remains; who should utilize the developed methodology? All project managers at the WMS provider should be aware of its elements, but it is ultimately developed for the owner of the change process, i.e. the change agent. As part of transferring the ownership of the change process from the WMS provider to the change agent, this methodology should be among the material handed over. What this methodology does is creating a common understanding between the WMS provider and its client what change management is, why it is needed and how it can be performed.

The developed methodology can be seen as a tool/aid, which provides guideline for working with change. But just as a nail needs a hammer, and the hammer need someone to swing it, the developed methodology needs someone who can use it, because tools alone does not ensure a great performance.

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Appendix A - Interview guide (in Swedish)

- Presentera dig (och din partner).
- Den här intervjun är en del av vårt examensarbete där vi vill undersöka hur företag kan arbeta bättre med förändringsarbete vid implementering av nya lagersystem likt Astro. Genom att tala med de som i störst grad påverkas av förändringen hoppas vi kunna komma fram till rekommendationer på hur man i framtiden kan arbeta annorlunda för att underlätta förändringsarbetet.
- Alla deltagare i undersökningen kommer att vara anonyma.
- Intervjun kommer att ta 1-1,5 h, vi klara absolut senast **XX**.
- Fråga om det är okej att vi spelar in intervjun!
- Rekvisita: Papper, penna och mobiltelefon för inspelning.

Att tänka på

- Försök skapa en relation för att bygga tillit
- Inta lyssnarställning (Fysiskt & Psykiskt)
- Försök att inte avbryta såvida ni inte glider alltför långt ifrån relevanta ämnen
- För anteckningar
- Gräv! Om du inte förstår eller om de vidrör ett intressant område som de gärna får utveckla
- Avsluta mjukt (koppla exempelvis tillbaka till tidsramen). Ställ kontrollerande fråga så att vi inte missar någon viktig information

"Är det, som avslutning, något du vill dela med dig av som vi inte berört?"

Ställ grävande frågor!

- Hur, Vad, Vem, Vilka, När, Varför?
- Fråga om skillnader
- Tidsperspektiv
- Ge exempel
- Utveckla
- Förtydligande
- Vad hade du gjort annorlunda?

Table 15: Questions to super user or management

Frågor till super user & lagerledning	
Intervjuobjektet	
Berätta om din roll	
Hur många arbetar ungefär på lagret?	
Vilket system hade ni innan Astro?	
Berätta om Astro implementeringen	
Hur lång tid tog hela projektet?	
Varför implementerade ni Astro? Vem tog beslutet?	
Berätta om stödet i organisationen?	
Generella Frågor	
Vad var det som var utmanande under implementeringen?	
Om du hade genomfört implementeringen igen vad hade du gjort annorlunda?	
Vad tror du är det som karakteriserar just en WMS implementering?	
Vad lägger du i begreppet förändringsarbete (CM)?	
Dedikerade ni några resurser till förändringsarbetet?	
Har du varit med om andra typer av förändringsprojekt? (Om ja, berätta om vilka.)	
Vilka är likheterna/skillnaderna?	
Vad är effekten av ett icke-fungerande förändringsarbete? – har du märkt av det?	
Berätta om framgångsfaktorerna i ett förändringsprojekt? Vilka är de? Förändras de under	
Hur tror du Consafe skulle kunna jobba med förändringsarbete för att underlätta implementeringarna hos er? Hur kan de påverka?	
Berätta om vilka som var involverade under implementationen (och när kommer de in i bilden)	
Vilka var nyckelpersonerna under implementationen?	
Berätta om hur kommunikationen fungerade under implementationen	
Berätta om styrgruppens involvering/stöd	
Berätta om projektteamet	
Berätta om teknikvanan hos användarna	
Process re-engineering	
Berätta om hur arbetsprocesserna påverkades	
Var det enligt förväntningar? Var det positivt?	
Vad kommunicerade CL?	
Kompetens	
Berätta om utbildningen av användarna (hur,vad,när,vilka) – vad kommunicerade CL?	

Makt/politik
Berätta om de informella ledarna innan/efter implementationen
Övrigt
Vilka är det viktigaste framgångsfaktorerna under?
Är det något som du känner att jag har missat som du skulle vilja berätta om

Table 16: Questions to end user (in Swedish)

Frågor till end user
Intervjuobjektet
Berätta om din roll
Berätta om Astro implementeringen
Varför implementerade ni Astro?
När fick du reda på anledningen?
Vem tog initiativet till det?
Stöttade du beslutet?
Generella Frågor
Vad var det som du kände var utmanande under implementeringen
Om ni skulle införa ett nytt lagersystem, vad hade du velat göra annorlunda då?
Har du varit med om andra typer av förändringsprojekt?
Vilka är likheterna/skillnaderna?
Organisationen
Berätta om vilka som var involverade under implementationen
Berätta om hur kommunikationen fungerade under implementationen.
Hur upplevde du dina kollegers inställning till ett nytt WMS?
Berätta om projektteamet. Vilka ingick och hur jobbade de?
Process re-engineering
Berätta om hur du fick reda på att ni skulle ett nytt lagersystem. När och vilken information fick ni kring det?
Berätta om hur din arbetsprocess påverkades. När och hur fick du reda på det?
Var det något med implementationen som gjorde dig osäker?
Vad hade du för förväntningar på systemet?
Vad kommunicerade Consafe Logistics?
Kompetens
Berätta om utbildningen (hur,vad,när,vilka) Hur pass involverade var Consafe Logistics?
Hur var det att börja arbeta med Astro? Berätta om din teknikvana
Makt / politik
Berätta om de informella ledarna innan/efter implementationen
Är det något annat som du känner att du skulle vilja berätta om införandet av det nya lagersystemet?

Appendix B - Change management models

Table 17: Identified Change Management Models

Year	Creator	Name
1990	Beers et al.	Seven Elements to Change
1991	Jick	10-step for Organizational Change
1991	Judson	Five-step Change Model
1992	Kanter	Ten Commandments for Executing Change
1994	Dawson	Processual Framework of Change
1995	Kotter	Eight Stage Processes for Successful Organizational Transformation
1995	Roger	Six-stage Model of Adaption
1996	Galpin	Nine Wedges Change Model
1998	Appelbaum	Strategic Organizational Change Model
1998	Nader	12 Action Steps to Change
1998	Pendlebury et al.	Ten Keys
1999	Armenakis et al.	Change Readiness Model
1999	Taffinder	Transformation Trajectory
2000	Brass et al.	Change Model for Organizational Decision Making Schema
2000	Garvin	Seven-step Change Acceleration Process
2001	Andersson and Andersson	Nine-phase Change Process Model
2001	Evans and Schaefer	Ten Tasks of Change
2001	Kirkpatrick	Step-by-step Change Model
2002	Marlene	Model of Identity Transformation in Organization
2002	Mento et al.	12-step Framework
2003	Luecke	Seven Steps
2005	Light	RAND's Six Steps
2006	Leppitt	Integrated Model
2006	Hiatt	ADKAR
2007	Alas and Ruth	The Triangular Model of Organizational Change
2007	Gerhardt	Twelve Successful Factors in Change Processes

Appendix C - Luecke's Seven Steps (2003)

Original from Beer, Michael; Eisenstat, Russell; and Spector, Bert; 1990

Step 3 by General Electric's Management Development Center

Step 4 by Robert Schaffer and Harvey Thomson

- Step 1.** Mobilize Energy and Commitment through Joint Identification of Business Problems and Their Solutions
- Step 2.** Develop a Shared Vision of How to Organize and Manage for Competitiveness
- Step 3.** Identify the Leadership
- Step 4.** Focus on Results, Not on Activities
- Step 5.** Start Change at the Periphery, Then Let It Spread to Other Units without Pushing It from the Top
- Step 6.** Institutionalize Success through Formal Policies, Systems, and Structures
- Step 7.** Monitor and Adjust Strategies in Response to Problems in the Change Process

Appendix D - Kotter's Eight-Step Model (1996)

- Step 1. Establish a sense of urgency.**
Discussing today's competitive realities, looking at potential future scenarios. Increasing the 'felt-need' for change.
- Step 2. Form a powerful guiding coalition.**
Assembling a powerful group of people who can work well together.
- Step 3. Create a vision.**
Building a vision to guide the change effort together with strategies for achieving this.
- Step 4. Communicate the vision.**
Kotter emphasizes the need to communicate at least 10 times the amount you expect to have to communicate. The vision and accompanying strategies and new behaviors need to be communicated in a variety of different ways. The guiding coalition should be the first to role model new behaviors.
- Step 5. Empower others to act on the vision.**
This step includes getting rid of obstacles to change such as unhelpful structures or systems. Allow people to experiment.
- Step 6. Plan for and create short-term wins.**
Look for and advertise short-term visible improvements. Plan these in and reward people publicly for improvements.
- Step 7. Consolidate improvements and produce still more change.**
Promote and reward those able to promote and work towards the vision. Energize the process of change with new projects, resources, and change agents.
- Step 8. Institutionalize new approaches.**
Ensure that everyone understands that the new behaviors lead to corporate success.