Critical Success Factors of an ERP System Implementation

With the Project LES in Volvo Logistics as the Case Story

Information Systems
Bachelor Thesis

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**Abstract**

The purpose of this bachelor thesis is to highlight some key critical success factors when implementing an ERP system. After my exploratory interviews with both parties, I have identified some important factors by which my study can help others with their IT projects.

The method I have used is a case study and I have interviewed two prominent people from each side of a project, from the developers' side, and one from the user side, just to get as much information about the project as possible.

I could identify within the project what were the problems, and the problems can be related to some of the critical success factors from the literature that I highlight.

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**Announcement**

I want to thank the IT / management consulting Entea and Volvo Logistics big time for their help and information I needed to complete this paper. Without you it would not have been possible.
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1 Introduction

In the introduction chapter, I will introduce the background, both to the problem of this essay and the problem that would be solved with the implementation of Volvo Logistics new ERP system. I will give you an explanation of what reusable packaging is and why it is important that an organization of Volvo's size needs to keep track of them. Furthermore, I will also introduce the consulting firm, which represented the implementation and the purpose of this essay. Finally, I will also mention my delimitations.

1.1 Background

In today's organizations, the ERP system is the most important part of an organization information technology. Normally, ERP projects / implementations are large and complex, which involve several different types of people and external resources (Akkermans & van Helden 2002). These people and resources will work together for a certain time and during this time, the established goals for the system is achieved and try to keep a certain subject budget. (Akkermans & van Helden 2002, Gustavsson 2007).

As the project has a deadline, and the projects are large and complex, it occurs several unpredictable events. This means that the timescale exceeds and “ruin” the project. The budget can exceed when the project needs to pick up extra people into the project to get back on track, or the result is not as good as expected because they did not have the time (Gustavsson 2007). According to Standish Group (2009) only 20% of all IT project was seen as succeeded in 2009 based on time, budget and result. The interesting thing is that they have not considered other critical success factors but just time, budget and result.

My case study is based on a case where Volvo Logistics has replaced an outdated Enterprise Resource Planning System (ERP system) to bring in a fresh, new system to manage and plan their reusable packaging in a better way. The project was called Logistics Enterprise Services (LES).

During the project implementation phase, the project has faced a number of problems that I have identified and based my thesis on. The big problem I can see is that there was a too great change that the users could not handle.

Major logistics companies have customers worldwide, which in turn have their customers and so on. As the starting company in the supply chain, you provide a lot of packages that you need to get back to your company for continuous use when producing new orders. If your costumer does not send back and you cannot trace where the packages are located, you have to buy new packages.

The problem with Volvo Logistics is that they have good traceability on their orders and deliveries but not on their own, such as EU-pallets etc. Volvo loses a lot of money each year as they lose track of their packages and that is why this project started in the first place. The managers’ are tired of losing this amount of money for no reason so they have decided to do something about the problem. They are in urgent need to take control over the situation.
A new fresh IT-solution was the answer but what they did not know was that the solution has not been as good as they expected, or maybe to good and well developed for their organization.

![Figure 1: A high-level model over the problem](image)

Figure 1 describes how empty packaging goes to workshops to fill them up with different parts such as car bodies, tiers, engines etc. The next step for the workshop is to forwarding the packaging filled with car parts to another workshop that creates the cars. Other workshops provide with other stuff such as nuts and bolts. In the end, the last workshop that use the packaging sends it back to the corporation to get cleaned and resend to the workshops again.

### 1.1.1 Reusable Packaging

Reusable packaging is one of three business areas within Volvo Logistics, which formulates, manages and develops comprehensive business logistics systems for the automotive industry worldwide. The other areas are inbound (material supply) and outbound (distribution), which together with packaging create conditions for order production on a large scale and makes them a unique logistics partner. Volvo calls this the True Business Logistics.

Clearly, if the reusable packaging material is not returned to the manufactures, they need to purchase new packaging material, which makes the supply chain financially ineffective for the product. Reusable packages are not cheap and buy more materials instead of sending the old ones back to the developer makes the product more expensive for the customers than necessary and the distribution gets bad (Glock & Kim 2014).

Clark and Twede (2004) made a study of the American automobile manufacturing industry to illustrate how a well-managed supply chain can facilitate to reuse of reusable packaging which also leads to cost savings, and how bad supply chain management can lead you in a direct opposite way.
The most significant industry in North America using reusable packaging is the automobile industry. A container that is used to send parts/elements to assembly lines is bins of metal, plastic pallets and different kind of craters and bins. In the 1990’s the major automobile manufactures presented the benefits of reusable containers/packages when the price of buying unrecyclable corrugated boxes was to high for just using them once and then throw them away (Clark & Twede 2004).

The new Supply Chain solution for packaging materials will handle and keep track of Volvo logistics packaging materials. The new system will also introduce a completely new application that will replace both Pool Online and Web Terminal.

The major automobile manufactures have a lot of power in the supply chain compared to their supplier and that has led to successful reusable packaging innovations. The big question according to Clark and Twede (2004) is ownership. Who is the owner of the packaging and containers? An example from the reality is that Ford solved the problem by selling the packaging to the supplier, and both General Motors and Chrysler was quick to use the same procedure. To encourage suppliers to use the working method could, for example, their suppliers buy pieces to a better price. In the end it will still be cheaper for the manufactures because they do not need to buy new containers/packages.

The problem in this Volvo case is for Volvo to sell the packaging to the workshops storage because it is not built to fit Volvo boxes. It means that Volvo cannot claim the money of the workshops.

1.1.2 Consult firm

The Consult firm that will manage the change within Volvo Logistics is Entea AB. Entea is as quite small company but with much expertise in management and ERP solutions. The ERP software they manage is especially SAP. Entea works by a particular knowledge profile, which means that consultants have a broad business expertise along with deep technical expertise. By bringing the business and IT together the consults can see the big picture. The missions they undertake are in management and strategy level, as well as the depth of their clients' various activities. They collaborate with global companies as well as with selected partners in various specialist areas so that they can shape deliveries based on customer needs (Entea, 2015).

1.1.3 Critical success factors in ERP system implementation

When a company implements an ERP system there are many critical success factors (CSF) that one needs to have in mind. Somers and Nelson (2001) established a useful list of CSFs for ERP implementation. The CSFs are presented in a ranked list by the most important first and so on. Other authors I have referred to in my thesis are Akkerman and van Helden (2002) and Haft et al. (2002). The sources may be a little old but they are leaders in research on critical success factors. These and other relevant sources of previous research are discussed in depth in chapter 3.

After my first interviews with both parties, I identified the main problems and based my thesis on those specific success factors.
1.2 Aim of the study

The purpose of this bachelor thesis is to highlight critical success factors when implementing an ERP system. After my exploratory interviews with both parties, I have identified some important factors and by my study can help other organizations with their IT projects.

- I want to identify critical success factors and find some factors that stand out from literary versus how the factors were handled in this project.

1.3 Target group

Besides the managers of the LES project, the target group of my study is those organizations that want to implement a new ERP system, which leads to drastic organizational changes. For a successful ERP implementation, it is good to keep an eye on these factors.

1.4 Delimitations

Delimitations I made in my thesis is that I have not done a survey of all Somers and Nelson (2001), Akkerman and van Helden (2002) or Haft et al. (2002) critical success factors because such a work would be too big. Instead I selected the ones most relevant to this particular case as mentioned in the last paragraph of 1.1.3 above.

Unfortunately, because of the time limitation, I could not compare the LES case with the results of previous ERP systems implementations that Entea has made.
2 Method

This chapter begins with a description of how the data to the thesis has been collected. Further on, the scientific approach and selected research strategy. The chapter continues with a description, the analysis method used and how the validity and reliability to be achieved in this paper. Finally, this chapter ends up with the ethical considerations I took with me in my interviews and analysis.

2.1 Collecting of information

Information about the previous state is based on documents and interviews performed at Entea AB and Volvo Logistics in Gothenburg. The interviews have been with open questions and structured with predetermined questions.

The empirical material I will present in this paper is collected on the basis of interviews highly placed people who were involved in this project from Volvo Logistics and the IT-company, Entea AB. From Volvo Logistics I will interview the solution leader for the project and from the consulting firm, I will interview the Lead architecture for the project. At first I will have one interview with them one by one to get a clear picture of the project and then one interview with the solution leader to get a more in-depth picture of the project.

The literature review conducted during the work has been carried out through the study of literature and library literature within the topic areas. Article Search databases have also been carried out. The studied literature forms the basis of the theoretical background and outcome.

My approach about this essay is based on Österle’s business model of change management that emerged 1995, as I will introduce in the beginning of the theoretical chapter. Based on the theory and empirical data, I will identify the perceived success factors. The final desired material I collected weighed against each other to write the analysis.

2.2 Research approach

The result is based on a survey of the project for the implementation of Volvo Logistics new enterprise resource planning system and a more in-depth survey has been made of the management of the critical success factors that I have seen in the project. I have used the “case study method” as described by Yin (2003).

Yin explains that a case study is one of many ways to do a social science research. What defines a case study is that the investigator wants answers to the questions why and how, when the investigator has lacks of control over what has happened and focuses on earlier studies. This kind of case study is called explanatory by Yin (2003) and such studies can be complemented by two other approaches, descriptive or exploratory case studies. A case study is used in different research areas to contribute knowledge (Yin, 2003 s.1ff).

I will apply this type of survey when I ask questions to my interviewees about how certain things happened, and why it happened.
According to Yin (2003 s.2), three questions are important to answer while you perform a case study. How to define the case that is being studied, how to decide which data that are relevant and what should be done with the data once they are collected.

The data I collect in this survey is relevant previous research about the implementation of ERP system and critical success factors while implementing an ERP system. In my second interview with the solution leader, I have come up with questions based on my analysis model to get answers about the critical success factors I present the theory chapter.

It is important that a research design include five factors (Yin, 2003 s. 26ff), first of all, the form of the study’s questions and that it is the ‘right’ questions. If you have not received the answers to the questions you asked, you most likely asked the wrong questions. For the next step it is to examine the scope of your study, and the third component is to find data to analyze. A logic next step is to link the data to propositions to see what the result of the study led to and than always be critical to the information you collect. In Yins (2003) opinion, weeding out bad data and finding good data is the hardest part.

What I have done to achieve this is that I have had two general interviews with two leading persons in the project. They gave me a great picture of the situation and in my second interview with the solution leader I asked the right questions connected with the previous information I have collected, and based on this, I got material to analyze.

The quality of an empirical study is judging by its trustworthiness, credibility, confirmability, and data dependability. Is it because the research is supposed to bring good, and new, information to the scientific area within a logical set of statements (Yin, 2003 p. 33).

To conduct a case study according to Yin (2003), you have to consider four design tests and what kind of tactic you need. These tests are constructed validity, internal validity, external validity and reliability and it is more complex than putting validity vs. reliability, which is standard in a case study.

2.3.1 Construct validity

Construct validity is the first test and it is a major problematic in case studies. Critical people mean that it is hard for the investigator to get a subjective view of the topic. The investigator has to consider two steps to establish constructed validity and those steps is to pick a specific topics that needs to be studied and relate the studied areas to previous studies, and the second step is to prove, by analyze the collected data from previous studies with the collected empirical study that it matches (Yin, 2003 p. 35). That is exactly what I have done when I researched the implementation phase of an ERP system and a number of critical success factors affecting result.

2.3.2 Internal validity

Internal validity is the test that has the best review in experimental research. There is two points that needs to be mentioned and the first is the casual case study, or explanatory study, where the investigator will show that event X leads to event Y. If it does not a casual relation between them there is a third factor that made Y happen. The second problem with this test is if the inferences the investigator made is correct. Is the collected evidence from interviews correct (Yin, 2003 p. 36)? In my study, the critical success factors contributed to the result of the project.
2.3.3 External validity

*External validity* test shows the problem with single case study. Is the study generalized or is the study a unique case? For example, if you do a study on a neighborhood, is the result the same for another or every neighborhood? The test has to implement in two or three other neighborhoods to prove the investigators point. Once the investigator done this, the result is accepted support for the theoretical chapter (Yin, 2003 p. 36).

2.3.4 Reliability

The fourth and final test is *reliability*. It means that if another investigator does a similar case study as you just did, the conclusions and findings will be the same. The purpose with the reliability test is to minimize the slipups and biases in the study (Yin, 2003 p. 37).

When I summarize my study I can say that if anyone else made a case study on critical success factors this specific ERP implementation they would get the same results that I.

According to Yin (2003) my single case study is a *unique* and *abstract* case in that sense the solution was tailor made IT-system and a unique case like this is worth documenting and analyzing.

2.4 Ethical considerations

There is a requirement that says that if the society is moving forward, it requires that research do the same. This requirement is called *research requirement* and it means that the available knowledge is developed further and the methods gets improved. Everything that requires research is not allowed to do, for example, the individuals that perform the research is not allowed to hurt anyone by physical or mental violence. This is an obvious starting point for research ethics considerations and is called *individual protection requirement*. This requirement is the basis for the four main requirements (Vetenskapsrådet 2015).

- The information requirement
  The author will provide with correct information and not leave anything behind. Those individuals who are involved in the research know the purpose with it and have all the rights to stop being doing what they are doing in the research. It is also good to tell the individuals where and how the result is being published (Vetenskapsrådet 2015).

  I made clear to my interviewees what I would do with the collected material and they had no objection to it. The collected material has not been misquoted or tampered in any way because they approved it.

- The consent requirement
  It is the individuals in the research that decides if they want to be a part of the research or not. If the study is done on minors (boys and girls under 15 years old), an approval of a parent or guardian is required (Vetenskapsrådet 2015).

  I did not force the interviewees to participate in my study, but they did it on their own initiative.
• Confidentiality requirement
The personal details about the individuals that involves in the study should be as inaccessible to the public as possible if that is a requirement from the involved (Vetenskapsrådet 2015).

I do not have the interviewees' names in the paper because I do not think it is relevant to the essay and using their roles instead. Something I got the green light on.

• In use requirement
The collected information and data from the individuals that is involved in the study shall only be used in the current study (Vetenskapsrådet 2015).

I will not use this information I have collected in these interviews in other purpose than in this survey.
3 Critical success factors in the implementation of an ERP system

The literature study in this paper is to support the specification of the aim of the study and provide support for the analysis chapter. In this chapter, the business model of change management is presented. Furthermore, the importance of the ERP is for an organization. After that, I will introduce you to the implementation process of an ERP system and a few critical success factors that is relevant for my study. In the end of this chapter I will introduce my analytical model I have establish to summarize my study. Mostly of the articles are 10-15 years old but I use them because they are conductive in their subject.

3.1 The business model of change management

Businesses should use the business model of change management when making changes in an organization. When a change happens in an organization, it affects all three levels of the business model of change management. To achieve a good result when using this model, the organization has to aims at all three business levels, instead of putting too much focus on an individual level. The concept of the business model of change management is that it focuses on all three key development levels within an organization, business development, operational development, and system development (Nilsson 2001 and Figure 2: Österle 2000 with alternations by the author).

Nilsson (2001) argues that business is conducted with elements of system development, which has led to the concept of "Business developer's toolbox." This means that they are important for businesses to operate in parallel with the three mentioned levels below.

- **Business Development**

  Business development is uppermost part of the model and is based on the business strategy for the organization. It describes how the business wants to work on the market and is the basis for how the two other levels should be performed (Nilsson 2001).

- **Operational Development**

  The level of operational development is the intermediary between the uppermost and lowermost level. The middle level is the focus on the business's internal development capabilities, processes and tasks using various forms of IT support. The level is about how processes should work, core business and where value is created (Nilsson 2001).

- **System Development**

  At the lowest level are developed and managed the company's own technology. It includes applications, component-based solutions, standard package and enterprise recourse planning systems (ERP). The systems are designed to facilitate and support the operations resources and also to enable new business based on the operational ideas (Nilsson 2001).
3.2 Enterprise resource planning

Nilsson (2009) defines Enterprise Resource Planning (ERP) by large integrated standardized systems that are comprehensive for a company's need of information. An ERP contains extensive functionality such as financial accounting, employee development, manufacturing, logistics and controller management. A vital part of an ERP is that the components of the system is strongly integrated to each other by a central database. With this in mind, ERP can be defined as standardized, organizational comprehensive system to support companies’ data.

According to Gleisner (2015) the ERP system's main duties includes managing key functions and processes within the business by helping to improve decision making and streamline key processes. ERP systems are typically used in areas such as finance, staffs and reporting.

Benefits with ERP are that the system providers guarantee that the functionality is integrated in an organized way in the system and the interface is well developed and tested (Nilsson 2009).

A disadvantage with ERP, according to Nilsson (2009), is that the system providers often have varying quality on their modules in the ERP. With a varying quality, it is a good idea to combine a comprehensive ERP with more business adapted niched modules.

3.2.1 Commerce Of The Shelf (COTS)

You can find a lot of names for the commerce of the shelf solution. According to Brandt et al. (1998) a COTS solution (or a standardize system) is an IT solution that is used more and more in both small and large companies. This is because companies today mostly have a strategy to primarily look for a COTS solution that is already developed to streamline their processes. A huge benefit and a great potential with this kind of systems is that has been proven by earlier users.
A COTS solution is a more or less complete software that can be used immediately in a company’s operations, unlike tailor made systems that need to be built up from scratch. The organizations require some adaptations to the standard system as well as the system needs to adapt to the customer’s business to get a usable solution. You can look at a COTS solution as a packaged system and another common expression is "standard package" (Brandt et al. 1998).

A standard can be acquired in different ways such as by purchase, lease, loan, gift or software change between companies. A number of different situations can be divided by (Brandt et al. 1998):

- **External COTS solution**
  External standard system sold by established domestic or foreign suppliers on the open market.

- **Internal COTS solution**
  Internal standard system provided by a joint IS / IT function for different business entities in companies within a group.

Brandt et al. (1998) noticed that the provider has a different approach to how the COTS solution should be used in customers' businesses. They would like to highlight two different philosophies when it comes to the use of COTS solutions in businesses. When an organization decides to implement a COTS solution it has to consider if they want to have a solution that guides the organization or if the solution should follows the organization.

The first philosophy (guiding standards) requires that the organization embrace the supplier's operating concept of the system. A guiding standard system can be an advantage for customers who have limited knowledge and skills to develop their own business and it is a disadvantage for companies that have a clear business model and where COTS solution concept is not consistent with the business model.

The second philosophy, with the following standard, allows a greater degree of customization of the system instead of pure operational adaptations. These COTS solutions are much wider, as there is no specific suggestion to set up the business of the vendor. This means basically that the suppliers are more open to several different scenarios over the company's business operations with different sets of parameters. Some suppliers create base models or design applications to facilitate the client's work by adapt to the organization’s processes and to their already existing systems. The customer needs to work by the idea of how the company should conduct its business and then customize the COTS solution thereafter. This freedom can be felt as a great advantage in certain situations when you have a worked out business strategy for the company. Still, in other contexts seem like a limitation if the client is unsure of how operations can be improved and expects the supplier provides a concrete proposal on the approach to the business.

It is also important to choose the right type of system so the organization does not contradict their business model. A business model is a model that shows the company and how it operates on the market by selling and buying services or goods. The purpose of establishing a business model is to understand, describe and predict why and how a company’s reaches their goals (Osterwalder 2004).
Osterwalder and Pigneur (2010) mention Key Resources in their Business Model. It can be divided into four different categories, physical-, intellectual-, human- and financial resources.

Physical resources are relevant in this context because it contains the organizations IT systems and its work processes, manufacturing facilities, buildings, machines, and distribution networks.

3.2.2 Customized ERP

The benefits of being able to customize the ERP system are that it can be adapted to the company, its work processes and business model. The company will not have to change their work processes and can instead get an ERP system that can help them streamline their current processes. As a standard system cannot be adapted to a specific organization well enough, it is hard for those organizations that have more complex work processes and are difficult to change. Some companies also fear that their activities are jeopardizing by a standard system (NAB Solutions 2015).

The disadvantages of customized ERP are that it is expensive to make adjustments than using a standard system. Because the customer adaptations are developed for the organization will also contribute to a more complex process during an upgrade of the system. The system is more sensitive and requires more time for an upgrade. Some companies get stuck and make more adjustments than what the organization actually does. This can hold also even for a business that adapts a basic functionality, that is, functionality that usually covers the basic need of the organization (NAB Solutions 2015).

3.3 Business model

According to Osterwalder (2004), the term business model can be divided into two, business and model. He defines business as activities of buying and selling services or goods to make money and the term model as an illustration of a current situation as a physical object, which often is smaller than the real object, or as a basic description of the object. By combining these words you get a model that shows the company and how it operates on the market by selling and buying services or goods. The purpose of establishing a business model is to understand, describe and predict why and how a company’s reaches their goals. Osterwalder means that it is too narrow to just say that a business model only shows how a company buy and sells goods or services, instead Osterwalder (2004) define a business model as:

“A business model is a conceptual tool that contains a set of elements and their relationships and allows expressing a company's logic of earning money. It is a description of the value a company offers to one or several segments of customers and the architecture of the firm and its network of partners for creating, marketing and delivering this value and relationship capital, in order to generate profitable and sustainable revenue streams.” Osterwalder (2004) p.13

When people talk about business models, a usual mistake they do is that they only talk about smaller parts of the model. An example Osterwalder (2004) highlights is an online auction. The online auction itself is not a business model, but price- or valuation mechanism is a part of the model.
According to Osterwalder (2004) a business model is a small tiny layer between business strategy and business processes in Österle’s (2000) model of change management were the focus is on the company or the organization.

### 3.3.1 Business Model Canvas

After a few years of study, Osterwalder and Pigneur (2010) describe the business model as a model that describes the logic way of how a company *creates, delivers and captures value*. This makes it more easily to see in what way your company is heading and where it is should be heading and to establish a good business model, it is an idea to complete the Osterwalder and Pigneur (2010) canvas model that include nine building blocks where you identify the organization (Figure 3).

![Figure 3: The Business Model canvas](source)

*Source: Osterwalder and Pigneur (2010) adapted by the present author*

### 3.4 Implementation of an ERP system

As many experts say it is very expensive and risky venture to implement an ERP. Approximately three out of four managers claim that an implementation of an ERP system may damage the business because of problems in implementation. Considering the high risks the implementation of an ERP system entails, according to Haft et al. (2002) is to focus on certain factors for an implementation is to succeed. Previous research, such as Somers & Nelson (2001) brings out about twenty critical success factors and Haft et al. (2002) have highlighted the most important factor that needs to have in mind in the implementation phase of a business.

Since the implementation of an ERP system is so difficult and complex, Haft et al. (2002) have developed a "best praxis" of how such an implementation should proceed. Haft et al. (2002) have collected a list of recommended steps to get a successful implementation as
possible. These recommendations are built on various studies and the Haft et al. (2002) have been linked to a whole.

To begin with, the software should be installed in a pilot environment and test so the system is working as planned. Then a technical user has to test and try out the system as they become familiar with it. Next step that is important is to get the key users receive the training required to operate the system (Haft et al. 2002).

What the user should do is to make a bunch of regular acts in the system that required the user to be able to do its job. Once users have been training and getting to know the program, the permit and safety should be ensured in the system. Which users have access to what? Once the process has gone so far, it is time to enter the vital data from the old ERP system into the new and it is important that the flow of information goes as smoothly as possible. If the transfer of data is transferred in a good way, the users receive a positive image of the system (Haft et al. 2002).

In the new system, the data can be handled in a different way compared to the old system. Therefore it is important that here already set up guidelines and policies for how the organization should work with the new system and the new data. Once this is done, it should be celebrated for the project is clear. Through a feast shows the organization of the project is over and management are satisfied with the result (Haft et al. 2002).

When the implementation process has come this far, it is important to continuously improve the organization. It is hard to change an organization overnight, the organization matures over time and then it is important to give the organization that time. The reason for this is that a network can change at a rate for a certain time period. For an organization, change is a constant process and it understands most successful companies. Therefore, they encourage their employees to use the new system as both the employees and the organization can develop (Haft et al. 2002).

Somers and Nelson (2001) are more abstract in their study when they discuss the implementation process. They talk about six phases and those phases are: initiation, adoption, adaptation, acceptance, reutilization, and infusion. During these phases, there are a number of critical success factors that need to be highlighted for a project to have greater chance to succeed.

### 3.4.1 Critical success factors

When a company implements an ERP system there are many critical success factors (CSF) that you have to have in mind. Somers and Nelson (2001) established a useful list of CSFs for ERP implementation is presented in a ranked by the most important first and so on. It is a ranked list of 21 CSF and this was a study on 110 companies that recently implemented new IT software with help by most part CIOs, directors and vice-precedents. In this thesis I will not walk you through all this 21 CSF but instead just the most important and relevant for my study.

According to Haft et al (2002) they found three main reasons why IT projects fails. These are poor planning and management, changes of goals during project because they do not know what they want and lack of top management support. All these three reasons are parts of
Somers and Nelson (2001) critical success factors and you can find more about them and more CSF below.

For an implementation of an ERP system should be seen as successful, Haft et al (2002) claims that the project meets the identified CSF and that it helps with potential benefits for the future. Benefits such as staff reductions, reduced cost of IT, better inventory management, streamlined processes, etc.

- **Management support**

According to Somers and Nelson (2001), management support was the most crucial for a company that implements an ERP system. The top management is supposed to be supportive and driven by the project. If they are not, who will? It is important for the management that they know and understand the capacities and limitations with the new ERP system and mediates this to the employees.

That is also a factor Akkermans and van Helden (2002) says. If top management is not highly involved in the implementation of an ERP system, there is small chance for the implementation to be a good project, especially in the early stages of a project. It usually corresponds well with most implementations of IT systems and innovations in a company. The importance of the middle management and other staff are also important, but if the top management only gives responsibility to consultants and technical expertise, the chance for project to fail is significantly higher.

Haft et al. (2002) emphasizes the need for strong leadership, involvement and commitment from top management when introducing an ERP system just like Somers and Nelson (2001) and Akkermans and van Helden (2002). Because many regular users of the system are "against" innovation and changes, and for the best result, the organization should have a management planning committee who understand how ERP systems work and are well integrated with the organization.

- **User training and education**

One other very factor is that the users have to be well educated in the new system. If the users have lack of knowledge in the system it makes easier for the project to look like it has failed. It says it takes around 6 month to learn a new ERP system. With all the new technology and perhaps the new processes the users needs to be trained on how they are supposed to work and how they relate to the new process early on (Somers & Nelson 2001).

Most companies use consultants to help during the implementation process because they do not have the right knowledge inside the company. Because of the consultant help, it is important that knowledge is transmitted from the consultant to users (Somers & Nelson 2001).

Perhaps the most confirmed critical success factor is training and education, mostly to those who will use the system to understand and master it (Haft et al. 2002). If users do not understand how the system operates, the users will create their own way to bypass the problem and manipulate the system. The full capabilities an ERP system offers cannot be realized before users know how the system operates properly. To get the training as successful as possible, it is required that the training begins early in the implementation process.
Managers tend to often underestimate the importance of education to the employees when implementing an ERP system because they believe it is an unnecessary expense. The management needs to have the training of users in the project budget to get as good a result as possible. Haft et al. (2002) recommends that between 10-15% of the total budget should go to education of users and results in the implementation success to 80%.

The problem with educating of the users is that they are expected to manage everything needed for the new system when the training is complete. However, the big learning process actually starts when the system is used properly in the organization. It may therefore be good to have a role of representing users and their knowledge of the system. The person should have contact with users to see if any new training should be done. To regularly hold a meeting with the users might be good to have in order to identify and solve problems arising in the user's everyday work (Haft et al. 2002).

- Management of expectations

One of the hardest things is to give the users all the same picture of the ERP system. An ERP implementation project may feel as a failure because it did not everyone’s expectations. Although the fact that the system meets the enhanced capability to the organization, there is one person who believes he is getting one thing and one other person believes she is getting another thing. In this scenario the project fails because a few of the users does not get pleased or received what they expected. Or that the vendors “oversell” it to the company and say that the ERP is better than it really is (Somers & Nelson 2001).

Successfully managing user expectations is something Akkerman and Van helden (2002) also highlight. It has been important for implementations of ERP systems for a long time. It is common that the future users have the wrong expectations and thoughts of the ERP system. For example, the ERP system vendor underestimates the complexity of the solution to the organization. That makes this success factor important through all stages of the implementation.

- Careful selection of the appropriate ERP

When an organization decides to implement an ERP system it is important to set some frames such as time, budget and goals or vision with the project. The importance of a careful preliminary study is vital to choose the right ERP system that matches the organizations needs. Consequences that entail with the wrong system are that do not fit the organization’s strategic goal or business processes, their business model (Somers & Nelson 2001).

Akkermans and van Helden (2002) means that many ERP vendors claim that their system is overlapping and fits your business's functionality perfectly, but this is a rare case. The reason for this is that some systems are better suited to larger firms, while other systems better suited to smaller companies. Some ERP systems are more suited for a particular industry and another system is more suited to operate in another part of the world. Once the system is chosen, it is important to decide which version of the ERP system to use and which modules that should be included to match the organization best. If a wrong decision is taken, it should be done early in the process. Either they come on to the system do not match the organizations work processes or if major changes are required, it can be very costly and time consuming if this kind of problems occur late in the project.
• Change management

The primary concern when implementing an ERP system that most of the users are involved in is managing changes. The implementation of an ERP system often introduces large-scale changes that can cause errors, redundancies, confusion, and resistance, and it is predictable that every second ERP project fails to achieve expected benefits, partly because the organizations do not care about the change management. Research has shown that successful change management is critical for implementations of technology and new business processes. Organizations need to adopt a comprehensive strategy toward the large-scale changes in the processes and systems that are connected with the ERP implementation. To summarize this critical success factor, you can say that making changes has to be everyone's first priority in the ERP implementation (Somers & Nelson 2001).

According to Haft et al. (2002), the organization's structure and processes today are rarely compatible with the structure, tools, and information that will be with a new ERP system. Even the widest ERP systems have their own logical structure compared to the organization's strategies and processes. This may cause that the organization needs to change its key processes or working methods for the system to fulfill any function and organization in such a way meets its goals. One problem that both touches change management and management support is that many managers only see an implementation of a new software as a new technical solution, not that it can change/improve the entire organization's way of operating (Haft et al. 2002).

In the big picture, the final goal should be to improve the organization, not only to implement the new system. Then the last implementation should be driven by the part in the organization that will be using the system and not the IT department, because there are not those who will use the product (Haft et al. 2002).

Of course, an implementation of an ERP system can cause major changes in an organization and its culture. If the users of the system are not prepared for the change, they can deny the solution and create a resistance to the system and do not use the system as it is supposed to be used (Haft et al. 2002).

To get the maximum out of the ERP system, the organization requires proper techniques that handle change management. It is good to highlight the opportunities that are available with the system. It is important to show what can be done in the new system, which was not possible in the old, and how it develops the organization (Haft et al. 2002).

• Clear goals and objectives

Another critical success factor was to have clear goals and objectives while implementing an ERP system. At the beginning of a project, it is important to compile a conceptualization of the goals and possibilities of the new system that will achieve. The goals should be operational and detailed level thereby set guidelines for the project. This factor is so vital that it is more important to have goals and objectives sort out before even looking for the top management support. Some standards for goals and objectives are the “project triangle” that shows boundaries for costs, scope, and time for the project. The most ERP implementation that fails is because the
organization does not have a clear plan or are mature enough to implement the system (Somers & Nelson 2001).

Clear goals are also an important factor according to Akkermans and van Helden (2002). It is known that the first phase of an IT project should begin by discussing goals, objectives and purpose of the new system, what is it to be achieved to develop clear goals and objectives are clearly a very important success factor, but it involves a lot of problems. The reason why it is problematic is that the beginning of an ERP project, it is difficult to establish exactly what the system must contain in a good way.

Haft et al (2002) also highlights the importance of clear goals and visions with the new ERP system. They argue that key people in the organization should create a clear and compelling image to satisfy customer, employee and supplier. Clear objectives, expectations and results are also important to define to get as good results as possible. Finally, the organization is required to identify critical and important needs the ERP system must contain in order to provide support to the organization.

- **Vendor partnerships**

Vendor partnership is important for a successful ERP projects. Research has shown that a great connection between the vendor and user organization is positively associated with a successfully implementation of the packaged software and the user organization should try to extend their relationship to each other. ERP provider must have the objective and vision to give customers an optimal solution as possible and that is as efficient and competitive as possible in the market. A supplier partnering is a critical factor for ERP success (Somers & Nelson 2001).

- **Data analysis, planning and correctness**

A central requirement for the value of ERP systems is the data is available and correctness. Problem and incorrect data can cause huge implementation problems and delays. One very important process in the implementation work is the management of data entering into the ERP system. The challenge for the company is to find the important data to implement into the system and transferring all those different data structures into a reliable format. This process can be devastating if organizations do not know what needs to be involved in the new ERP and what needs to be ignored. Another important thing to have in mind is the interface with other systems and departments that requires capability to handle complex data and different data types (Somers & Nelson 2001).

Haft et al. (2002) claims that to obtain as much capability as possible of an ERP system, it requires that the data entered into the system is completely accurate. As an ERP system computes the data contained in the system, it is important that the information is consistent with the balance, for example inventory. This is another reason to educate the users so they understand the importance of the balance.

An ERP system also requires everyone to work in the system and not around it. Users must become convinced that the system complies with what top management says and that they remove the old routines that are not required to replace with the new routines. It is important to eliminate the old system, so no one uses it in parallel (Haft et al. 2002).
3.5 Analytical model

The analytical model (figure 4) is designed to analyze about in my analysis chapter. What I emphasize with this model is to get as good result as possible of the implementation of an ERP system, the organization has to be enough prepared and mature to do this huge change in their business. A new ERP system often tends to be large, complex (for the users that is not accustomed to the new system) and expensive implementations.

Therefore I have made a model that symbolizes a balance board how the critical success factors affects both the organization’s and system maturity weigh against each other. Too much of maturity on the systems causing excess weight on one side and too much maturity in the organization creates excess weight on the other side. It is important that these two sides balancing on a good way for it not to weigh over in any direction (figure 4).

![Maturity Balance Board between System and Organization](image)

**Figure 4: The Maturity Balance Board between System and Organization**

*Source: The author (2015)*

The following two bullets will explain how the model was derived from the discussion in this chapter.
- **System maturity**
To get the "right" maturity on the system you need to choose the right system vendor and the right ERP system. With the right system vendor means that the customer and the supplier have a good dialogue and both parties agree on what the system will be delivered. With poor communication between these parties, there is a good chance that the customer gets a system that they did not want. It is also important to have clear goals with the system. In this way, the organization can help the developers to get the right maturity of the system so it does not get too complicated than is needed. A final factor affecting the obvious that the data in the system must be accurate and have access to the data when it is needed (Somers & Nelson 2001).

- **Organization maturity**
The organization's maturity involves a lot of how the organization handles the change. To succeed as well as possible, it is important to have a clear management support and that it is handled properly. It is also important to have an organized change management so employees know how to manage change. One factor identified is also user education and it is important for users to be able to embrace the system and use it. Another important aspect has been how users see the system and you have to be careful to be clear of what users will get (Somers & Nelson 2001).
4 Empirical data

As mentioned in Chapter 2, there is a need to determine “how to decide which data that are relevant”. It has already been that interviews can provide relevant data for the description and analysis of this case. In this chapter, the data collected are presented in a rather unanalyzed form. Of course, the data has been generated by me, they are not simply facts to pick. My influence on the data generation comes from the selection of documents to study, the places and times where I made the questions I put to the interviewees.

4.1 Internal documents

Since these documents contain numbers and sums as both parties asked not to be leaked out, I refer to my ethical considerations where I mention that I will not use anything that is not appreciated by my interviewees.

4.2 Interview with ERP consulting firm

- Do you want to introduce your role you had in the project?

In this specific project I was Lead Architect for the software called LES (Logistics Enterprise Services) and Lead Architect for that specific part which had to do with packaging and that project was called LES supply chain. The project started because Volvo Logistics had to change their system to collect packaging.

- How did you get in contact with Volvo Logistics?

Entea AB was contacted by Volvo to build a finance control model for their logistic development. According to this model (A more low flying model of Figure 1) we help companies who have problems with their IT technology, but first of all with the commercial components before we build IT technology. Many IT companies working with IT technology first, we the total opposite, we check first that the company has a vision, have their strategic objectives to work with find their capability. Volvo knew what they wanted but they did not know how to get there. That is why they developed an economic control model. The model is based on what the organization want to see and improve, where they can find value. For example, if someone tells you that he / she should see if you come to work on time every day, then it's highly likely that you do so. The model show only those value the organization wants it to focus on.

The next step is to have software, that’s were we came in. We built that model said how you should comply with this company and then start working with the system that could deliver those values. This is where we built the LES value chain, and that is the financial system for this company, the software was SAP. This was the first project Volvo gave Entea, and the second project was LES supply chain.

- What was the problem with their old system?

Volvo Logistic had an old house-developed solution that had become too old or in a situation that made the product could not make use of today's new technology, the software did not
keep track of inventory, and there were also far too many errors in the product. With the house-developed solution, adjustments have to be made all the time and in the end it was impossible to adapt when they found 64 major bugs in the software. To bypass these errors, the staff had to know for example that; *now when I am doing this I know it will be wrong*, and so did they fix it all. The situation was untenable.

The old mainframe environment Volvo Logistics used had two main issues. First thing, there is the integration between software’s that are about to exclude now called Vcom, a type of integration solution that should not be left as it is too old and too unreliable. The second problem is that the old mainframe computers are so old that it is difficult to get hold of people who are knowledgeable in it. To keep going and operate it is cheap but the big problem is the skills disappear all the time.

- *It sounds like it is very old; can you estimate how old the software is?*

The technology is between 40-50 years and the application is approximately 20 years. It is far away from Microsoft Windows environment we are talking about.

To summarize it all, it was so many flaws in the software so that Volvo lost unnecessary money in inventory costs each year. Generally when working with packaging, pallets, etc., so it relies on pledge model. You buy a Coke and you pay for the deposit and when you leave the Coke you get the deposit back. Most pools are based on that system but not the Volvo. They work more for a trust model, where they lend packing and they assume that the other party keeps track of it and just pay when they use the material, so called, transaction based model. Workshops also need to pay if they lose pallets. The problem with that is that there is no reason for the workshops to keep track of packaging because they have not invested any money in it, and because it is relatively low value on the package, it gets priority little secondary. The only way that a trust model works is exerting very good control of the situation and that was Volvos problem. They had bad control over their packaging.

Volvo had forgotten its business model on its packaging, and then they had built a system more from a pledge of thinking. That was also one of the errors they were about to do. Entea was not the first consulting firm who got the assignment in the first place. It was another firm so we were assigned the project two, three months into the project.

They were about to introduce a COTS product (Commercial of the Shelf) that SAP has named returnable packaging. A standard solution and the problem with this is that it is for returnable based on a deposit model. The company who is not working for a deposit model is the solution extremely dangerous and this is one of the most common errors. The companies do not look at their business without thinking, "What is the difference between a deposit model and a trust model". There is a huge difference because they do not enjoy the same commercial mechanisms. Even though you can do the same things that look exactly the same but you do not get the same result.

Another big issue was that the packaging that Volvo had was not particularly appreciated on the market. This made Volvo, with all its business partners, they had to bend a lot on their own requirement to get systems in place. This leads to that those parties out there that had integrated had integrated in its own way and at its terms, the same even within the Volvo Group, which made getting integration they had taken all the blame yourself. The problem
with this was that the integrations became very advanced, traditionally said, the receiver to the system determines integration. If company A, B and C want to integrate with company D, company D decide how it should be done. In this case it is total opposite.

- **Is the system live now and if so, how has it managed afterwards?**

I'm a little unsure when it went live but somewhere around the end of October, I think.

It was handled terribly badly. Our commitment here in this project is a little different. The system went live in October and now we are giving supporting control to Volvo. Entea is not the system provider, but rather the business consultants and is therefore not responsible for the operational. This makes the of course that Volvo IT is not especially good at the product. They are not good at business models, so even though we ERP consultants have taught them a few times now, they do not understand what to do.

Another problem after the implementation was that the organization itself was not ready to go live. It was very clear but they had no choice when the project could not be paused again, because it is already been paused twice. Volvo Logistics knew that it would not go well, this will hurt but they had to take it in.

The thing to take a system like SAP with the whole idea of this system is completely unforgiving (as it should be) and comes from a system that has 64 known bugs and is very forgiving, that often becomes a cultural shock for the organization, which it did this time. Users will be unable to fix and tricks, as the new system did not allow fix and tricks.

To do the implementation as smooth as possible, I gave Volvo a “Go live plan” that those did not care about. It was created for a reason but instead they struggle a lot, but now, six month later, the system is beginning to stabilize. Now they are about to take stock of the last pieces and this is of course a pool, it means that there is an end bearing system. Everything moves all the time. That means if you do not inventoried in the warehouse is not working systems.

Everything must be done simultaneously. It’s like a balance sheet, you cannot create new entries without having made an offsetting entry. This should be done for all who have the pool and then we are talking about roughly 4,000 users. These 4,000 users have x number of containers to be inventoried into the new system. Now, in the end it has gone well but it could be handled much better.

- **What are the technical solutions of the system, RFID etc.?**

There are three classes packaging, there are standard-, special- and customer owned special packaging. Some of these packages are extremely expensive and it is packaging that holds up some engine racks and to be able to move large motors. They have been tagged with RFID but it is estimated that one per thousand or more of all packaging available. The pool itself is very low tech, when it is more based on "I send packages to you, then I go onto a website and type I sent the x amount of packages. You get the packing and the system automatically estate receives the packaging." After two days (who is the lead time) the goods arrives to you and you received the goods onto the system. During the lead-time is packing in a so-called 'in warehouse of transit'. Since I send to you, you must accept and be responsible for a package and you then forwards. The large terminals receive the goods manually and check the packaging. Therefore there must be some points where someone counting and match properly. The difference of the previous and the new system is that with the new, all shipments actively
being received and entered into the system for better monitoring. The automatic goods receiver is out of business because they need to take better control over the goods and that systems should integrate more. There is much about supply chain visibility and try to use messages already to get better goods receivers. The packaging is too cheap to use RFID, a pallet does not cost more than 100 SEK but if you have 100’000 pallets it gets expensive.

- *Why did not Volvo Logistics use a deposit system instead of a trust system?*

The reason why they could not use a deposit system was because when they bought the so-called "Volvo pallet", nobody wanted it and getting subcontractors to pay for them was not an option.

- *What kind of Logistics Company is Volvo Logistics?*

Volvo Logistics is a transport logistics company. They are one who is called 3PL (Third Party Logistics provider), which means that it is about transporters, like Schenker. It is a very special industry. Volvo Logistics is very good at transport logistics but not as good at ordinary logistics. To manage a pool or inventory management are two entirely different things in the logistics world.

- *What is the business case with the project?*

The visibility we are looking for here is all about getting off the swinging demand curve (Figure 3 & 4) and try to straighten it out. This implicate that Volvo will be able to reduce the total need of packaging. It is pretty basic warehouse logistics.

Of topic, at Christmas, for example, when a grocery store sells a lot, it requires that you order a lot, the vendors will be happy but would probably rather have seen that sales spread out over the year when it gets big swings in stock. This means that if you at one point ordering home for 100 pallets of goods warehouse must be large. If you only had to order 10 pallets of goods per month, you would not have needed to have nearly as large warehouse.

Just as in the Volvo case story, at one moment they send lots of packing to a workshop and may not return anything to reuse because of the use of the trust system.

It is important to find the company’s vision. In a company’s vision you will find their business model. In this Volvo case story we found out that they use a trust model rather than a refundable deposit model. The next step was to find the purpose of the change. Often it is someone from the IT department who have seen something awesome system compared to what they have themselves and want a change. Then back to business change and in this case it was to take down the swings in the warehouse and create visibility. How do we measure it? Well we measured it in lost packaging. Without these swings, they had not lost as much packing and without swings they would not have as much packaging.
4.3 First Interview with Volvo Logistics, Solution Leader

- *A brief introduction of who you are, and what was your role in the project?*

In this project I worked as a solution leader. It means that I am responsible for delivering IT solutions to the packaging as a function or process. Partly to deliver the functionality that processes need to work, and that we do it at as low a cost as possible, and that there is support, but I am also responsible to ensure that the right skills are the users within the system. I shall not be responsible to educate users but to signal if it comes extra costs because the users does not have the right skills, something has to be done. It is largely the responsibility I have, then I have a new responsibility since the organizational changes made and it means that I have the responsibility to synchronize IT solution with process development but we have not had a clear counterpart but most looked at the process line needs. It has been shown that Volvo has not been the best transitions between the various stages of processes that costs money and disrupts activities.

- *In which direction do you think you will go? Adapting your processes or adapting the system?*

That is a very interesting question. The problem is that there is a kind of maturity, we do not have the tools to do the valuation what is best. We do not really understand what parameters allow one to focus on the process and the parameters that will focus on the solution. This is one of my duties and I think this is very interesting because I have an image that says if you have business processes that are very important for generating customer benefits (which often contain lead times) then it is the process that should be given priority, but if you has features that have a high degree of reusability, such as billing, then it should not be managed as a process but as a reusable service. Another example would be if you like laptop manufacturer would develop pointing device then there is no meaning because it is standardized to lots of users by the use of USB. This is what should be called a service. If the process is critical to customer and customer benefits, it is the process that is ruling and then you should organize itself by the process, but it's reusability and cost effectiveness can be service oriented and these interfaces can live together. In this way you can build a matrix where you can easily see what's important and who, for example, is responsible for delivering the trucks, he is responsible for building trucks and he is responsible for developing the truck, viewed from a high level, then there is a financier who will ensure that the economy work together. You cannot build three different processes but instead have one process for this task.

- *How is your business model for the reusable packaging to your customer?*

Briefly we are a third logistics party that provides our workshops with packaging using a trust system. Our trust system means that the workshops do not have to pay for the packaging they use, only if the customer breaks it or have it in their possession for more than three weeks. If any of this happens, the customer is required to pay for it, either as a late fee, or for the repair of the damaged packaging. Of course, the business to be profitable compared with disposable packaging.

The problem is if a supplier from Brazil needs one only pallet a week. The cost of that pallet is extremely expensive and the transport does not pay of. When this situation occur, Volvo has to deliver more parts to the supplier and they need to store it in their stock and they have it
more than three weeks. It is on Volvo's initiatives to save transport costs. In this scenario, the supplier does not have to pay any rent for using it longer than three weeks.

The main reasons for going from the old system to the new was that the old system had a bunch of limitations, which meant that we had poor control of inventory balances. We wanted to optimize planning to operate more cost-effectively throughout the pool. It is about buying the right products and the right amount of the right products distributed across the world. Purchase of packaging made in an external software that we wanted to integrate with the new solution.

As the project progressed, the focus has been moved from cost efficiency to be able to operate the pool in less packaging.

- *How do you explain the new SAP system compare to the old system? Use friendly?*

Volvo has a lot of transactions. These transactions are between a half to one million transfers a month. The system availability of development was another great aspect. The solution was built in the late 80's and back then it was a great cost to store data. This meant that developers were careful not to have redundant data. The downside was that Volvo had poor visibility and a great complexity when new function would evolve, as they had to search several different tables in the database to get total view. If a business analyst needed data to make a new report to an analysis, it took an IT developer or a database specialist to obtain the data in a structured way.

The old system was all about balance control. If you take, for example, availability of an item in the old system, we had a table where we stored balance, the acute onset balance, and every time some updating happened with an article as balances did.

In a transaction-driven system, it is only balanced as a calculation. The balance might be stored somewhere in the database, but by not putting focus on this, the system speeds up. If you want to know your balance you must start counting of all transactions, plus and minus, to obtain a result that a running calculation. If there is a lot of transactions taking this calculation take very long time so it is not possible to do so. Most new systems have some sort of intermediate storage of the current balance. The advantage is traceability and to explain a balance of change as for instance why we have a difference, then you can easily see all the in- and out balances. The old system was needed all the delivery notes to make the analysis.

SAP, however, is another type of control, I like to call the document management system, which creates some kind of a document. SAP is at a very high level a table with documents and is managed by transaction and traceability. To collect the correct data from the documents you have to put different documents together and this makes SAP so complex and difficult to manage. Compared with many other ERP systems have a table named inventory transactions.

The planning has also become much worse than it was before. The planners are planning more manually now than what was done earlier. It is because they are not embraced the new solution, they do not understand it completely. Earlier we used all packaging that we thought would be needed for a week and calculated on the total volume for the week. Then we started the next week and so on.
In SAP, we work more for MRP (Material requirement planning). For example, if one has a shortfall of packaging and need washing boxes you can tell them that there is laundered boxes elsewhere. Here you create an order to move the boxes to be washed and so there will be a balance in need.

But if you do not do this transaction, this differential is always there, and when the planners pick up the data in Excel as they did with the old system as a bad habit, everything gets messed up. This means that they do not have time for their work when it is time to plan the next week. The planners had their routines when they analyzed data in Excel and they had the opportunity to do more because they knew the system. Now in the new system (which the planners have not mastered) is more difficult to collect data and it has resulted in a lower planning in advance. Thus the exact opposite of what the project was about.

This is not the only solution is wrong, but it is very much about the level of maturity in the business but it work together. A complex solution that is complicated to learn and understand. It is about thinking differently in terms of logistic. To go from balance planning to current net requirements planning with a new modern system is hard.

It's like going from counting to simulate the future by creating the transactions that are expected to occur. The mental shift has not taken place at all, very few if I'll be completely honest.

- **What do you think of the new SAP solution?**

I do not think this was the right way for Volvo Logistics. We were not enough mature to obtain this new product. We are in the habit, and stuck in the old system and how it worked so our new planning function is not working as it is supposed to do within the SAP. There is a great frustration how the system is today. Right now we have a very large backlog of 130 cases that need to be corrected. Analysts do not deliver as planned thanks to the complex solution. It is difficult to get hold of the right skilled people. One of the basic problems that I see is that our business is not particularly commercially generic. Generic business means that you buy into some products develop them and then sell them. Clean in and out process. Here at Volvo Logistics is just out, and we own the material remains and comes back in again. The material never leaves the company. The new SAP solution has made is that all packaging accounts are external. Since Volvo still owns the material must Volvo also keep track of the balance and Volvo will also be able to plan and so on. What is done is to create a fictitious / global warehouse that is constantly in motion. Where each bin is a packaging account with different players so we have 7000 different bins. There were some who claimed that Volvo Logistics has the most storage locations throughout the world. To get this to work with the business model has been required to add pretty much into the SAP-solution. We have set up some rules that some bins may only send to the bin, etc. There are different types of transactions, transactions of empty packaging, transactions of filled packaging, and several internal transfers. All these entities are available in SAP but they are not applied to the way we work, but in a different way.

- **What is the opinion on the system today?**

One of the disappointments of the new solution is that we have not been able to use it to the fullest, but instead get daily work back on track. Today's planning is much worse ahead than the earlier planning. It is planned to increasingly hand than before for the simple reason that
we have not understood the system yet and planners do not get the right data. As it stands today, we have received a worse planning ahead and it is exactly the opposite what the project was about. We have a lot to work on there. I do not just blame the solution but it is a level of maturity.

The change we have made in our work is that we have gone from a working method to count the number needed Packaging to simulate the future by creating future transactions. The mental shift has not occurred than in the most users.

From experience I know that most, if not all, new systems implementations are unsuccessful from the user's point of view. Our implementation was also a big disappointment to many that users could not see any benefits at all.

The old system, which was implemented around 1990 and many of the users have never worked in another system that they could just fine. It was also built by our operations and processes were adapted to the system or vice versa. The problem is that the processes have changed over the years but we still have followed the conditions of the system and only built on more and more.

The thing with the old system, it was not an area that was not used. Everything that could be used was used. The new system is much bigger difference when we only use about 10% of the system. In this way, we get a lot of "unnecessary information" that do not even use. Among all this information is 10% of what to use and it's not easy to find these 10%. This brings much frustration among users.

We still have not managed to bill the rental of the Packaging and now the system has been live for about six months. Each month we lose large amounts of any company would be unforgivable. It is the highest priority right now and because it has taken so long with the billing of rent, management is worried about having to give away the rent.

**4.4 Second Interview with Volvo Logistics, Solution Leader**

- *How did the implementation process work? From that the solution lay in the test environment until it was put into use.*

It was divided into several main parts. An important part was the entry of master data from the old system into the new. It was not easy as the two systems have different data structure and functionality.

Another important element was the training of users. There is a separate part of the project has focused on just the training of users. The project has a lot of external users. In total there are 7000 users of the system but only 200 working internally with SAP. Thus the 200's internal users and the rest are external users around the world. Therefore, it is difficult to have an education for all of these users, but rather solved the problem of making videos of what to use and how to use it. The external users do not have such a big change in their daily work.

The 200 internal users of the system, however, were those who had the most change in work and needed the most training. The problem was that they did not receive enough training and education within the system that would be needed. It was a very big change in the...
organization and training period would have been needed much longer to get a full understanding of the system. The old system was custom built and all the functionality of the system was used while the new system, there functions that cannot be used, and then you get more information than needed.

The training was divided into various functions where the affected departments was a device such as planning for themselves and distribution planning for, and management control for itself. A leader in each group trained users with manuals and documents that were needed.

All individuals are different, some users learned faster than others and when people began to understand the solution and the system was training phase slowly on ice.

Some departments took the initiative and educate staff as good as it went through to show how it works, but it is up to the user to go into the test system and train yourself.

Some departments did their own internal training sections where users could train themselves in a test environment and now it is a moment for implementation as these departments have had the least support cases and a minimum of problems of knowledge.

Because this project is so large and took a long time, new managers has come and gone. Therefore, some form of management training would conduct so that the new management can gain an understanding of the system and its features. There we have missed in the training.

I am not completely happy with the education because you can never get too much education within a system. Today we manage the vital level for the business to roll on a daily basis.

We did not test the solution thoroughly in a test environment before we implemented the ERP system in the organization, but we implemented the system and started to introduction the master data.

There were guidelines or system manuals for how users would use the system and how the function worked in the system. There were not any processing instructions. Only the system would be used. These manuals were developed at the beginning of the project at a fairly high level. We had the backbone to the manual but they were changed for the project. Then, the departments themselves continued to adjust these manuals, each department has a key user who has continued to improve manual engines, these manuals are also used when hiring new staff.

Asked about any opening ceremony/party or kick-off for the new system, he replies that there is nothing they have had and the only bright point was in the end of the project's implementation is when they went live with the system.

During this six-month project has been live, I've seen great change in users' use of the system. There are parts of the business that is not only changed the system but also the work methodology. In particular, the planning of packaging needs where procedures have not been set yet. They live on in the old system and break out of the system to work in Excel as they worked before. The other departments begin to organize.
Success factors

• Who decided that a system change would occur?
We would change system has been gradually in management. The old system has been enhanced with the functionality so that it was no longer sustainable and that the architecture of the system was too old. In the old system, there were three factors that were important and it could not support the system.

• How involved was the lead in the project, how did they get users on "train"?
In a large company like Volvo's is not the top management involved anything in a project like this. It works so that you sit and decide on the financial resources at high level, and so have their own change goals. It allows putting money on change the organization have. The next level down in the hierarchy will be to develop proposals on the solution of how these change goals will be achieved.

In contrast, top management within the packaging was very involved in creating the conditions for obtaining financing. They were not particularly involved in functionality but it's more the lowest managers who are more involved in, so-called line managers. It is these managers who served on reference groups and discussed these topics. One problem with the project was to basically have the entire management has been replaced from the start of development up to implementation. There have been a contributing factor to these people had "the packaging mindset" which means that management has taken the decision without a thought of the consequences when they do not have the same mindset.

• Supplier selection? Why Entea?
Entea had developed a different solution for Volvo in finance managing control in SAP. Volvo has also stated that it is possible to use SAP so should this system be used. The former CIO of logistics felt that packaging would use SAP and then chose Entea when the SAP of suppliers. They were simply an inquiry and they said yes.

IT governor said there were too many instances of SAP so it must be "merged" with someone who is already there. The only SAP solution Volvo Logistics had was the finance solution that Entea developed. Therefore the answer was fairly easily of which supplier we would have. We did thereby no do major audit of suppliers, as it was they who had an eye on the financial solution. The lead architect working more as a management consultant with us at Volvo instead as a vendor, Volvo is very pleased with him and his work.

• The choice of ERP system?
It was simply according to Volvo's principles when they want to work in the right SAP. There are two camps in the Volvo, one that says we should only make use of SAP and another who does not want to use SAP. SOA (Service Oriented Architecture) do not want to become dependent on such a large application like SAP, but they want smaller portions. I feel that in such a large organization, you have to almost go in that direction to bring down the costs of further development.

• Goals and objectives with the project?
The important to get the new system was not getting a lot of new functionality without simply replacing the old functionality and a more modern platform that was mutable. These are the primary targets, but it has also emerged and disappeared goals along the way as the project developed. In the beginning it was very much about bringing down transport costs but then go
over more and more til to operate a more efficient packaging pool. The problem is that we have not seen any improvement in any of these goals.

Should you get the perfect planning as we seek, we have to work after the system is designed, and then you cannot work for old routines. There are so many other factors at play. It is not only the system's fault.

- **How did you handle the change management?**

We had a dedicated person to handle change management. This person got to see the changes in both systems and processes in which he recorded all these changes in a log called the change log.

There was not a single responsibility to push the entire business change project. For each item we had in the log there was one in charge for each item so they would ensure that these are met, or how far they have come with the change. Most of these business changes were linked to going live, thus they have to be fulfilled before the system was implemented. Some went to do in advance, but most had a dead line. To follow up these items held meetings regularly. It worked very well work this way.

Apart from all the technical aspects of the project focused mostly on business changes and how they were handled. There were some problems with creating new work practices and to shift responsibility over the organization. As an example, no one voluntarily stands up and say "I take responsibility for this" or "I solve the problem." Otherwise we have handled change management quite well.

To get the users more “changeable” we also talked a lot about how the new system can perform some activities that were not possible with the old system, and thereby show that the new system will improve the organization.

- **How have you handled the expectations of users on the system?**

From management, they point out much that it is about to change platform so do not expect a lot of new functionality, but it will at a later stage. By being clear about this so did users a clear picture of what was delivered.

However in some parts of the organization, they have realized that their daily work will take longer than it did before because the system has become more complex than earlier.

It has been too little focus on the end users of this project, it has been more "take it or leave it". That has not been 100% good. Expectations in turn, has actually not been particularly high since there have been initial resistance to the new regime from many directions. That are several factors that affect this, such as the choice of the solution, just the decision that Volvo did not listened to the users what they want in the system. We have received some but certainly not all, and it's been annoying for many.

What we did was to say from the beginning that we would not make any business changes, but only at this stage to change platform. It was handled badly if I'll be completely honest. I have worked a lot in the administrative systems and it is natural that the user to change system is stressed and unhappy.
There has not been any problem with Entea as a vendor and they did not “oversell” the ERP system, but we had a great communication and understanding what to expect. The problem today is that everything is not in order just yet.

- **Planning and analysis of data?**

It is an ongoing process. The planners do as they did in the old system. They build the Excel document by the side and it is not the new solution built for. Because there are other things in the system that are more important to gain control of right now, this has been prioritized away. Administration of getting out invoices and receive the correct data in the system. For that reason, much focus has been there.

Right now we cannot see improved results in the planning but quite the opposite. We have got a worse planning and less planning ahead than before.
5 ANALYSIS

In this chapter I analyze the collected empirical data and compared against the theory by using the empirical material and analysis model, which is based on the theory. Analysis of the model structure is used, and each of the critical success factors I identified and the underlying dimensions in the analysis model are discussed.

5.1 Implementation phase

Haft et al. (2002) did a study where they picked up determinants from different scientists to build a complete "best practices" on how an implementation should be done. To begin with, the solution should be tested in a test environment so the system works as it should. The Solution Leader said that they did not test the solution thoroughly in a test environment before they implemented the ERP system in the organization but they fulfilled Haft et al. (2002) the second step in the implementation phase.

That phase is where a responsible / leading end users test the system and get an understanding of how the system works. The logical step to take after a few leading users tested the system are obvious to those users who will operate the system on a daily basis (Haft et al. 2002). Since there are 7,000 users of the system worldwide was obvious difficult to have training with all these 7,000 users. Instead dissolved a video tutorial of how things are dissolved in the system. Their work did not change especially much in the change of systems. In contrast, the 200 internal users who work in the system needs better introduction of the system as their daily work is changing significantly with the new system. According Haft et al. (2002), users should initially perform some common tasks in the system that users find useful to cope with their tasks. Education and training phase will come later in the analysis chapter.

One of the two most important elements in the implementation of the system according to the Solution Leader was entering data from the old to the new system. It was not an easy procedure which the two systems has two completely different architectures and completely different functionalities. As Haft et al. (2002) mentions, it is in this step, after education step, that the important data that must be entered in the new system. This should be according to Haft et al (2002) go as painlessly as possible just to send positive signals to the employees, but that is not the case for Volvo Logistics. They had huge problems with getting into the master data correctly.

This step is important according to Haft et al. (2002) to have clear working guidelines as the new system often involves changing operation. What Volvo Logistics has done is that in the beginning of the project produced a manual on a general level how the system worked and how users would use in it. Gradually, during the project, this manual has been updated. Each department has a key user who has developed these manuals.

When the system is in the organization considers Haft et al. (2002) that implementations celebration should be held for the reason that the management should show users that the project is over and that they are satisfied with the result. Any party after the implementation of the system was not held according to the Solution Leader. The only thing that really
showed that the project was finished was when the system went live, and his body language to read, no one was particularly interested to celebrate the project was over when many are unhappy with the solution.

Once the system is live in the organization comes under Haft et al. (2002) to continuously improve the organization's way of working. They argue that an organization cannot go from A to B overnight but it takes time to adapt to the system. It is important when the system is implemented in the organization is to encourage users to users to operate the system to bring both himself and the organization forward in development.

In Volvo Logistics case, the system has been live in the organization for more than six months, and at first perceived the Solution Leader that the users did not like it at all, but they are now gradually becoming more and more familiar to the system. He has seen a great development on the 200 internal users that is using the system. If it only had been the system that was replaced, the problem had probably not been so big, but another change with the system is the working methods. One of the departments that do not really embraced the solution yet is the planning of packaging. The still works in the old way of thinking with their Excel documents they used in the old system. A major reason for this has not been resolved is that there is more "fire" in the system that must be given priority, for example, that sales of the packaging is not working as it should. Here is Volvo bleeding economically every month says Solution Leader.

A couple of reasons according to Entea’s Lead Architecture is that Volvo Logistics did not use his "go live plan" that he had compiled for them, but they used their own manuals instead. The other more obvious reason was that the organization itself was not ready to implement such a complex system like SAP yet. However admits Lead architecture that the system is taking shape and is used in the right way in the organization.

5.2 Critical Success Factors
Implementing an ERP system is often expensive and risky projects. It is said that three of the four ERP systems projects can damage an organization's business operations. Haft et al. (2002) has developed a number of factors that influence the success of an implementation of an ERP system becomes.

Somers and Nelson (2001) had a more high level when they discussed the phases in the implementation process. These phases were initiation, adoption, adaptation, acceptance, reutilization, and infusion. Their study of critical success factors is built on these stages and that there are critical steps in each of these phases. Of their twenty critical success factors that arise when an IT project, I will in this chapter take up a few of them to see how Volvo Logistics and Entea manage these critical success factors.

- Select the right ERP system

The Solution Leader said that the choice of changing ERP system was realized gradually as the system had become too old and out of fashion. The Lead Architect is on the same track as the system was around twenty years old and it is difficult to get hold of the right skills to maintain such an old system. He says the skills are dying and it was very expensive to operate the system. Another aspect was that the correct functionality not found in the old system.
When the system was built, it was built for contemporary Volvo and it fitted perfectly. The organization has now expanded dramatically over the years and it has meant that the system needed to be stronger and more powerful.

Just like Somers and Nelson (2001) says that the most important thing for an organization that implements a new ERP system is to choose the right one for the organization. It is important that the ERP system matches the needs of the organization to streamline operations. A wrong choice of ERP system may cause that the system does not fit the organization's strategic goals and business processes. According Akkermans and van Helden (2002) differs small and medium-sized enterprises ERP for large corporate enterprise. Some systems are more suitable for a certain type of industry, and another system is more adapted to operate on the other side of the earth. In this way, Akkermans and van Helden (2002) says that there is no business that overlaps an organization to 100%.

In the case of Volvo Logistics, the Solution Leader says that the choice of SAP simply was all about Volvo's principles, and that means that SAP will be used if it is possible. According to Volvo Logistics Solution Leader, priority was not on what is best for the organization, but that the system would follow Volvo's principles. There are two camps in the Volvo, one camp that wants everyone to use only SAP and other camps are not just enter the location of the SAP. The second group would rather see a SOA (Service Oriented Architecture) solution that is a little more loosely coupled and not so hard linked as SAP. They believe that such a large organization, as the Volvo's because it would be a better solution when and it would not be so expensive to develop.

- **Selection of vendor**

The Solution Leader said that the choice of supplier fell on Entea since Volvo wants to work as far as possible in SAP. The problem for Volvo Logistics was that Volvo IT governor felt that there were too many instances of SAP in the organization and therefore must build up the solution with any other solution. It became natural to build up the new solution with Volvo Logistics latest SAP financial control systems. It was Entea who delivered the system and they had the most control on that instance. Therefore, the choice fell naturally on Entea. There was no thorough search of providers but as it was they who had control of the previous solution, it was only a bonus and easy choice of supplier. The lead architect works today more as a management consultant with us at Volvo instead as a supplier because Volvo is very pleased with him and his work.

The Partnership is something that Somers and Nelson (2001) highlights. They believe that the partnership is very important to get such a successful project as possible. They believe that a good relationship between supplier and organization often contribute to a successful implementation of a business and that the two parties in the future will continue to cooperate if it would require a new form of IT systems. The system vendor must have goals and visions of how the system will be in the end so that the organization can continue to develop and according to Lead Architecture there were obvious plans for the system. The problem was according to Lead Architecture that the system was so well developed and complex compared to the old system that users do not know how it would be used yet. The system itself is very good, it’s just that the organization has not adapted itself to the great change that comes with the system.
• **Goals and objectives**

According to the Solution Leader, it was not the purpose of the implementation to get lots of new functionality, but instead get a more modern and more powerful platform because the old was not very congested. This was the main goal for the IT project and according to Somers and Nelson (2001), it is important to map out clear objectives for an IT project for it to succeed. Akkermans and van Helden (2002) agreed with Somers and Nelson (2001) when they say that at the beginning of a project, the goals and objectives should be the discussed in the new system. The objectives should be detailed on an operational level and it's good to make a list of goals to get an overview of what the organization wants to change.

The Solution Leader says, however, that in the beginning of the project, more cost objectives was discussed to reduce transport costs but as the project progressed was the target of more to get a more efficient packaging pool as well. During the project, goals came and disappeared in the project and it goes against Somers and Nelson (2001) when it comes to having clear objectives. One problem Akkermans and van Helden (2002) identified the goal and purpose is that it is very difficult at first to determine what an organization should have the precise objectives of the project.

Since the objectives changed during the project, the result may have been affected. The Solution Leader says they have not seen any result of improvements to any of neither the transport costs or the packaging pools planning and there is a sanction of Somers and Nelson (2001) on the objectives are not clear affected the outcome of the project negatively.

Haft et al. (2002) argues that the goals of a project should generate satisfaction towards the customer, employee and suppliers. Now, only six months after implementation, the Solution Leader says that the employees (users of the system) are not satisfied when they failed to master the system. A distinction I made in my work is that I have not talked to Volvo's customers or other vendors in addition Entea then it would be too extensive.

• **Analysis and planning of data**

According to the Solution Leader, analysis and planning the data has not been improved after the project, e.g. that the planning of packaging would be more efficient has become the opposite. At this particular moment, it has only become worse than before. It takes longer than before. One problem is that users have not embraced the solution to the fullest. Instead, they work in Excel documents as they did in the previous system, and the data in the ERP system become not reliable. According to Somers, and Nelson (2001), the value of implementing a new ERP system to get the correct data, and to get the required users to use the system and not bypass it. Haft et al. (2002) also believes that it is important that users must use the system functions for it to achieve full functionality.

The problem of Volvo Logistics case according to Solution Leader is the users to bypass the system and thus damage the functionality of the system. Bypasses the users the features of the system is damaged stock levels and then disappear purpose of the plan in a simple manner in the ERP system. This is yet another reason to have a thorough and good training of the users so they also understand the consequences of improper stock levels (Haft et al. 2002).

What the Solution Leader said during the implementation phase was that they had trouble getting the data correctly in the system when the new and old system differed so much from
each other in both structure and functionality. Problems arising or inaccurate information can lead to delays in implementation. A very important process in the implementation work is handling the data contained in the ERP system. The challenge now is to find important data to implement the system and transmits all these different data structures into a reliable format (Somers & Nelson 2001).

- **Management support**

The Solution Leader insists that in a large company like Volvo, the top management cannot help to drive the project. Instead, they have the task of dividing the resources to the different parts of the business to achieve the goals that are set. The next step down in the hierarchy, they are working with solution proposals and the objectives that top management was developed will be fulfilled. The top management of Packaging Logistics on other hand was very involved, however, mainly in efforts to obtain funding for the project. They were not particularly involved in the functionality of the system, but it was the line managers who worked together with the users of the upcoming system.

The problem with this, according to Somers and Nelson (2001) is that the top management (in this case in Packaging Logistics) should be involved in an implementation of an ERP system to achieve as successful as possible. Instead of the management was the driving force in the project, it was the line managers and they were mainly from those who the “challenge” came from. That is exactly right in line with the Haft et al. (2002) mentions. They push just like Somers and Nelson (2001) on that management must be involved when many future users are "opposed" to change and innovation.

An inadequate factor on management's involvement in the project was that since the project came out so much time had most of the change of management over time. With the change of leadership came new ideas into the project. Those who helped to start the project had a picture of it, and those who completed the project had a different picture of what the outcome would be.

The lack of top management commitment in Packaging Logistics and the management was replaced was, according to Akkermans and van Helden (2002) a small chance that the project could be seen as successful. They also believe that middle management and other employees should be involved because if they only give responsibility to consultants and technical experts is a great risk of project failure.

- **Change management**

According to Somers and Nelson (2001), perhaps the most important factor is how change management is handling at an implementation of an ERP system. In an implementation of an ERP system is often great changes within the organization that may create confusion among users. If the organization is not prepared that there will be changes in the organization after an implementation of an ERP system, it will not go well. The Solution Leader says that Volvo Logistics handled change management in a good way when they had a devoted employee who identified changes in the system compared with the old one and the changes in the process compared with the old processes collected in a change log.

According Haft et al. (2002), the organization should have the right technology to manage these changes and in Volvo Logistics case handled this in a good way in their change log.
They also claim that highlighting what can be done in the new system compared to what could not be done in the old system. This makes the users more willing to adapt and work according to the new system. The Solution Leader said that it was just as Volvo Logistics did in their change management towards users. To show what was possible with the new system that could not perform in the old one.

Somers and Nelson (2001) also say that change management is not about one individual to carry out all work, but it should be in everyone's interest to work toward change. It was something that the Solution Leader mentioned, that there was an individual responsibility to resolve without the need permeated the entire Volvo Logistics as an organization. What Volvo Logistics did was that they divided all items of change in the change log and gave them a responsibility to follow up and see how the change process develops. One problem with this, according to The Solution Leader was that there were few who wanted to take responsibility and take the tasks in the change log. There were few who said, "I take this one" or "I am responsible for this task," etc.

The Solution Leader says that most of the change management about changes after the implementation of the ERP system, which meant that they could not prepare the users of what is to come over there will be no changes in work routines. According to Haft et al. (2002), in this way, the employees is not prepared for the change and it can lead to future users of the system, creating a denial to the system and the system is not used properly. It is something that the Solution Leader has seen the operation, the system is not used entirely correctly.

- **Training and education**

The Solution Leader mentions that one part of the implementation was the training and education of users. There are different types of users (internal and external) and they were divided education into two. External users is approximately 7000 and they are located all over the world as an educational face-to-face was not an issue while their work is not affected very much by the change of system. They received instead tutorial videos to learn they have changes that resulted in the system.

The 200 internal users of the system, on the other hand needed the more education when their work changed radically. The training was divided into various functions where the affected departments was divided such as planning for themselves and distribution planning for themself, and management control for themself. A leader in each group trained users with manuals and documents that were needed.

The manuals consisted not of how the processes were built but only of how the system would be used. These manuals were developed early in the project and were developed as the project went on. Eventually, the key user at every department updated the manuals.

Somers and Nelson (2001) argue about if a project should not be seen as a failure, it is important that the education of users is well developed. One other important factor is that the users have to be well educated in the new system is with all the new technology and perhaps the new processes the users needs to be trained on how they are supposed to work and how they relate to the new process early on. They also claim that users should have an understanding of the business for about 6 months. The Solution Leader says he is not really happy with how the training of the employees has proceeded. He says that individuals are different and learn at different rates so when some users began to understand the education
system was down. Today (just over six months later) we manage the vital level for the business to roll on a daily basis. Haft et al. (2002) argues that this is a common problem when management often sees only the training of the staff as an unnecessary expense. They recommend that about 15% of the budget for the project should be put on training users to a positive result will be achieved.

Somers and Nelson (2001) mentions that often do organizations take help of consulting firms to implement a new ERP system and take their help in the training of users and then it is important that the information is transmitted in a good way. As previously mentioned in the analysis chapter gave Entea's Lead Architect a "go live plan," but it was not used.

The Solution Leader said that some departments took the initiative and educate staff as well as possible through to show how it works, but it is up to the user to go into the test system and train you. There is something Haft et al. (2002) highlights a problem that can arise when implementing an ERP system, when the implementation is over, users will instantly know what to do. However, they argue in spite of everything that is when the system is in the organization as the big learning process begins. The Solution Leader have seen clear progress in some departments embraced the training phase by setting up a test environment that users can test the system and it is these departments that require a minimum number of support cases.

- **Management of expectations**

Volvo Logistics has been very clear that it is not initially going to get a lot of new functionality without it primarily involves replacing the old platform and the old architecture of the system. According to Somers and Nelson (2001), this is very difficult step in implementing an ERP system. Although this operation may cause the project is seen as a failure if users do not get what they expected.

The Solution Leader says that it has been too little focus on the end users of this project, it has been more "take it or leave it". The expectations of the system have not been a major problem in the sense that users have been against it from the beginning and thereby not really bothered about the result. And that is a problem itself.

On the question to the Solution Leader about if the vendor “oversold” the product did he say that there has not been any problem with Entea as a vendor and they did not “oversell” the ERP system. We had a great communication and understanding what to expect. The problem today is that everything is not in order just yet. Somers and Nelson (2001) say that a common problem while implement a ERP system is that the vendor oversell the product and make them to believe that they get something better than what it is.

Akkermans and van Helden (2002) highlights the problem may occur if the vendor underestimates the complexity of the system compared to the organization's maturity. For example, if the organization gets a system that is so complex that they cannot handle it. It makes implementation more difficult than expected. Precisely this is a problem that the Solution Leader mentions when the organization was not mature enough to adopt such a well-developed and complex system.
6 Conclusions

This chapter describes the results of the study.

The aim of my bachelor thesis was to highlight a few critical success factors for implementation of ERP systems. I identified some critical factors and found some factors that stand out from the rest in how they were handled in the LES project in the Volvo Logistics organization. How these factors were handled in the project clearly differs from conclusion made by various authors, in particular Somers and Nelson (2001), Akkermann and van Helden (2002), and Haft et al. (2002).

In the analysis, one can clearly see a couple of problems that have arisen with the implementation of the ERP system in the Volvo Logistics. One factor that is not handled in a perfect way was the actual implementation work when Volvo Logistics chose not to test the system in a test environment before the final implementation, but instead went live with the system and then continue with education phase. For me it was such an obvious thing to do before a final implementation of an ERP system or any IT systems whatsoever for that matter, so I did not ask the Solution Leader. It came up during the interview and it made me react. Why did they not test the ERP system in a test environment?

One factor that was handled in a good way was change management. I understand this factor as one of the most difficult to manage. How Volvo Logistics succeeded (tried) to get the users of the system to do their part by delegating the responsibilities in the change process. The problem that emerged from this was that there was no one who was actually committed enough to voluntarily undertake tasks in the change log. That is just a sign of lack of commitment, and users are not passionate for the system.

Because the lack of commitment of the users, it looks like that the expectations of the system was handled well because both the planning and the outcome of the project was the same. The problem was that users did not care about the system and therefore it can appear that this factor was handled well.

When not even the management is committed to an implementation of an ERP system, it is difficult to get the "regular" workers to participate or get a positive image to the system. To hear a manager or high ranking employees say that this change will contribute much to the organization and to facilitate your work and pep users would facilitate the change process so much. Now, instead, people in the organization have been more pessimistic and been disappointed with the choice of system and of such contracting out of employees.

As a validation of my analysis, I like to end this final chapter by mentioning that after I interviewed the Solution Leader the second time, he told me that the interview was perfect and that I had stressed exactly the right points.
List of references

Written References


**Verbal References**

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Solution leader in Project LES from Volvo Logistics, interview 1. May 6th, 2015

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