SCORing high on Alfa Laval

- Creating a management system framework for implementation of common workflows

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Abstract

Title: SCORing high on Alfa Laval
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Issue of study: The number of companies that are discovering the benefits of having a process-oriented mindset is continually increasing. But moving from having a strict functional-oriented mindset to becoming more process-oriented does not happen over night. The road of transformation is long and many challenges are faced on the way. Therefore, this thesis focuses on the question of how companies should approach a transformation of this kind in order to implement the new mindset successfully within the organisation.

Purpose:

- To create a management system framework, including a management structure with roles and responsibilities, in order to secure the sustainability of Alfa Laval's new set of standardised workflows.

- To study the implementation of such a management system framework as well as the standardised workflows at Alfa Laval, and give recommendations to further improvements.

- To contribute academically in the context of discussing implementation of a process-oriented mindset within an organisation.

Method: A qualitative method has been used during this study and the data has mainly been collected through semi-structured interviews with people both internal and external of Alfa Laval. Literature studies have also been performed. Kotter's 8-step model for change and Hammer's PEMM have been used in the analysis.

Conclusions: A management system framework has been developed and presented in chapter 7.There isa risk that the management structure will limit the important aspect of continuous improvements because of its top-down focus. Further the way of organising according to the three workflows - Source, Make and Deliver - may lead to a continuing silo thinking within Alfa Laval. This does not foster a process-oriented mindset where focus lies on the customer instead of on the manager. As this is a weakness of the management structure, it is an important aspect to be aware of.

When studying the Supply Chain Processes-projectat Alfa Laval, some areas within change management have been revealed to be more crucial than others. The important aspects are strong leadership, senior management involvement and employees' involvement.

This thesis also clarifies a confusion of the concepts of processes and process-orientation among companies. The underlying definition of a process is not always understood and a confusion regarding processes and workflows seems to often exist. The thesis also discusses the journey from being a functional-oriented organisation to becoming a process-oriented organisation. The ACE-model presented in the end of chapter 6 is created based on the learning from this study and aims to help organisations in their transformation of becoming more process-oriented.

Keywords: Change management, process, process-orientation, SCOR-model, Alfa Laval, support system, workflow, management system framework

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Lund, 2009-05-27

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Abbreviations and frequently used terms

BPM	Business Process Management. A holistic management approach that focuses on continuously improve processes
CMS	Content Management System. A computer application that is used to create, manage and edit different kinds of digital media and electronic text
ECM	Enterprise Content Management. A key component of an organisation's infrastructure and refers to strategies, methods and tools that are used to manage content and documents that are related to organisational processes
ERP-system	Enterprise Resource Planning-system. A company-wide computer software system that is used to manage and co-ordinate resources, information, and functions of a business from shared data stores
HSS	High Speed Separators. One of twelve product groups within Alfa Laval
ISO 9000	Is a family of standards for quality management systems and is maintained by ISO, the International Organization for Standardization
KPI	Key Performance Indicators. Measures or metrics that companies use in order to define and evaluate in order to reach long-term organisational goals
MOSS	Microsoft Office SharePoint Server. A server program that organisations use to facilitate collaboration, provide content management features etcetera that is essential to organisational goals and processes
OD	Operations Development, a part of Operations at Alfa Laval
PEMM	Process Enterprise Maturity Model. A model that measures a company's process maturity
PULSE	Project within Alfa Laval Parts that aimed to implement standard logistic processes globally. PULSE means "logistics Processes which are Uniform, Lean and supported by a common System Environment"

SCC	Supply-Chain Council. A global consortium that "*provides and help organisations to make dramatic and rapid improvements in supply chain processes"*
SCOR-model	Supply-Chain Operations Reference-model. A performance measurement tool helping companies mapping their operating processes
SCP-project	Supply Chain Processes-project at Alfa Laval. The implementation of common working method within all manufacturing sites globally
Senior executive team	Top management of Alfa Laval
Senior management team	Top management of Alfa Laval Operations
QLM	QualiWare Lifecycle Manager. Provides a set of business modelling architecture and management system-related capabilities that supports different types of business modelling/documentation activities

1 Introduction

In this initial chapter, a basic background, the case-company Alfa Laval, a problem description, and the purpose are presented as well as the delimitations and target group of this thesis. Lastly, a general outline of the thesis is provided, which gives the reader an overview of the contents in each chapter.

1.1 Background

During the last decades many radical changes has taken place in the world, which also have had a great affection on the business world. The globalisation, increasing demands among customers and shorter product life cycles due to fast changes in the technology are some examples that have resulted in a power shift between the suppliers and the customers. It is no longer the producing companies who possess the power, but the customers. Companies all over the world have therefore gone towards being more customer-oriented. This era has been introduced as *the Customer Economy*.[1]

Organisations are usually focusing on cost reductions or differentiation[2] in order to create competitive advantages.[3] However, in order to succeed in the Customer Economy, it is essential that companiesfocus more on the customers and make sure that everything performed in the organisation is made in order to create customer value. Companies have traditionally been structured based on different corporate functions, where internal needs are satisfied more than the external ones. The functional-oriented organisation is not adjusted to the fast changing world we live in today and still remains mainly due to traditions.[4] Control within functional organisations is made vertically while the value creating is made horizontally. The employees are working towards the manager's demands in a functional-oriented organisation and not towards the customer's, which means that the activities are not always creating value for the customer.[5]

To better acknowledge the customers, organisations should identify and design their core business processes, which will help them move towards becoming more process-oriented. Agility has become an important success factor for organisations and by having an overview of their processes, it will be easier to identify problems and proactively find solutions that can solve them.[6]

The number of companies that are discovering the benefits of focusing on processes is continually increasing. But going from a strictly functional-oriented mindset to

[1] Hammer (2001), p. 1-7
[2] Porter (1980), p. 42
[3] Willaert et al. (2007), p. 2
[4] Hammer (2001), p. 55-57
[5] Ljungberg & Larsson (2001), p. 75-77
[6] Willaert et al. (2007), p. 2

becoming more process-oriented does not happen over night. The road of transformation to get there is long and many challenges are faced on the way. Therefore, it is necessary to have a clear plan of how to approach a transformation of this kind and have a structured plan regarding the implementation process.

1.2 Presentation of Alfa Laval

In 1883, Gustaf de Laval and Oscar Lamm founded Alfa Laval under the name AB Separator. It started off with constructing separators for the milk industry and began in 1888 to sell pumps that were used to pump skimmed milk from the centrifugal separator. 126 years later, Alfa Laval has 12 different product groups and has more than 26 large and medium sized manufacturing units around the world. The company consists of three key technologies, which are heat transfer, separation and fluid handlings and is today a leading global provider of specialised products and engineered solutions.[7]

Alfa Laval's corporate mission is: *"To optimise the performance of our customers' processes. Time and Time again."*[8]

Due to the complex environment that Alfa Laval operates in, the company has not been able to have one single organisational structure. The organisational structure that defines Alfa Laval is a double cross-functional matrix.[9] To achieve its market strategy, Alfa Laval has set up sales organisations that take both customer segments and geographic locations into considerations. Thanks to the approximately 50 different sales companies located around the world, Alfa Laval is able to get closer to their customers that are spread in around 100 countries. Furthermore, Alfa Laval has divided its nine different customer segments between two divisions: Process Technology Division and Equipment Division. In addition, there is a third division called Operations that support the sales organisations with the right quality products at the right time, see
Figure 1 below. The activities of Operations include procurement, manufacturing and logistics.

[7] www.alfalaval.com (2009)
[8] Ibid.
[9] Fagerberg (03/04/2009)

Figure 1 - Alfa Laval's organisational structure.[10]

Sales companies and Market Units act as front end towards Alfa Laval's various markets, but to get a cost efficient supply chain set-up Alfa Laval has chosen to focus on twelve different product groups, presented in Table 1 below.

Table 1 - Alfa Laval's twelve product groups.[11]

Product Groups within Alfa Laval
Plate Heat Exchangers (PHE)
Brazed Heat Exchangers (BHE)
Welded Heat Exchangers (WHE)
Separators/ Modules (HSS)
Decanters (DEC)
Pumps & Valves (P/V)
Spare Parts (Parts)
Heat Exchanger Systems (HES)
Air products (AIR)
S&T
Fusion-bonded Heat Exchanger (FHE)
Others

This thesis has been written in collaboration with Operations Development Supply Chain (OD) at Alfa Laval in Lund. OD is a subsidiary function to the division of

[10] www.alfalaval.com (2009)
[11] Alfa Laval intranet (2009)

Operations and its mission is to develop, promote and implement breakthrough strategies and concepts in order to optimise supply chain performance in all product groups within Alfa Laval, globally[12]. Figure 2 below shows the organisation of the Operations and OD's position within the organisation.

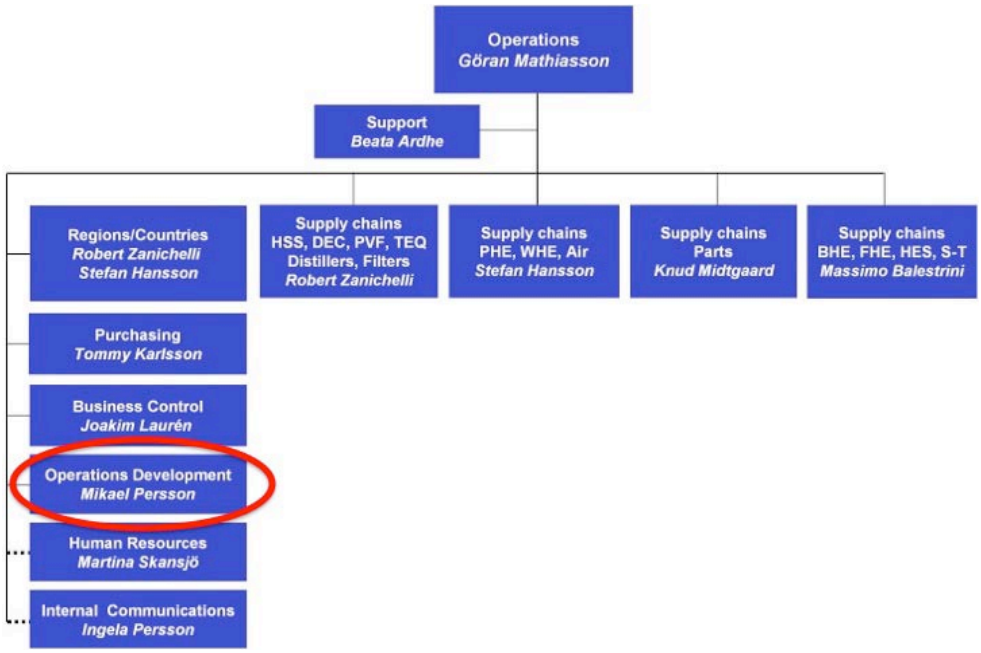

Figure 2– Organisational chart of the Operations division within Alfa Laval.[13]

1.3 Problem description

Each manufacturing site within Alfa Laval Operations has, until recently, been functioning as individual units with the freedom of deciding how to organise itself and which ERP-system (Enterprise Resource Planning-system) to use. This has resulted in a great loss of synergies and economies of scales between the sites.[14]

In 2006, ideas about defining common supply chain processes emerged from another project which purpose was to implement the same type of ERP-system on all sites within one of the twelve product groups. OD came across the SCOR-model and began to use this model as a base when mapping Alfa Laval's common supply chain processes. The processes were designed according to what OD considered as best practise – the best way of working. Thus, the processes have been mapped on a strategic, tactical and operational level with the initial focus lying on the product group High Speed Separators (HSS) and more specifically on the Monza-site, Italy. This project will be referred to as the Supply Chain Processes-project (SCP-project) further on in this thesis.

[12] Fagerberg (03/04/2009)
[13] Alfa Laval intranet (2009)
[14] Jacobsson (27/01/2009)

The implementation of the common supply chain processes will be conducted by using a top-down strategy approach. OD represents the strategic level and will hand over the process maps to the tactical and operational level and expecting them to start working according to the maps almost immediately. This approach can lead to a resistance of the new standardised way of working by the employees on tactical and operational level. After implementing the common processes in Monza, OD will continue the implementation process in the remaining sites within HSS, namely Krakow in Poland, Eskilstuna in Sweden, Pune in India and Jiang Yin in China. When all five sites within HSS are up running, OD will continue the implementation process at the remaining product groups.

The Supply-Chain Operations Reference-model (the SCOR-model) is a performance measurement tool helping companies mapping their management processes, and has been developed by the Supply-Chain Council (SCC).[15] The SCOR-model does not include guidelines for the implementation of the processes nor provides a framework for managing and securing a long-term sustainability of the processes. Only a few Swedish organisations have used the SCOR-model in the work of mapping their processes but for the time being, no Swedish company have actually implemented them.[16] Our case-company, Alfa Laval, has mainly used the SCOR-model when mapping their processes and is now ready to implement them within the whole organisation.

In order to succeed with the implementation program of the common processes at Alfa Laval Operations and to secure that all sites will work according to the processes, Alfa Laval needs a framework that secures and enables an efficient administration for the implementation of the processes. This framework, more precisely a management system framework, shall be available to the right parts of the organisation and shall contain roles and responsibilities for the supply chain processes on strategic-, tactical- and operational level. The management system framework shall also be a tool that supervises process changes and/or adjustments made on strategic-, tactical- or operational levels and include a decision-making process that facilitates the handling of such proposed changes. Further, since there is no proper document handling system and no structured way in how to communicate with each other within Alfa Laval Operations, there is a need to look at and invest in a supporting IT-system.[17]

1.4 Purpose

The first purpose of this thesis is to create a management system framework, including a management structure with roles and responsibilities, in order to secure the sustainability of Alfa Laval's new set of standardised workflows.

[15] www.supply-chain.org (2009)
[16] Stefansson (03/03/2009)
[17] Fagerberg (20/01/2008)

The second purpose is to study the implementation of such a management system framework as well as the standardised workflows at Alfa Laval, and give recommendations to further improvements.

The theoretical purpose is to contribute academically in the context of discussing implementation of a process-oriented mindset within an organisation.

1.5 Focus

The management system framework that is developed in this thesis is primarily developed in order to secure that the employees at operational level work according to the common processes. The management system framework is, thus, not primarily developed in order to improve the performance of the processes.

This study is focusing on finding a management system framework for the common processes and is not in any case discussing the content of the processes. However, if there are any criticisms against the processes, this critic will be taken into consideration.

1.6 Target group

An important target group for this thesis is Alfa Laval, who also is one of the main stakeholders. It is primarily Alfa Laval that will have use for the developed management system framework. Hence, other companies facing the same issues of standardisation of workflows can find inspiration from this framework.

Another target group are enterprises in general that strive towards becoming more process-oriented. This thesis can help them with providing a foundation when approaching a transformation towards becoming more process-oriented.

Also, the School of Economics at Lund University and the Faculty of Engineering at Lund University are included in the target group regarding the theoretical aspects and the contribution to the academy.

Additional target groups are Volvo Aero and ST-Ericsson that have contributed with information to this case study and who have requested to take part of the results of this thesis.

1.7 Research outline

The outline of this thesis will provide the reader with a brief description of each chapter's content and in what order they are presented.

Chapter 1:*Introduction*
Presents the background of the thesis, a company description of Alfa Laval, the problem description, the purpose, the focus and the target group.

Chapter 2:*Methodology*
Presents the methodology used in this thesis, including the work of writing this thesis, the methodological approach, the case study approach, the data collection, the method of analysis and validity and reliability.

Chapter 3:*Theoretical framework*
Presents the theories applied in this study, which mainly focuses on process-orientation theories and change management theories. Through the theoretical framework, the authors aim to find valuable information to be able to contribute academically.

Chapter 4:*Empirical findings at Alfa Laval*
Consist of a thorough empirical research with key personnel within Alfa Laval, which is a valuable source of information that will have impact on the analysis of this study.

Chapter 5:*Benchmarking*
Presents information that the authors have collected when studying other organisations' work in becoming more process-oriented. This chapter also describes different potential support systems.

Chapter 6:*Analysis*
Presents a discussion regarding the results found in the theoretical and empirical studies and aims at answering to the set purposes. The chapter ends with presenting the conducted theoretical contribution.

Chapter 7:*Delivery of management system framework*
Presents the developed management system framework including the roles and responsibilities as well as a meeting structure, a decision-making tree and recommendations of a support system.

Chapter 8:*Conclusion*
Finally, the conclusions of this thesis are presented.

2 Methodology

This chapter presents the methodology of this thesis and begins by introducing the overall working process before the methodological approach, the collection of data, the method of analysis as well as the validity and reliability are presented.

2.1 Thework of writing this thesis

The working process of this master thesis has consisted of three main parts. The first part of this master thesis has been to develop a management system framework. In this phase an abductive research approach[18] has been used, which means that the authors have made a theoretical research parallel with an empirical research. During the first weeks, a lot of time was devoted to literature studies in order to get a broader understanding of the topic before it was possible to dig into some of the areas that were found more relevant for this study. The first weeks were also a phase of getting to know the culture within Alfa Laval and to get an understanding of the background and the needs of a management system framework. Benchmarking towards other organisations that have experience from process implementation was performed. The purpose of the benchmarking was to collect different approaches in how a company can organise itself in order to optimise its process performance and how to communicate with each other within this organisation. From the empirical and literature researches, the authors designed different versions of management structures, which were then presented and discussed with OD before a final management structure was designed and agreed upon. Thereafter, a meeting structure and a decision-making tree were developed. These were also discussed under the development phase together with OD.

The second part of this thesis has been to evaluate and propose a support system for Alfa Laval based on their demands on such a system. Alfa Laval's demands on a support system have been established through a survey that has been answered by people within Alfa Laval. A complemented benchmarking has also been performed in this phase in order to collect data regarding support systems before a proposal for Alfa Laval has been conducted.

During the third part of the working process, in the work of making an academic contribution, an inductive research approach[19] has been used. By combining our experiences from this study with two well-recognised models from the theory, our academic contribution is shaped. In this third part, a discussion regarding implementation of a process-oriented mindset within organisations is made and recommendations to Alfa Laval are presented. Figure 3below describes the working process used throughout the thesis.

[18] Wallén (1996), pp. 48
[19] Ibid. p. 89

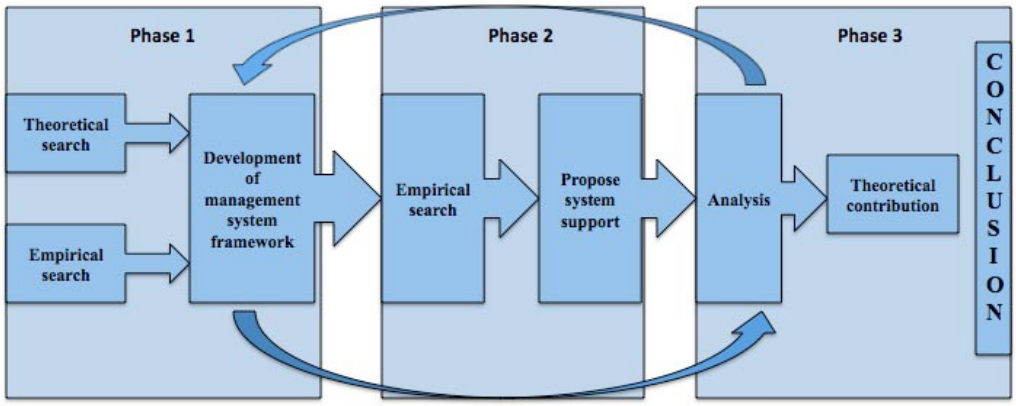

Figure 3- An illustration of the working method.

2.2 The systems approach

The research process is about creating a fit between *the paradigm*, *the methodology* and *the problem*. The paradigm concerns the researcher's basic assumptions of the reality. The methodology concerns the different possible solving techniques of the problem or the research question.[20] The paradigm (the basic assumptions) affects how the researcher looks at the problem and his/her attitude towards the methodology. Furthermore, the problem and the solving technique influence one another, which also affects the paradigm. There are three different harmony groups or methodological approaches which describes the fit between the paradigm, the methodology and the problem. The three methodological approaches are "*the analytical approach*, *the systems approach* and *the actors approach"*.[21]

The methodological approach that is used during this thesis is based on the systems approach.[22] The authors argue, just like the systems approach, that the reality is objective but that the components that shapes the reality is mutually dependent on each other and that synergies between these components are possible.[23] A holistic perspective and the relation between the entities of the system will be in focus during the whole research.[24] The reality is seen as an individual, social and cultural construction where the focus in the study lies on how the individual understands and interprets the surrounding reality in relation to earlier knowledge and experiences. [25]

The authors have been situated at Alfa Laval's headquarter in Lund most of the time during the writing of the thesis and have been able to interact with the people at the department of OD on an every day basis. The authors have therefore to some extent been a part of the subject that has been observed. The authors havestudied the

[20] Nilsson (1994), p. 1
[21] Bjerke (1981), p. 3
[22] Nilsson (1994), p. 8
[23] Ibid.
[24] Bjerke (1981), p. 8
[25] Backman (2008), p. 53

situation of the investigated part and have tried to see the world from their perspective.

2.3 The case study approach

The case study is appropriate in order to understand the dynamic within single settings situations.[26] The case study approach is particularly useful when to explore new topics or when little is known about a phenomenon.[27] Case studies can involve either a single case or multiple cases.[28]The main focus on this thesis has been on Alfa Laval but two other companies, Volvo Aero and ST-Ericsson, have also been studied during the research. Both Volvo Aero and ST-Ericsson consider themselves as process-oriented organisations which is why they are interesting for this study.

Case studies can be used to achieve various objectives such as provide descriptions, test theory, or generate theory.[29] The objective in this study is to generate a theoretical contribution within the studied areas.

Data collection methods such as interviews, questionnaires and observations are commonly used in case studies,[30] and can involve qualitative data only, quantitative data only or both.[31]The method used in this thesis is based on qualitative data and the study has focused on observations and interviews with key persons at Alfa Laval. Benchmarking towards other companies has been performed in order to get input from external parts.

2.4 Data collection

The data collected during this study is based on both primary and secondary sources. The primary sources consist of semi-structured interviews with people within and outside of Alfa Laval. In a semi-structured interview, the subject are decided in advance, but the questions are formulated as time goes on and are adjusted to the respondent's answers and reactions.[32]Employees, which have been interviewed inside of Alfa Laval, are people at OD (strategic level) and people on tactical and operational level. Also people from other departments within Alfa Laval have been interviewed. Interviewed people outside of Alfa Laval are key persons in companies towards whom the authors have benchmarked. Furthermore, people that possess extensive knowledge within the studied areas have been interviewed. Most of the interviews are performed face-to-face, but interviews over the telephone have also been performed.

[26] Eisenhart (1989), p. 534
[27] Ibid. p. 532
[28] Ibid. p. 534
[29] Eisenhart (1989), p. 535
[30] Ibid. p. 534
[31] Ibid. p. 534-535
[32] Björklund & Paulsson (2003), p. 68

A questionnaire has been conducted in order to collect the different demands that Alfa Laval have on a support system. A questionnaire consists on predefined questions and answering alternatives and can for example be graded. The respondent can also be given the opportunity to answer more openly.[33] The respondents answering the survey in this thesis were asked to grade the predefined demands between the scales of 1-5, and were also given the option to add own demands.

Secondary data have been collected through various literature and articles. Also the Supply-Chain Council's webpage and other relevant web pages have been used to collect data.

2.5 Method of analysis

In order to ratiocinate early in the analysis process and to structure the data, so-called write-ups have been made after every interview. These write-ups describe what has been said during the interview and they have been important to generate insights for the study. The authors have tried to see the studied companies as a stand-alone entity with the purpose to search for unique patterns in each case. These are then compared to each other in order to search for cross-case patterns. To analyse the collected data the researchers have selected categories in order to find similarities as well as differences between the cases. These categories are developed from the problem in this thesis. The findings from the cases have also been compared to the theories in the area, to find similarities and differences between the written literature and the case studies.[34] Roles and responsibilities, a meeting structure as well as a decision-making process, adapted to Alfa Laval's supply chain processes have been conducted based on this analysis, discussions and workshops together with OD. What kind of support system that would fit Alfa Lavalhas been analysed based on the identified demands on such a system within Alfa Laval.

The SCP-project within the product group HSS at Alfa Laval has been analysed based on Kotter's eight-step change model as well as on Hammer's PEMM, which are presented in chapter 3. These two models are together with our experiences making the foundation of our academic contribution.

2.6 Validity and reliability

Validity is the connection between the studied object and what is actually measured. Validity refers to, if what should be measured really is measured. In order to increase the validity in a study an object can be studied through different methods. The reliability refers to the credibility of the data collection and analyse.[35]

The authors of this thesis have performed several interviews with relevant people at Alfa Laval. The authors have also been in contact with key persons within the benchmarked companies who possess extensive knowledge of the studied area, which

[33] Björklund & Paulsson (2003), p. 68
[34] Eisenhardt (1989), p. 539-540
[35] Regnell & Runesson (2006), p. 42

increases the validity of the study. The fact that all three authors have participated during all interviews has increased the reliability and minimised the risk of missing out on any important details. In some cases interviews via telephone have been conducted, but the major part of the interviews have been performed face-to-face. Complementing questions have been sent to the interviewed people as well as a draft of what has been said during the interview in order to increase the reliability.

The literature studied origins from reliable sources, which have been discussed by all three authors in order to minimise the risk of missing out on important details. By doing so, the authors were also able to broaden the understanding of the studied area.

3 Theoretical framework

In this chapter, the theories applied in this thesis are presented. Firstly, organisational theories are presented which will be followed by decision-making theories, process theories, the SCOR-model and lastly, change management theories.

3.1 Organisational theory

Organisational theory focuses on the interactions between the three areas namely structure, processes and culture. Figure 4 below illustrates the three perspectives as equalised parts. However theoretically, it is more likely that a certain perspective is stronger than the other two in an organisation.[36]

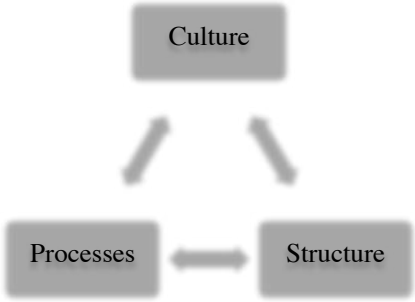

Figure 4 – Illustration of the interaction between the three perspectives.[37]

What type of structure a company decides to choose depends on the size of the business, different requirements, demands, and organisational traditions. Management can alternatively choose a structure that involves everyone at all levels (strategic, tactical and operational) within the organisation's hierarchical structure, which as a result contributes to wider information material as well as a wider acceptance within the organisation. However, this way of working is more time consuming and also more exposed to conflicts.[38]Figure 5 below illustrates the three different management levels within an organisation's hierarchical structure.

[36] Bakka et al. (1993) p. 25
[37] Ibid.
[38] Ibid. p. 236

Figure 5 – Traditional hierarchical structure.[39]

In organisational theory, processes often involve concepts as decisions, interactions, conflicts and motivation.[40] Recent process theories consider processes to be much more extensive than so. This will be discussed more deeply later in chapter 3.

There are many definitions of what culture is in the academic world. Hofstede believes that culture is *"the collective programming of the mind which distinguishes the members of one group or category of people from another"*.[41] A company's corporate culture is created over time and depends much on past experiences as well as cultural characteristics in a country.

There are three levels of culture. The first level, *artefacts*, is the visible face of culture and it includes the physical behavioural and verbal manifestations. The second level, *values*, is a greater level of awareness. Lastly, *assumptions* are those taken for granted by a particular group and they remain invisible to people outside of the organisation.[42]

It is also vital to understand the nature of cultural characteristics in different countries and not to consider them as homogeneous. Hofstede believes that "*culture is more often a source of conflict than of synergy. Cultural differences are a nuisance at best and often a disaster"*.[43]

National cultures are distinguished from organisational cultures, which means that management must handle both national and organisational differences. National culture differs mostly at a deeper level, at the level of values. Hofstede has created a framework for assessing culture and found five dimensions of culture that are suitable for comparing an organisation between different countries:[44]

- **Low versus High Power Distance** – how organisations accept unequally

[39] Bakka et al. (1993), p. 236
[40] Ibid. p. 25
[41] Hofstede G. and Hofstede G., J (2005), p. 4
[42] Schein (2004), p. 36
[43] www.geert-hofstede.com/ (2009)
[44] Ibid.

distributed power
- **Individualism versus Collectivism** – the degree to which individuals within an organisation are divided into groups
- **Masculinity versus Femininity** – shows on distribution of roles between genders
- **Uncertainty avoidance** – whether organisations feel either uncomfortable or comfortable in unstructured situations
- **Long versus short term orientation** – describes different values associated to the time frame

These cultural differences describe averages or tendencies and are not characteristics of individuals. Further, organisational cultures are somewhat manageable while national cultures are given facts for management how to think and act in order to keep the multinationals together.[45]

3.2 Decision-making

A decision is defined as *"a specific commitment to action (usually a commitment of resources)"* and a decision process as *"a set of actions and dynamic factors that begins with the identification of a stimulus for actions and end with the specific commitment to action"*.[46]

Before a decision can take place, some sort of stimulus needs to evoke it. There are three types of stimulus: opportunity, problem and crisis stimulus. The *opportunity* stimulus improves on an already secure situation and is voluntary. An opportunity decision is evoked by a single stimulus, often in the form of an idea that the decision-maker has. When the timing is right, the stimulus is acted upon. A *crisis* stimulus requires immediate attention and often involves the state of the organisation. Crisis decisions also require only one stimulus and the impact of that stimulus is great enough for actions to take place immediately. A *problem* stimulus is somewhere in between those two. When a problem decision appears, multiple stimuli generally need to build up before it is necessary to proceed with any actions.[47]

3.2.1 Mintzberg's general decision model

It is possible to describe how a decision is made by dividing a decision process into three phases: identification of opportunity, crisis or problem, develop solutions and lastly select on one solution. The different phases are explained below:[48]

1. Identification: Recognise and make a diagnosis
In this phase, opportunities, problems and crisis are recognised and evoke decisional activity. The management tries to make a diagnosis in order to understand the evoking stimuli and to determine the cause-effect relationship for the decision

[45] www.geert-hofstede.com/ (2009)
[46] Mintzberg et al. (1976), p. 246
[47] Ibid. p. 251
[48] Ibid. p. 252-260

situation. As soon as one or multiple stimuli reaches a threshold level, a decision process is initiated and resources are mobilised to deal with it and make some sort of diagnosis, formal or informal.

2. Development: Search and design a solution
This phase is the centre of the decision-making process that leads to one or more solutions to a problem or crisis or to the elaboration of an opportunity. The decision-maker starts with *searching* after ready-made solutions. Further, the search for a solution is a hierarchical and stepwise process. If there are not any suitable solutions that can be applied, the decision-maker must *design* custom-made or modify ready-made ones, which is a complex and iterative procedure.

3. Selection: Evaluation and authorisation
The Selection phase begins with superficial *screening* that tries to find any ready-made solutions that can be evaluated. The screening reduces the number of alternatives to a number that can be stored and later handled by time-constrained decision-makers. The next step is to *evaluate* the alternatives through judgment, bargaining or analysis. By applying judgment, an individual makes a choice based on personal values and beliefs. In bargaining, selection is made by a group of decision makers with conflicting goal systems, each exercising judgment. In analysis, a factual evaluation is carried out, generally by technocrats. Managers then have to make a choice based on judgement or by bargaining.

When the individual making the choice he does not have the authority to commit the organisation to a course of actions, he has to seek *authorisation* of the chosen solution by upper management. The decision must follow a route of approval up the hierarchy and sometimes to parties in the environment that have the power to block it. Typically, authorisation is sought for a complete solution, after final evaluation-choice, but occasionally it can occur situations where the seeking of authorisation is done earlier before to proceed with a decision process, either at the outset or during development.

3.2.2 The performance of a decision-maker

The decision-maker's performance regarding evaluation of a problem, crisis or opportunity and to come up with a good decision is related to his ability to diagnose the situation and score different parameters for good or bad. There are mainly four parameters that has the largest impact on the decision-maker's ability:[49]

1. **The time available:** Time devoted to solve the problem depends on perceived importance and priority of the problem.
2. **The culture**: Sometimes, culture inhibits problem solving. For example, some managers may thrive on problem solving and solve short-term crisis, hence not to look too deeply into the initial cause of the problem.
3. **The person:** Decision-makers have own perspective and prejudices and interprets the same system in different ways. Decisions often have multiple

[49] Taele et al. (2003), p. 127-129

objectives and seek to achieve a variety of outcomes, some of which may be mutually exclusive.

4. **The cost and benefit:** The degree to which the decision-maker investigate, diagnose and model a decision scenario depends on a judgement of the likely costs and benefits of the study and likely outcomes.

3.2.3 Supporting routines

To support the phases in the decision-making process there must be some sort of decision control routine that guide the decision process itself. It is also necessary to have a communication routine that provides information regarding the input and output necessary to maintain decision-making.[50] The efficiency of information exchange is often the main concern in the decision-making process.[51] Political routines enable the decision-maker to develop a solution in an influenced environment by, sometimes, hostile forces. Political activity generally becomes evident in bargaining situations together with people who have some control over choices.[52]

The decision-maker's position in the organisation determines the required set of skills he/she needs to have in order to make successful decisions. When organisations evolve from a paternalistic to a synergistic structure, the decision-making process must also change. In a paternalistic structure, a dictative decision-making style can be successful, but in a synergistic structure stakeholders require that decisions be made in a joint effort.[53]

3.2.4 Graphical techniques

There are many different techniques that can be used to visualise decision-making systems: context charts, organisation charts, flow charts and data flow diagrams. These are supposed to visualise and help understand the area of concern. Flowcharts are the most commonly used method for describing a sequence of activities at both detailed and general level. Typically, the sets of symbols used have a common meaning within the design activity concerned.[54]

3.3 Process theory

3.3.1 The definition of a process

The word process is widely spread and commonly used in the business world but often in an incorrect way.[55] The definition of a process is not easy to set, and several definitions are found in the literature. Some examples of definitions are presented below:

[50] Mintzberg et al. (1976), p. 260-262
[51] Taele et al. (2003), p. 122
[52] Mintzberg et al. (1976), p. 246-275
[53] Basi (1998), p. 262
[54] Taele et al. (2003), p. 141-142
[55] Hammer (2001), p. 53

"A business process is a group of logically related tasks that use the resources of an organisation to provide defined results in support of the organisation's objectives."[56]

"Process is an organized group of related activities that together create a result of value to the customers."[57]

Ljungberg and Larsson (2001) present three varied definitions of a process which are followed by a discussion in order to better understand what a process actually is:

"A process is a collection of linking activities which transform an input in order to create an output."[58]

"A process is a link of activities which in a recurring flow creates value for a customer."[59]

"A process is a repetitive and used network of arranged linked activities which uses information and resources in order to transform "object in" to "object out", from identifying to satisfying of the customer's need."[60]

The first of these three definitions is simple and may be popular due to its simplicity, but this definition does not take the organisation as a system into consideration. The second definition pays attention to the customer and highlights the fact that a process is repetitive. The third definition is the one that better describes a process and where processes are seen as a network and not only as sequential activities. This description also highlights the fact that a process starts with a customer need and ends with a satisfied need. This description also clarify that a process does not create result by itself but needs both information and resources to be added.[61]

It is important to understand that regardless of which definition that is used, these kinds of shorter formulations of processes tend to put the focus on the technical features of a process, which may mislead organisations to think of processes as something that is easy and concrete. How an organisation defines a process will have a great impact on the focus of an organisation's process work. Further, Ljungberg and Larsson (2001)expresses it as "*the choice of definition an organisation makes is critical, because the definition controls how you look at the thinking of processes, what is included and excluded, what methods are used and furthermost which results are reached"*.[62]

[56] Grover & Kettinger (1995), (WWW)
[57] Hammer (2001), p. 53
[58] Ljungberg & Larsson (2001), p. 44
[59] Ibid.
[60] Ibid.
[61] Ibid. p. 44-46
[62] Ibid.

Processes are in some literature often described as a range of activities, which as described earlier may mislead an organisation to think of processes as something that is simple. It is important to separate a process from a workflow of activities, not at least in order to secure the development of new processes. It is vital to take time to reflect over what a process actually is in order to obtain knowledge about how to develop it. The existence of the process is entirely based on the process' ability to satisfy the customers need.[63] The high variability of definitions sometimes makes it difficult to contract for and communicate about processes over company boundaries.[64]

3.3.2 Process-orientation and process-oriented organisations

Below are two examples of process-orientation definitions presented:

"Business process orientation of an organisation is the level at which an organisation pays attention to its relevant (core) processes"[65]

"Process-orientation is the approach which aims to change the view of organisational form, system and structures as well as attitudes, values and corporate culture that are impressed by the functional-oriented paradigm, and put these factors into a process context. Process-orientation is about adjusting the company to a new paradigm."[66]

When an organisation discovers and appreciates the concept of processes the organisation often starts changing the way to look at, design, manage, pursue and develop the business, with processes as a new base. The people in the organisation develops a process-driven mindset[67] and the organisation is then on its way of becoming process-oriented.[68]**Figure 6** illustrates the transformation of going from a functional paradigm towards a process paradigm.

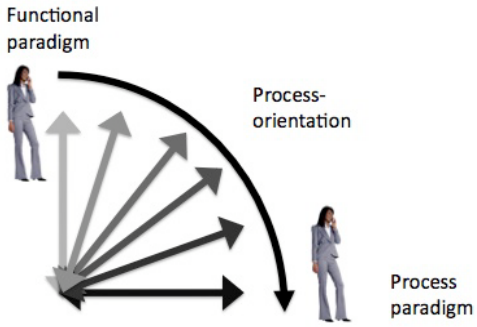

Figure 6 – Illustration of the transformation towards a process-oriented mindset.[69]

[63] Ljungberg & Larsson (2001), p. 45
[64] Davenport (2005), p. 102
[65] McCormack & Johnson (2003), p. 21
[66] Ljungberg & Larsson (2001), p. 88
[67] Willaert et al. (2007), p. 3
[68] Ljungberg & Larsson (2001), p. 88
[69] Ibid. p. 270

The process-oriented organisation is divided into manipulability units along with the processes. The processes starts with a customer need and ends with a satisfied need, and the content of the processes is dependent on what is needed in order to go from start to end. It is the process and not the individual, the department or the functions that create the profitability and satisfy the customers. It is the collective effort toward mutual objectives that determine the success.[70] Process-orientation has been shown to increase the integration between functions and departments and has led to positive impact on the organisation on both short- and long-term.[71]

It is assumed that employees "think" and "act" by themselves in a process-oriented organisation, and the competence of the employees is captured in a better way than in a functional organisation. A higher responsibility is put on the employees, but they get at the same time more stimulation and a holistic viewof the organisation.[72] Studies have shown that companies, which possess a high level of process-orientation, perform better from an internal perspective as well asregarding bottom-line results.[73]

One of the first steps towards becoming a process-oriented organisation is the mapping of the processes within the enterprise. The mapping enables an overview of the organisation's business, including the customer in contrast to the traditional function-oriented description of an organisation. By mapping the processes, an understandable visualisation of the processes is created describing how the different processes are related to each other and how they interoperate with each other.[74]

3.3.3 Roles within a process-oriented organisation

There are three distinct roles within a process-oriented organisation, namely the process owner, the resource owner and the team leader.[75]

Process owner –The purpose of the process owner is to have one person responsible for developing and controlling the entire process, and in order to avoid sub optimisation, it is important that the entire process is studied and not each part on its own.[76] The process owner has a total responsibility for the process and has the authorisation to do modifications and changes in the process.[77] Important to note is that the process owner is a new position and should not be mixed with the traditional line manager.[78] It is important that the process owner possesses power and authority to carry out changes, and in an early phase when implementing a process-oriented mindset it can be wise to give this responsibility to the previous line manager. Thus, in a longer perspective, the process owner and the line manager should not be the

[70] Ljungberg & Larsson (2001), p. 27
[71] Willaert et al. (2007), p. 2
[72] Ljungberg & Larsson (2001), p. 28
[73] Willaert et al. (2007), p. 2
[74] Ljungberg & Larsson (2001), p. 188
[75] Ibid. p. 132
[76] Ibid.
[77] Hammer (2001), p. 65
[78] Ljungberg & Larsson (2001), p. 124

same person.[79] It is, unfortunately, common that the process owner does not get the authority to implement all the changes that are necessary to make the processes work.[80] It is essential that the process owner accepts and believes in the process thinking and its benefits. If the process owner does not believe in the concept it will be impossible to create engagement in the rest of the employees.[81]

The main tasks of a process owner are to take a personal and overall responsibility for the process in its wholeness, co-ordinate the process' activities in a structural and value-adding way, avoid sub optimisation, create objectives for the process and determine the focus of the process, and moderate the development of the process.[82]

Resource owner – The resource owner is responsible for the employees' development and wellbeing, regardless of which process the employees belong to. Thus, the resource owner is not tied to a specific process.[83] The resource owner shall provide the employees with the best possible knowledge and skills[84], and look at the organisation as a portfolio of competencies.[85] In the traditional functional organisation it is the line manager's responsibility to manage the resources, which include developing and motivating the employees. This requires features and competence of the line manager, which can differ a lot from the features that got him/her the position.[86]

Table 2 below illustrates how the resource owner's and the process owner's responsibilities and missions differ depending on what level they are working at (strategic-, tactical- and operational level) within the organisation:

Table 2 - The process- and resource owners' responsibilities at different levels within an organisation.[87]

	Process owner	**Resource owner**
Strategic	-Setting the framework and pointing out the direction	-Be aware of the present and future competence need -Be aware of the present and future employees need
Tactical	-Creating support and ease the work on operational level	-Allocate personnel to the processes -Employ personnel -Develop personnel

[79] Ljungberg & Larsson (2001), p. 155
[80] Hammer (2007), p. 114
[81] Ljungberg & Larsson (2001), p. 154
[82] Ibid. p. 131
[83] Ibid. p. 92
[84] Ibid. p. 157
[85] Ibid. p. 161
[86] Ibid. p. 79
[87] Ibid. p. 146-147, p. 161-162

Operational	-Participate in the practical development work[88]	-Distribute operational work and develop competences -Work as a support and mentor for the employees -Give feedback on performances and development -Deal with personal questions

Team leader – It is the team leader's responsibility to put together the resources and the process. It is the team leader's role to get the team to work efficient and to lead the team in the right direction. The team leader will support and give the team guidelines on how to perform the work but it is up to the team to decide how to perform the task in the best way. By doing so, the competences within the team members will be exploited.

3.3.4 Hammer's Process Enterprise Maturity Model – PEMM

The way towards creating a process-oriented mindset within an organisation is a big challenge, bigger than most companies initially understand.[89] The change is not only about mapping the activities within a business; it is about changing the paradigm within the organisation.[90] Hammer (2007) discusses the challenge of this transformation and expresses himself: "*All change projects are tough to pull off, but process-based change is particularly difficult*." Further Hammer states, *"designing new business processes involves much more than rearranging workflows"*. Hammer defines workflows as *"who does what task, in what location and in what sequence"*.

Hammer has identified key elements that need to be changed in order for the new processes to work:[91]

1. Companies must redefine jobs more broadly.
2. Increase training to support those jobs and to enable decision-making to frontline personnel.
3. Redirect reward systems to focus on processes as well as outcomes.
4. Reshape organisational culture to emphasise teamwork, personal accountability and the customer's importance.
5. Redefine roles and responsibilities so that managers oversee processes instead of activities and develop people rather than supervise them.
6. Realign information systems so they help cross-functional processes to work smoothly rather than simply support departments.

It is often hard for the executives to know exactly what to change, how much and when. The executives may also focus on different things while there are many areas that are affected by the change. In order to secure that the organisation is ready for a

[88] Ljungberg & Larsson (2001), p. 147
[89] Hammer (2007), p.112
[90] Ljungberg & Larsson (2001), p. 34-36
[91] Hammer (2007), p. 112

change like this, it is necessary to perform a maturity analysis before starting to redesign the processes.[92] To help executives in their transformation work Hammer has developed *the Process and Enterprise Maturity Model* (PEMM). PEMM can be applied to companies in any industry and does not specify what a particular process should look like. A company can apply PEMM to all its processes.[93]

In this framework, Hammer has identified two sets of features that are required in order for the processes to perform well and to sustain that performance: enablers and capabilities. PEMM helps companies evaluate the maturity of their processes according to these two sets of features, identify their weaknesses in the transformation and assure buy-in from the management. PEMM is a useful tool to make people within the organisation engaged and involved in the process mindset and can also be used in educational purpose.[94]

The first set of features is the *five process enablers* that apply to individual processes and determine how well a process is able to function over time. They are mutually interdependent and if any are missing, the others will prove to be ineffective.[95]

1. **Design** – The comprehensiveness of the specification of how the process is to be executed. In other words, specification of which people that must perform what tasks, in what order, in what location, under what circumstances, with what information, and to what degree of precision.
2. **Performers**- The people who execute the process. They must have appropriate skills and knowledge.
3. **Owner** – A senior executive who has responsibility and authority to ensure that the process delivers results.
4. **Infrastructure** – Companies must align their information technologies and HR-systems to support the process.
5. **Metrics** – Companies must use the right measurements to assess the performance of the process over time.

Hammer has found through his research that not all companies are equally successful in putting these enablers in place. But those who are possess important *enterprise-wide capabilities*. In order for companies to achieve high-performance processes, they must first create supportive environments in shape of four organisational capabilities.[96]

1. **Leadership** – Senior executives who support the creation of processes
2. **Culture** – The values of customer focus, teamwork, personal accountability and a willingness to change.
3. **Expertise** – Skills in, and methodology for process redesign.

[92] Hammer (2007), p. 112
[93] Ibid. p. 118
[94] Ibid. p. 119
[95] Ibid. p. 113
[96] Ibid.

4. **Governance** – Mechanisms for managing complex projects and change initiatives.

All these four capabilities mustbe in place across a company, if the organisation will succeed with institutionalising the enablers and sustaining the performance of its processes.[97]Together, the enablers and capabilities provide an effective way for companies to plan and evaluate process-based transformations. Hammer means *"process design determines performance"*.[98]

In PEMM, it is possible to evaluate the intensity or strength of the enablers in four levels:[99]

- **P-0 level:** Processes work inconsistently.
- **P-1 level:** A process is reliable and predictable. It is stable.
- **P-2 level:** A process delivers superior results/performance because the company has designed and implemented it from one end of the organisation to the other.
- **P-3 level:** A process delivers optimal performance because executives can integrate it, where necessary, with other internal processes to maximise its contribution to the company's performance.
- **P-4 level:** A process is best in class, transcending the company's boundaries and extending back to suppliers and forward to customers.

The stronger the enablers are, the better results can the processes deliver on a sustained basis. The enablers' strength determines *"how mature a process is – that is, how capable it is of delivering higher performance over time"*. If only four out of the five enablers are at the P-1 level the process itself is at the P-1 level. Not until all five enablers have reached the P-2 level, the process is at P-2 and so on. If one enabler is so weak that it does not even meet the P-1 level, the process is at P-0 level, which is the natural state of affairs when organisations have not focused on developing their business processes.[100]

Further on, there are also four levels of enterprise capabilities: E-1, E-2, E-3, and E-4. If an enterprise has E-1 capabilities, it is the first level of enterprise maturity. Stronger organisational capabilities make for stronger enablers, which allow for better process performance. When all four capabilities have met E-1 level, the enterprise is ready to advance all its processes to the P-1 level, and when they all meet E-2 level, they are ready to move along to the P-2 level and so on. The capabilities are also evaluated in PEMM after three criteria: largely true, somewhat true and largely untrue.[101]

[97] Hammer (2007), p.115
[98] Ibid. p.113
[99] Ibid. p.114-115
[100] Ibid. p.114
[101] Ibid. p.115, 118

Most companies tend to overlay new processes on already established functional organisations. However, the structure of the traditional organisation – such as job definitions, performance measurement systems and managerial hierarchies – do not always support high-performance processes. A high-performance process extends across functional boundaries, so a senior executive must supervise it. Without such a person, the process will not become anchored within the organisation. It is also important to redesign its metrics to assess performance over time.[102]

3.3.5 Process standardisation

By introducing the *lean* thinking into the business many companies have gained tremendous improvements. Lean is a philosophy, a framework, a methodology, techniques and tools, which was introduced by a group of researchers at Massachusetts Institute of Technology (MIT) after they had studied the unique behaviour at the Toyota Motor Company as well as other companies. They presented the concept lean as the ability to accomplish more with less.[103]

The lean thinking is highly connected to standardised work, and by comparing everything with standards you pursuit perfection and gain efficiency. By standardising the processes, a basis for measurements and a ground for improvements are created.[104]

In a process enterprise the question is no longer about centralisation versus decentralisation, but instead standardisation versus process diversity. There is no right answer and companies have shown high-performance in both ways. There are benefits with standardisation such as lowered overhead costs, lowered transaction costs both for the organisation and for the suppliers and customers, creation of an organisational flexibility where people from one unit can be reassigned to another.[105]

There are criticisms against standardisation, saying that process standardisation has been pushed too far, with little regard for where it does and does not make sense. Too much standardisation tends to make the employees switch into autopilot and reduce the accountability.[106] What argues fordiversity, is the big advantage of being able to serve customers differently based on their specific demands. It is possible to standardise some processes and at the same time allow diversity in other processes, and Hammer and Stanton (1999) express their guideline to "*standardise processes as much as possible without interfering with their ability to meet diverse customers' needs"*.[107]

[102] Hammer (1997), p.113
[103] Williams & Sayer (2007), p. 9
[104] Ibid. p. 169
[105] Hammer & Stanton (1999), p. 114-115
[106] Hall & Johnsson (2009), p. 58-65
[107] Hammer & Stanton (1999), p. 115

3.3.6 Content management

Organisations need to find a way to manage all of their electronic documentation. Documents may include everything from texts, data, graphics, images, and metadata ("the data about data") to styles and formats. An organisation's documentation may consist of different versions and combinations and a single document may exist in several languages, multiple revisions and versions depending on local information.[108]

3.3.6.1 Enterprise Content Management

AnEnterprise Content Management system(ECM) is a generic term for tools and processes that handle different types of content and is defined as *"the technologies, tools, and methods used to capture, manage, store, preserve, and deliver content and documents related to organizational processes"*.[109]

The benefits with having an ECM-system is that it gives an increased efficiency and lower costs by letting the organisation take control over the information resources.[110]There is a variety of ECM's and they range from simple scan and store systems to complex and highly integrated systems that are capable of managing documents and other types of data within the entire organisation.[111]

3.3.6.2 Content Management System

A Content Management System (CMS) is a computer application that companies use in order to create, edit, manage, and publish content in a consistently organised way. The content managed can be everything from computer files, electronic documents, and web content.[112]

The major difference between CMS and ECM is that the CMS is a software system (or systems) for the specific use of managing and publishing content. The ECM in contrast refers to both tools and strategies.[113]

3.3.6.3 Business Process Management system

Business Process Management (BPM) mainly focuses on supporting companies' end-to-end processes. The definition of a BPM is "*a generic software system that is driven by explicit process designs to enact and manage operational business processes"*.[114]

BPM-systems has become one of the most important enterprise market segments and is both a technique and a tool that enable workers in organisations to improve their processes in order to achieve their core goals.[115] BPM-systems include methods,

[108] Hodgson (2004), (WWW)
[109] Ibid.
[110] Logica-Enterprise Content Management (WWW)
[111] Porter-Roth (2004), (WWW)
[112] Content Management-Jargon to English translation (2008), (WWW)
[113] Ibid.
[114] Weske et al. (2003), p. 1
[115] Lee & Dale (1998), p. 214

techniques, and tools to support the design, enactment, management, and analysis of operational business processes.[116]

3.4 The Supply Chain Operations Reference (SCOR)-model

The Supply Chain Operations Reference-model (SCOR) is developed by the Supply-Chain Council (SCC), which is a global organisation with more than 800 members worldwide from several industry groups.[117] SCC wants to provide companies with a cross-industry standardised method for describing management processes and measuring supply chain performance as well as to create a common set of metrics that can be used for benchmarking purposes.[118] The SCOR-model is an example of a *performance measurement system* that is defined as *"the concrete tool designed to quantify the performance"*.[119]

According to the SCC's own definition, SCOR is a model that integrates concepts of business process reengineering, benchmarking and process measurement into a cross-functional framework. The ambition with SCOR is to capture the present state of a process and then obtain the "to-be" future state of processes by using techniques of business process reengineering. Benchmarking is used to quantify and set target values of the operational performance metrics based on "best-in-class" results. SCOR also provides a framework to perform best practices analysis, which aims to identify management practices and software solutions that will result in "best-in-class" performance.[120]

3.4.1 The objectives of the five SCOR-processes

The SCOR-model focuses on activities within functional areas of purchasing, logistics and manufacturing[121] and consists of five different core management processes that management can use in order to achieve cross-functional integration: *plan, source, make, deliver* and *return*[122].The processes extend from the suppliers' supplier to the customers' customer and are all aligned with a company's operational strategy, material, work and information flows.[123] The model does not attempt to describe every business process or activity including sales and marketing, research and technology, product development and some elements of post-delivery customer support. But it is possible to create links between the processes that are not included within the SCOR-model.[124] As the objective of the SCOR-model is operational efficiency, the drivers that generate most value for the user company are cost reduction and assets utilisation.[125]

[116] Weske et al. (2003), p. 1
[117] Bolstorff & Rosenbaum (2003), p. 2
[118] Council of Supply Chain Management Professionals (WWW), (2009)
[119] Skjött-Larsen et al., (2007), p. 313
[120] Supply Chain Operations Reference-model, Version 9.0, (2009), p. 1
[121] Lambert et al (2005), p. 38
[122] Supply Chain Operations Reference-model, Version 9.0, (2009), p. 4-5
[123] Bolstorff & Rosenbaum (2003), p. 2
[124] Supply Chain Operations Reference-model, Version 9.0, (2009), p. 3
[125] Lambert et al (2005), p. 36

The objectives of the five management processes are:[126]

- *The **Plan** process:* Balances aggregated demand and supply to develop a course of action which best meets sourcing, production and delivery requirements.
- *The **Source** process:* Procures goods and services to meet planned or actual demand. It includes everything from scheduling deliveries and verifying received products to manage inventory, supplier network and import/export requirements.
- *The **Make** process:* Transforms product to finished state to meet planned or actual demand, which includes testing and packaging the product.
- *The **Deliver** process:* Is warehouse management from receiving and picking product to load and ship product. The deliver process includes order handling, transportation and distribution management.
- *The **Return** process:* Are all processes associated with returning or receiving returned products for any reason.

Each of the five management processes contains three levels of process detail. The SCOR-model also mentions a fourth level which involves company specific activities, but this fourth level is not a part of the SCOR-model.[127] The model is visualised in Figure 7.The model is flexible in the sense that on each level, components from the model can be selected and de-selected to fit the specific supply chain in question.[128]

Description of the different levels of process detail:[129]

- **Level 1** (process types): Defines the scope and content for the SCOR-model (number of supply chains and which metrics that will be used[130]). In this level the basis of competition performance targets are set.
- **Level 2** (process categories): A company configures its supply chain from the list of core process categories. The configuration options are planning, execution and enable. Companies implement their operations strategy through the configuration they choose for their supply chain.
- **Level 3** (decompose processes): Defines a company's ability to compete successfully in its chosen markets, and consists of process element definitions, process element information inputs and outputs, process performance metrics and attributes and definitions and lastly best practice definitions.
- **Level 4** (decompose process elements): This level is not part of the model, although SCOR has provided with guidelines on how companies can implement supply chain management practices that are unique to their organisations at this

[126] Supply Chain Operations Reference-model, Version 9.0, (2009), p. 4-5
[127] Supply Chain Operations Reference-model, Version 9.0, (2009), p. 7
[128] Skjött-Larsen et al. (2007), p. 341
[129] Supply Chain Operations Reference-model, Version 9.0, (2009), p. 7
[130] Lambert et al (2005), p. 29

level. Level 4 defines specific practices to achieve competitive advantages and to adapt to changing business conditions.[131]

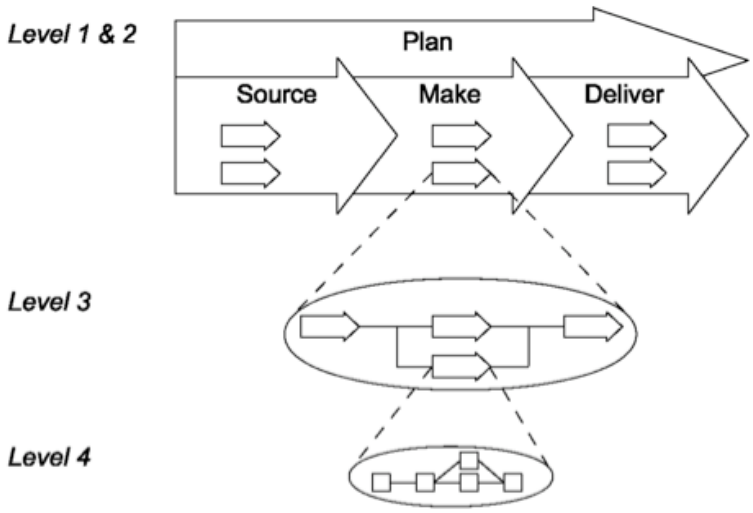

Figure 7 - Visualisation of the different levels of the SCOR-model.[132]

3.4.2 Organisational support

There is today neither any developed model explaining how to implement SCOR within an organisation nor any management structure securing the sustainability of the implemented processes. Instead most companies use known management tools when following up an auditing process' sustainability and progress.[133] An example of such a management tool is Six Sigma, which is a problem-solving methodology available for improving business and organisational performance.[134]

3.4.3 Benefits with the SCOR-model

A perceived strength with the SCOR-model is the concept of benchmarking between companies and supply chains.[135] The model provides members of SCC with the opportunity to compare metrics on a quantitative level.[136] It also provides with process benchmarking by having best-practice analysis.[137] When benchmarking are performed towards competitors or firms in comparable industries on key operational metrics, organisations are able to work with continuous improvements and strive towards what is considered as best practice.[138]

[131] Supply Chain Operations Reference-model, Version 9.0, (2009), p. 7
[132] Holmberg (2000), p. 847-868
[133] Stefansson (03/03/2009)
[134] Gygi et al. (2005), p. 9
[135] Lambert (2005), p. 39
[136] Skjött-Larsen et al., (2007), p. 342
[137] Lambert et al (2005), p. 39
[138] Ibid. p. 39

SCOR also enables organisations to get an understanding of working from a horizontal point of view rather than a vertical perspective and how to go from the "as-is state" to the "to-be state". Also, when having a common language, everyone within the organisation gets a better understanding of specific words and terms, which facilitates the communication.[139]

3.4.4 Criticisms against the SCOR-model

There are criticisms against the SCOR-model, mainly because the model has an internal focus and most processes are often not aligned with other external parts of the supply chain or with other functions of the organisation such as marketing and R&D.This can result in lower levels of performance and failed initiatives. Also the lack of a clear connection between functional and corporate strategies might endanger the organisation-wide alignment of resources. The management should focus on positioning SCOR within the overall corporate strategy,[140]and the model should be used in combination with other supply chain frameworks and concepts in order to optimise the entire supply chain performance.[141]Gammelgaard et al. (2004) argues that the SCOR-model should not even be called a supply chain model. This is due to that SCOR focuses merely internally and does not provide metrics that evaluate the relationships with suppliers.[142]

Other limitations with the SCOR-model are that it is more complex in comparison to similar models since it requires a significant amount of training in order to understand, design as well as implement the model in a company. Due to that the benchmarking tool is aligned to the framework, best practice can only be provided by the SCC.[143]Organisations that work according to SCOR lose their flexibility and must pay attention to many details. There are also demands on documentation in different situations, which makes it more complicated to control and secure the right version of the process and that everyone within the process has the right information.[144]

3.5 Change management

3.5.1 Organisational change

Organisations are constantly faced with different changes due to the emergence of new technology, products and increased global competition. Changes are made at all levels within a company, hence, it is important that the approach towards change is structured in order to handle the many differing opinions that exists within the organisation. Organisations are *"co-operative systems that rely on the willingness of members to behave in ways that support the organisation"*. Nevertheless, people's personal goals often disagree with the organisations', which is why managers are

[139] Stefansson (03/03/2009)
[140] Lambert et al (2005), p. 41
[141] Skjött-Larsen et al., (2007), p. 343
[142] Gammelgaard et al. (2004), p. 236
[143] Moberg (2008), p. 42
[144] Stefansson (03/03/2009)

responsible to influence their employees to put their efforts towards the organisational goals.[145]

An organisational change is best defined as a planned change designed to significantly improve overall organisational performance by changing the behaviour of a majority of people in the organisation. When implementing an organisational change, it is important to plan the implementation process in detail to minimise possible problems in the future. Strong resistance to change may occur due to different corporate cultures. Difficulties often arise when people act in the best interest for one individual or group, and not in the best interest of the whole organisation. According to Kotter and Schlesinger (2007), there are four common reasons explaining why people resist change:[146]

- A desire not to lose something of value
- A misunderstanding of the change and its implications
- A belief that the change does not make sense for the organisation
- A low tolerance for change

It is important not to underestimate the different ways management can positively influence individuals and/or groups during a change. The understanding of the advantages and disadvantages of different methods that management uses when implementing an organisational change is therefore important aspects. Strong leadership, direction setting and communication are required to help people in these situations. Often is management aware of and know that the change is needed but they do not really know how to deliver it or establish it into the organisation.[147]

Change management is a structured approach to handle change in organisations, among employees and groups that enables the change to go from a current stage to a desired future stage. Employees, confronted by the change, often experience a culture shock when established patterns and routines of a company's tradition alter.[148]

Minor changes do not require the same level of implementation effort as major changes where there is a high cost of implementation failure and high risk that the human factor is resistant to change. When implementing big changes like an organisational transformation, it is required to have focused change management.[149] Implementing a change is always costly but remaining status quo can many times be even more expensive.Gaining peoples support and buy-in is a critical first step in managing change. However, the buy-in process cannot stop at the first step since the employees continually must be motivated to change their behaviour throughout the implementation. Employees will not make sacrifices, even if they are unhappy with the status quo, unless they believe that the change will lead to better results.[150]

[145] Furst & Cable (2008) p. 453
[146] Kotter & Schlesinger (2007), p. 2
[147] Ibid. p. 3
[148] Stuart (1995), p. 558
[149] Jacobs (1995), p. 18-25
[150] Kotter (1996), p. 9 (WWW)

3.5.2 Models for change

Within organisational theories of today there are several integrated models with the purpose to facilitate and support changes. In general, most models are quite similar and follow the same process: analysis, planning, implementation and evaluation. The models also advise a "sense of urgency", which means that in order for a change to be a success, everyone involved must understand the purpose and benefits of the change. Furthermore, all models recommend a clear communication and involvement of everyone affected by the change and advocates a long-term perspective, meaning that a change should take the time it needs in order to anchor within the organisation. Strong leadership, where the leader not only controls its co-workers but also activates and motivates others is vital in order to implement a change successfully.[151]

Jacobs (1995) is critical against standard change models and argues that transformations within organisations are too complex in order to follow a set of specific steps each time a change is attempted. Every change is a unique blend of the environmental surrounding, corporate culture, and individual skills, which make it difficult to set up rigid rules explaining how to implement a change. The simplification presumed in some models, where the top management only needs to follow the recommended sequence of steps as long as the necessary information is gathered and analysed, results in that it is only possible to predict change. The essential challenges, in terms of management, communication and participation tend to be underestimated due to the simplified "instructions" given by the theoretical models. Changes within an organisation cannot be controlled but guided and influenced.[152]

Kotter (1996) defines eight steps that will enhance implementation of changes in organisations, and also help limit or lower the amount of stress or tension when implementing a change. According to Kotter's theories about change management, it is important to follow his comprehensive framework for managing change processes successfully, from establishing a sense of urgency to anchoring new approaches in the culture.[153]

To prevent making mistakes when implementing a change, Kotter created the following 8-step change model:

1. **Create a sense of urgency** – in order for a change to be successful, it is important that everyone understands and is convinced of that a change is necessary. If the organisation is convinced of otherwise, it will be impossible to implement a change. Therefore it is vital to create the feeling that the change is something of serious matter and urgent.
2. **Creating aguiding coalition** – one person alone cannot manage to drive and implement a change. A team, consisting of leaders with status and authority

[151] Norell et al. (2007), p. 31
[152] Jacobs (1995), p. 18-25
[153] Kotter (1996), p. 21 (WWW)

from different levels within the organisation are needed in order to drive through a change.

3. **Develop a clear vision** – every successful work of change is built up on a vision of the future state, developed by the coalition. The vision must be able to clarify realistic goals for the future that motivates and encourages employees and that are easy to understand and communicate.
4. **Share the vision** – when the vision is formulated it has to be communicated to everyone that are involved and affected by the change.
5. **Empower people to act** – when the process is up and running, different obstacles tend to occur. Therefore, it is important to give the employees the authority to solve possible obstacles on their own in order for the process to continue as planned (without any delays).
6. **Secure short-term wins** – a change process takes time and a majority of the employees needs to see the benefits of a change and how it is progressing in order to continue and not lose motivation. Announcement of short-term wins also reduce resistance to change.
7. **Consolidate and keep moving** – the celebration of short-term wins is not the same as that the change process is completed. Opposite, the short-term wins are used in order to activate the next step within the overall vision.
8. **Anchor the change** – the last step is to establish the change within the corporate culture, that it becomes *"the way we do things around here"*.

A major change is hard to implement and most companies fail to create sufficient urgency when starting a transformation program for many different reasons, mostly because management underestimate how hard it is to drive people out of their comfort zones.[154] Therefore, when anchoring the change in the corporate culture it is vital to show people how the new approaches and attitudes have helped to improve performance.[155]

3.5.3 Leadership and change

How management treat people during a change initiative determine how successful the change as well as the organisation will be in the future. Change is inevitable but most managers do not handle it well. Employees most often feel worried when a change is first introduced because they feel that they lose control of their own future. Therefore, a change process must start with the human factor because people are the ones that have to commit the change.[156]

When introducing an organisational change, people tend to react in different ways. According to a Harvard Business Review research, only 15 percent of the workforce embraces a change initiative immediately when as much as 60 percent are uncertain and 25 percent heavily resistant to change.[157] The challenge for management is to avoid strong reactions from employees and instead try to make them work with and

[154] Kotter (1996), p. 5 (WWW)
[155] Kotter (2007), p. 96-103
[156] Fugate et al. (2008), p 31-32
[157] Mirza (2009), p.31

be a part of the change rather than against. Sometimes, in order to maximise the change efforts, it is better if the change leader is new at the company. The reason to this is that a new person do not get criticised in the same extent in comparison to a person that has been involved in many different projects before, and thereby is associated with previous problems. It is also the change leader who identifies other new potential change leaders within the company that have the engagement and capacity to inspire everyone else affected by the change.[158]

When leading a considerable organisational change it is not possible to expect to be popular within the organisation, but it is however possible to be respected. To succeed in implementing a change and overcome resistance among employees, managers cannot communicate or repeat oneself too much or too often and cannot be afraid of defending the process and the criticised information in public.[159]Change is more likely to fail when the reasoning is poorly communicated and hence not properly understood.[160]

3.5.4 Strategies for change

Change management literature has explored a range of strategies that managers tend to use to reduce the resistance within organisations.[161]If an implementation strategy is not well planned from the very beginning, the implementation process often takes a lot longer than expected which leads to costs in terms of managerial time or emotional disruption.The most common mistake is the lack of having a clear strategy for dealing with change as well as implementing the change too quickly, which tends to hinder the implementation.[162]When approaching an organisational change the managers have to consider the speed of the effort and develop a strategy that best fit and correspond to the specific organisation. Important factors to pay attention to are whether the organisation is mature and friendly towards change or not and if the planned strategy reduces or increases resistance to change.[163]

It is important to have a clear strategy for many different reasons as well as to have a strategy that allows for the co-ordination of activities. A clear and well-defined strategy also enables managers to think about the futureand long-term goals. When introducing a change, the possibility to reach desired result is if it is planned and directed. In some cases the change must involve a number of stakeholders within the organisation and most commonly those affected by the change. Managers are able to make strategic choices whether they believe that the change should be implemented fast with a clear plan of action and thereby little involvement of others, or if it should be a much slower process with many people involved to reduce the resistance as much as possible.[164]

[158] Loon (2001), p. 285-300
[159] Ibid.
[160] Kotter (2007), 96-103
[161] Furst et al. (2008), p. 453
[162] Kotter & Schlesinger (2007), p. 6
[163] Adcroft et al. (2008), pp. 40-45
[164] Kotter & Schlesinger (2007), p. 7

In a business world that becomes more and more dynamic, managers can improve their chance of success in an organisational change effort if choosing the right strategy. Otherwise, if choosing a poor strategy and tactics that does not develop the organisation and its people in a good way, the consequence of poor implementation will become increasingly severe.[165]

[165] Kotter & Schlesinger (2007), p. 7

4 Empirical findings at Alfa Laval

This chapter describes the empirical findings concerned the SCP-project at Alfa Laval as well as Alfa Laval's demands of a future support system.

4.1 Alfa Laval – a case study

4.1.1 Background to the supply chain processes

In the fall of 2006, Operations Development (OD) began to investigate how Alfa Laval Operations could improve its capacity utilisation and performance. It started of as an idea of implementing the same ERP-system on all sites within a product group. It was later on from this project that ideas about defining common supply chain processes began to take form. OD found the SCOR-model to be a convenient framework to use when identifying and categorising supply chain processes.[166]

Historically, every site within all product groups has had the freedom of deciding how to organise itself and choose which ERP-system to use. This has resulted in that every site has developed its own routines and working procedures as well as the existence of many different types and versions of ERP-systems within Alfa Laval, most common systems beeing Movex and Jeeves. The ambition with the SCP-project was therefore to involve every manufacturing site so that they eventually will work after common standardised processes that are considered as best practice.By standardising working procedures, the objective is to reduce costs and make resources more available as well as having a common language. In addition, it will also be easier to benchmark KPIs between sites within and between product groups.[167]OD's objective with the SCOR-model is not to support a process mindset but initially rather a way to standardise working procedures.[168]

4.1.2 Implementation of the Supply Chain Processes-project

In 2007, it was decided that sites within the product group HSS should all start to use the ERP-system called Movex. The Eskilstuna-site in Sweden had already installed the system back in 1999 and it was the Krakow-site in Poland that was next in line. The site in Monza, Italy, was not to implement Movex until January 2009. It was in association with the implementation of Movex in Krakow 2007 that OD thought it would be suitable to define and map the processes for Source, Make and Deliver with help of the SCOR-model.[169]

In late November the same year, OD arranged a kick-off in Copenhagen for two days with the purpose of getting the project members to know each other between sites and to start introducing the Supply Chain Processes-project (SCP) to the product group HSS. OD had mapped the processes on a strategic level and now wished to go one

[166] Persson (27/01/2009)
[167] Skarstam (28/01/2009)
[168] Fagerberg (03/04/2009)
[169] Jacobsson (27/01/2009)

step further and map them on tactical level. Representatives from Krakow, Eskilstuna and Monza were participating during these days. The other two sites within HSS, Pune in India and Jiang Yin in China, were not participating due to the long distance geographically and that the focus of the implementation initially was going to lie on the other three sites. Moreover, there were not any plans that the two sites would install Movex in any time soon and they were still working in the other ERP-system called Jeeves.[170]

The purpose with the kick-off in Copenhagen was to discuss how HSS should develop common processes on tactical level in more detail and to promote the benefits with the SCP-project. The ambition was also to consolidate the three sites and involve everyone in the new way of working. As a result, the kick-off would enable each person to reflect and highlight the differences between the three sites' way of working and start discussing how the sites could benefit from collaborating with each other.[171]In order to help the reader to better understand the nature of these processes, the process *D2.3 Reserve Resources & Determine Delivery Date,* which is a part of the Deliver process is visualised in Appendix 1. This process represents level three in the SCOR-model and the activities within it represents level four.

The mapping of the processes according to the SCOR-model was first made on a strategic level at OD. Next, the processes were mapped on tactical level together with people working on this level within HSS. Lastly, the processes were mapped on operational level in Monza as Monza was chosen as the first site to implement the new processes. The common processes were then to be implemented within the whole HSS organisation, but this still remains.[172]

So far the main focus has been on the three processes of Source, Make and Deliver. Neither the Return-process nor the Plan-process described in the SCOR-model have yet been mapped. The Plan-process has in some extent been taken into consideration and there are plans to develop the Return-process in the near future.[173]

Monza went live with Movex, the January 1st 2009. In the beginning of February 2009, there was a second HSS common process meeting in Monza with the purpose to discuss and agree upon roles and responsibilities, actual process status, strategy workflow and action plan. OD did also once more present a brief description of the strategy and purpose of the processes. After the meeting, the current factory manger in Monza and assigned process chairman for HSS, was given authority tocontinue to run of the processes with support from OD. From having worked with the common processes "on paper" they were now suppose to actually use them in real life, which means having common processes, the same work language, KPI-metrics and ERP-system.[174]

[170] Tydén (16/02/2009)
[171] Jacobsson (27/01/2009)
[172] Ibid.
[173] Persson (27/01/2009)
[174] Palebo (17/02/2009)

According to OD the kick-off went very well and a majority of the participants were positive towards the common process and had accepted the new way of working. OD and the product group manager for HSS received valuable input regarding which factors to improve for the next implementation on another site.[175]

4.1.3 Organisational structure

There are 12 product groups within Alfa Laval and every product group has a product group manager. The product group manager has an overall responsibility for all manufacturing sites and the role also involves visitingthe sites on regular basis. There are normally 3-5 sites within a product group and it is the factory manager who is in charge of each site.

Within the product group, there is a product group management team that meet face-to-face once every quarter. During the product group management team meetings where they discuss issues such as strategy implementation, status, supply chain training and auditing. Furthermore, every site has its own site management team meeting on a regular basis.[176]

In the SCP-project, there is already a temporary management structure developed to support the new processes. The product group manager for HSS was given the responsibility to assign roles to appropriate people within HSS that would be in charge of the performance of common processes and ensure that improvements within HSS are carried out according to agreed decisions. Besides the Source, Make and Deliver processes, Finance and Quality are included even if these two are not mentioned in the SCOR-model. However, this temporary structure can still be redesigned if any improvements are identified during spring 2009. The temporary management structure for the processes consists of three levels:[177]

- **Strategic level** – Operations Development
- **Tactical level** – Each product group, product group manager and global process owners
- **Operational level** – Local process owners, factory manager and employees on all sites

The roles were divided into three different category levels and job descriptions were developed for each role with help from the HR-department. The three different category levels are:[178]

- **Common Local Process Owners –** responsible for a specific sub-process (Source, Make, Deliver, Finance, Quality) on site (operational level)
- **Common Global Process Owner** – responsible for the respective sub-process (Source, Make, Deliver, Finance, Quality) globally (tactical level)

[175] Tydén (16/02/2009)
[176] Ibid.
[177] Fagerberg (27/01/2009)
[178] Ibid.

- **Common Process Chairman** – in charge of the common processes within a specific product group (tactical level)

Within HSS today, there are in total 15 local process owners and five global process owners.[179] The local process owner should have the same position as existing line managers or possess any similar position. It is important to assign people with authority in order for the implementation to run faster during the start-up phase.[180] It is also essential to avoid the occurrence of mainly assigning people from one site within the management structure for the new processes. Otherwise there is a risk that the project will be considered to be a "Monza-based" project or an "Eskilstuna-based" project. All sites must be involved in order to gain peoples' trust and enthusiasm towards the common processes.[181]Figure 8 below illustrates how the roles within the temporary management structure for HSS are connected to each other.

HSS Management Team				
Process Chairman				
Process	Local Process Owner resp.	Local Process Owner resp.	Local Process Owner resp.	Global HSS resp.
Source				
Make				
Deliver				
Quality				
Finance				

Figure 8–Temporary Management Structure for HSS.[182]

In order to co-ordinate and synchronise the common processes, both within and between product groups, it is suitable to have process meetings on regular basis. However, the meeting frequency should not be too high as meetings most of the time are very time consuming and people are normally not able to meet face-to-face too often due to long geographic distances. The main purpose with having process meetings is to secure that all sites are working according to the common process maps and that people will get an opportunity to communicate with each other.[183] OD believes that they are the ones that should make the final decision regarding change requests concerning the common processes in order to secure the sustainability of the processes.[184]

[179] Tydén (16/02/2009)
[180] Ibid.
[181] Palebo (17/02/2009)
[182] Marchetti (16/02/2009)
[183] Fagerberg (03/04/2009)
[184] Jacobsson (02/03/2009)

4.1.4 Alfa Laval and processes

Alfa Laval's definition of a process is:

"A process is a chain of activities, with a start and an end, with the purpose to achieve a result."[185]

Alfa Laval is facing a big challenge with the implementation of the SCP-project. The work is very time consuming since the majority of the people involved in the project on lower levels do not know the definition of a process or possess a process-oriented mindset.[186] On top of that, there is also a challenge in changing every sites' traditional culture and the way they have always worked. An important factor to take into consideration here is that some people are more resistant to change while others are more open towards accepting a change.[187]

Most people that will work with the new processes believe that it is possible to think in terms of processes, but when actually discussing the processes in more practical terms, they mainly refer to the IT-system Movex.[188] In order to change the employees' way of working, there must be people in charge of promoting the benefits of starting to work according to the common processes and to think globally instead of locally.[189]

4.1.5 Support systems within Alfa Laval

At present, there are a couple of different content management systems within Alfa Laval such as SharePoint and Documentum. Alfa Laval is currently using IBM Lotus Notes and IBM Lotus QuickPlace as support systems where Lotus Notes mainly facilitates the communication through e-mail and calendars, and Lotus QuickPlace is used for project documentation and to spread corporate information within the organisation. In addition, Alfa Laval also has other systems that they have built on their own.[190]

SharePoint is a support system that is highly recommended by Alfa Laval's IT department and will also be replacing its existing intranet in the near future. According to Corporate IT, the main benefit with SharePoint is the system's ability to communicate information within the organisation through e-mail, news pages and discussion boards in an effective and for the users clear and visible way. Furthermore, SharePoint is able to structure information in a way that makes it easy for the user to navigate and thereby find the right information quicker in comparison to Lotus QuickPlace. SharePoint is very easy to learn, much due to the fact that it is a Microsoft-based system. The user only needs a couple of hours of education in order

[185] Ekendahl (27/01/2009)
[186] Palebo (17/02/2009)
[187] Ekendahl (27/01/2009)
[188] Ekström (09/02/2009)
[189] Axelsson (02/02/2009)
[190] Olén (08/04/2009)

to learn its capabilities and functions. Due to its potential as a system, Alfa Laval will stop investing any more money in Lotus and start focusing on SharePoint.[191]

However, Alfa Laval will initially only have access to the free version of SharePoint (WSS 3.0), which is a limited version of MOSS (Microsoft Office SharePoint Server) that holds all the extra features. The limited version does not allow the user to make any direct changes in how the system is built-up. Furthermore, the limited version's ability of visualising the common supply chain processes in a satisfying way is very restricted. Another drawback with the limited version is that it is not connected to Alfa Laval's e-mail system. Nevertheless, the limited version will be Alfa Laval's support system until the very beginning of 2010 when MOSS is expected to be implemented within the whole organisation.[192]

There is not any existing support system today within Alfa Laval that is well suited for process management. As content management systems often are complex products and very expensive, it is not likely that Alfa Laval will be able to buy an IT-system that mainly supports process management today. Another solution would therefore be to investigate and evaluate some potential Business Process Management (BPM) systems in order to find the most suitable one as a complement to their content management system, in this case SharePoint. The BPM would be a complement to uphold and develop the processes while SharePoint handles the communication. Since Alfa Laval is starting to look into ways of becoming more process-oriented, it would be wise to have an IT-system that supports processes later on. Still, the foremost important factor when evaluating an IT-system is the price, which reduces the options to choose what system to implement within the organisation.[193]

4.1.6 Alfa Laval's demands on a support system

When studying ways of managing a company's processes and how to best facilitate communication, it is important for a company to consider what specific capabilities the organisation demands of a potential support system. To ensure that the support system is suitable, it must correspond to the company's specific needs and requirements, which are unique for every company.[194]

People within the temporary management structure as well as people at OD consider that the capabilities shown in Table 3below are the most important criteria in order to secure the sustainability of the common processes globally. The results are collected from a survey that can be further studied in Appendix 2. The rating scale is between 1-5. The capabilities with an importance rate of 4 and 5 are considered as the "must have" factors. The capabilities rating from 1-3 are considered as "nice-to-have" and will not be the most essential aspects for Alfa Laval to consider when determining which support system to choose.

[191] Olén (08/04/2009)
[192] Ibid.
[193] Ibid.
[194] Fagerberg (23/03/2009)

Table 3 – Results of the requirements on a support system according to Alfa Laval.

Demands on a support system	**Importance**
Is user friendly	4,3
Has a supporting IT-department	4,3
Is fast	4,2
Shows the latest updated version of the common processes, when it was updated and by whom	4,2
Facilitates a fast and clear communication of any change or update regarding the common processes to the organisation	4,2
Visualises the processes in a good and understandable way, including visualisation of different process versions	4,1
Supports a simple navigation in the system	3,9
Provides educational material of how to use the support system	3,9
Includes a organisational structure explaining whom to contact with a question and who is responsible for what	3,8
Updates automatically within the whole system when making a change at a specific site/product group (object-based system)	3,7

5 Benchmarking

This chapter presents the information that the authors have collected outside the SCP-project at Alfa Laval. Firstly, three different support systems are described. Thereafter, the product group Parts within Alfa Laval will be presented as well as ST-Ericsson and Volvo Aero.

Before presenting the results given by the benchmarked companies, three support systems are introduced in order to provide the reader with some basic understanding of the characteristics of each system and knowledge of frequently used terminology. Since these systems are used by the benchmarked companies and/or recommended by the internal IT-department at Alfa Laval, these three systems have been chosen for further study and evaluation.

5.1 Support systems

The need for control of a company's assets all depend on one thing, namely how well the company knows its business and how to manage it. Today, there are many different support systems, all with their own unique features and services for companies to choose from. However companies must consider what capabilities they demand on a potential support system, as they cannotimplement any random system in their organisation.[195]

5.1.1 SharePoint

SharePoint is a Microsoft Office System that provides one single, integrated location where users can effectively collaborate with other team members within an organisation. The system makes it easy to find organisational resources, search for corporate information and to manage workflows.The system is designed to work with other programs, servers and technologies and also enables organisations to create and build their own SharePoint sites.[196]

MOSS (Microsoft Office SharePoint Server) is a server that handles the central management of sites, data repositories, access and security policies, search, and other functions. The major benefit with MOSS is that it provides a management system for enterprises to use across departments and not just within them.[197]

To minimise the risk that two people are in the same document making changes at the same time, it is possible to for the user to check-in and checkoutwhen working in a specific document. The system also provides the user with the alternative to publish a document as either public or private. The system has created three levels of different users:

- **Owners** – they have the mandate to do what they want within the system

[195] Andersson (19/03/2009)
[196] http://www.microsoft.com/Sharepoint/default.mspx (2009)
[197] Ibid.

- **Members** – they have the rights to attach documents within the system
- **Visitors** – they only have the possibility to look in the system.[198]

Some experts mean that MOSS' capabilities will not manage to meet larger enterprises' needs but rather meet the needs of smaller enterprises and departments.[199]

5.1.2 Documentum

The architecture of the Documentum platform, owned by EMC Corporation, is an Enterprise Content Management(ECM) solution that provides a unified environment for storing, accessing, organising, controlling, retrieving, and delivering any type of unstructured information within a company. It is not possible to buy Documentum as a complete product; instead the software is designed after specific customer demands. Therefore, when developing and implementing Documentum within an organisation, retailers of Documentum together with the customers have workshops in order to identify what capabilities and functions that are necessary for the system to fulfil.[200]

The advantages with Documentum are that it works very well for team collaboration since the software keeps all files and data in one centralised location. The system also has an effective document-handling system, which makes it possible for the user to track different versions and changes that have been made in a document. This capability is very important for example in the pharmaceutical industry where traceability is an important factor. Anyone who is working on a specific project gets access to this centralised location and users can thereby review and update the same documents that everyone else has used.[201]

Even though the collaboration software solution is useful, there are some drawbacks. The system requires the use of an IT-infrastructure and the system also needs an extensive amount of installation time. In addition, Documentum does not support the visualisation of processes.[202]

Documentum is a complex and expensive solution in comparison to other similar IT-systems and is therefore more suited for global enterprises where specialised features are required to be implemented within the system. The pricing is based on per server and per seat rates, which makes the total cost of ownership very high. The price of licences differ depending on two types of users:[203]

- **Consumers** – they only have the possibility to look in the system
- **Contributors** – they have the mandate to develop and make changes within the system

[198] Olén (26/03/2009)
[199] Weil (2008)
[200] Helgstrand (8/4/2009)
[201] Ibid.
[202] Ibid.
[203] Ibid.

Due to the complexity of the system, it results in a greater need for training and support and thereby it gets even more expensive.[204] A dedicated administration is necessary to handle the system and most often, a full time administrator is required to monitor the system. Otherwise the risk is that the system is broken down.[205]

5.1.3 QualiWare

QualiWare is a global business modelling software provider founded in 1991 with headquarters in Denmark. The system focuses on helping companies to succeed with their Quality Management, Process Management, and Enterprise Architecture.[206]

QualiWare Lifecycle Manger (QLM) is a tool that provides a customised meta-model-driven approach regardless of type of business, and the model can be defined and implemented by the customer. The repository is openly architected in order to support extension of different content. The meta-model can thereby be adjusted to meet the needs of any business due to the fact that business models differ in their level of detail, complexity, and specification.[207]

QLM supports a range of functionalities including multiple versioning, multiple configurations, multiple languages, private workspaces, multi-repository linking, and team development. A configuration may contain many revisions of an object but only one of them is active at a certain point. This concept is important because it allows the user to see what has been changed in the model between two releases. It is also possible to have "parallel" configurations to support parallel development. A revision of an object may exist in multiple language variants that can be used both to translate the models and to implement localised variants of models.[208]

QualiWare has a concept of remote linking that makes it possible for different repositories (models) to interact with different baselines in a common model, which can be useful when a common model is used by different projects or common models have specific variants such as regional or organisational variants. The QualiWare Repository provides administration such as revision control, access rights, check-in/check-out, and release management of final business models. Further, QualiWare supports integration with a wide range of tools and applications.[209]The price varies according to licensing and products, which are purchased individually.[210]

5.2 Benchmarking towards other companies

The main purpose of benchmarking towards other companies is to collect different approaches in how a company can organise itself in order to optimise its process

[204] Helgstrand (8/4/2009)
[205] http://www.onlinedocumentsharingreviews.com (2009)
[206] http://www2.qualiware.com (2009)
[207] Ibid.
[208] QualiWare product suite version 4.3 (2007)
[209] Ibid.
[210] QualiWare product suite version 4.3 (2007)

performance, how to communicate with each other within the organisation and what IT-system to use to support the processes. The gathered information from the benchmarking is used in order to compare the different structures with Alfa Laval's existing structure, which is used as sources of inspiration.

5.2.1 Alfa Laval – Parts

5.2.1.1 Product group description

Alfa Laval Parts (Parts) is one of the 12 Product Groups within Alfa Laval and is supplying the sales companies with spare parts. Parts consists of eight Distribution Centres (DC) spread all over the world: Tumba and Lund in Sweden, Kolding in Denmark, Indianapolis in the US, Shanghai in China, Mumbai in India, Shonan in Japan and Singapore.[211]

5.2.1.2 Processes at Alfa Laval-Parts

Parts has during the last years implemented standard logistics processes globally. This project has gone under the name of PULSE, and is not primarily an IT-project but a project to implement standard processes in the same ERP-system with the same configuration. The purpose with PULSE is to achieve a common way of doing business across all DCs, which will enable the utilisation of one global logistic system. This will lead to better service for both internal and external customers, increased synergies and the ability to implement new KPIs.

The benefits with PULSE are primarily that it facilitates co-ordination and provides an overview of the product group as a whole - "one size fits all". There are also huge cost savings by streamlining the processes. The disadvantage on the other hand is that one DC may have to adjust to the other DCs if a change is made.[212]

Parts defines a process as: *"Business processes are the systematic activities by which a firm conducts its affairs, i.e. the standard practices to accomplish common tasks. An example could be a standard way of picking, packing and invoicing orders."* [213]

In 1999 Parts started a project called GDS Sanitary, with the purpose to implement the ERP-system Movex on all the DC's. This project was connected with many problems and the project was closed in 2002. The work of synchronising Parts continued when the PULSE project started and began mapping the future business processes at the DC in Kolding in January 2003. PULSE Kolding went live in October 2004. But due to complications concerning the implementation of PULSE, the project became associated with delays and increasing costs, which forced the project to close in February 2005. In March 2005, the work related to the solving of the problems within the system connected to PULSE Kolding began and the business processes and the system could be up and running again in the end of 2005. Today, in

[211] Lucas (04/02/2009)
[212] Månsson (25/02/2009)
[213] Alfa Laval intranet (2009)

2009, the implementation is finished throughout all DC's, and everyone is now working according to PULSE.[214]

It is important that everyone works after the same organisational structure, the same KPI-metrics and that everyone is encouraged to be involved during the development of the processes. The risk is, when starting to describe all processes at a certain site in a specific country, that it is hard to get acceptance of the processes at the remaining sites.[215] It is also important to consider cultural differences and deeply rooted traditional working routines when implementing a change. If the management had been more understandable with their buy-in at all levels and DC's in the beginning of the project, the implementation process could have gone faster and been more successful.[216]

It is important to pay attention to the people who are working in the process. If the implementation of a new process will affect the way an employee performs his/her work and especially if the implementation also involves a new IT-system, it is of high importance to take the age difference between the employees into consideration. It may be a higher barrier for an employee who has worked several years within a system and performed his/her work in a specific way to adjust and learn a new system and process. Younger employees may have easier to adapt to a new system, which as a result makes the older employees insecure in their work. To prevent this, there should be educations provided on different levels.[217]

It is possible to have the same foundation for all product groups, but it should also be possible to make specific changes for each product group and DC in order to reach customer satisfaction.[218]

5.2.1.3 Roles and responsibilities

Parts has defined two main processes for the product group that are equal on all Parts' DCs globally. The main processes are the Global Deliver Process and the Global Source Process. Parts is organised according to a functional-oriented structure, but in addition to this structure Parts has identified roles and responsibilities connected to the two main processes. The roles are:[219]

- **Global process owners** – one for each main process
- **Local process owners** – one local process owner per main process and DC
- **Super Users** – people who are working within the process and the system in their daily work, and are responsible for testing a new suggestion in the system
- **Application Managers** – experts in the IT-systems

[214] Poulsen (3/4/2009)
[215] Lucas (04/02/2009)
[216] Piléus (16/02/2009)
[217] Ibid.
[218] Ibid.
[219] Lucas (04/02/2009)

The global process owners are members in Parts' management team. The local process owners are usually unit managers at the DC's, while the super users often are team leaders in the line organisation who possess extensive knowledge of the system.[220]

Regarding authorisation, conflicts may arise between the global process owner and the DC manager. The consequence of the implementation of PULSE has been that all sites report globally to the global process owners regarding change requests.[221] Parts has defined a decision-making process to deal with change requests related to both the process itself and the system. The global process owners have together with the application managers so called Request-For-Change (RFC) meetings approximately 8-10 times per year, where the priorities and the costs connected to the RFC are discussed. The application manager sends out RFC-updates 2-3 times per month in order to make sure that everyone knows what to do with the specific RFC. Parts sees an improvement potential regarding decreasing the number of RFC meetingsto 2-4 times per year at specific dates instead of dealing with them on an ad-hoc basis like they do today.[222]

Conflicts may arise between the global process owners and the DC managers if a proposed change involves monetary resources. As it is the DC manager that is responsible for the monetary resources in most cases, it is difficult for the global process owner to get the mandate to make certain decisions that concerns a specific site.[223] The people working within the Global Source Process are not closely connected to the DC's as the people working in the Global Delivery Process are, which has affected the role of global process owner for Source Process. The Global process owner for the Delivery process owns the resources, which means that the employees report to him and not to the DC manager.[224]

In order to facilitate a good communication Parts has set up a meeting structure:

- The management team of the product group Parts meet face-to-face four times a year to have common process meetings combined with management meetings where they discuss strategy implementation, supply chain training and auditing.[225]
- The global and local process owners from one of the main processes meet once a month to discuss the processes, if there are any improvement proposals or any necessary changes that has to be made.[226]
- The management team of each DC get together once a month to have improvement meetings. If there are any improvement suggestions, it is the

[220] Piléus (16/02/2009)
[221] Lucas (04/02/2009), Bendix (18/02/2009)
[222] Jonasson (02/03/2009)
[223] Bendix (18/02/2009)
[224] Poulsen (3/4/2009)
[225] Lucas (04/02/2009) & Bendix (18/02/2009)
[226] Piléus (16/02/2009)

local process owner's responsibility to pursue this matter together with the other local process owners at the other DCs.[227]

- The local process owners also have meetings with the super users once a week.[228]
- Every local DC within Parts has daily meetings called Cell Status Board meetings, where a status report is given and discussed as well as the challenges for the day.[229]

5.2.1.4 Documentation and support system

Parts uses QuickPlace as a support system where they document the processes, storedocuments connected to the processes, as well as communicate with each other. Everyone at local level is able to apply for a change in QuickPlace by creating a *local draft*. It is then the DC manager who is responsible to raise and discuss the issue locally whether the change is needed. If the change is accepted at local level, the local draft becomes a *global draft*. At this stage, when the IT-department has analysed the costs and benefits of the change, it is up to the global process owner to decide whether the change will improve Parts as a whole or not. Lastly, the proposal is sent to the IT department to be *delivered for test* and afterwards every DC is responsible to test and implement the change. QuickPlace is regarded as a very user-friendly system.[230] On the other hand, Parts did not perform any analysis on different suitable systems due to that QuickPlace was the only alternative at that time.[231]

5.2.2 ST-Ericsson, Product Group Mobile Platform

5.2.2.1 Company description

ST-Ericsson is a 50/50 joint venture (since February 2009) uniting the wireless semiconductor division of ST-Microelectronics (ST-NXP Wireless) and the mobile platform division of Ericsson (Ericsson Mobile Platforms). ST-Ericsson is an industry leader in design, development and creation of cutting-edge mobile platforms and wireless semiconductors and employs approximately 8,000 people worldwide. The company's operations are spread around the world, with main centres in China, Finland, France, Germany, India, Japan, Korea, Netherlands, Norway, Singapore, Sweden, the UK and the USA.[232]

5.2.2.2 Processes at ST-Ericsson

Since the joint venture of the two companies, a mutualprocess management in ST-Ericsson has become an important question. Process management has beenacentral part of Ericsson Mobile Platforms' business and they have worked and developed their processes since the start of the company in 2002. The aim of this work was from the beginning to increase the efficiency in the way the company conducts business

[227] Piléus (16/02/2009)
[228] Ibid.
[229] Ibid.
[230] Lucas (04/02/2009)
[231] Bendix (18/02/2009)
[232] www.stericsson.com (2009)

and how everyone operates within the company. Processes have been designed to support business decision flows and enable co-operation in development projectsregardless of where in the world the work is done. Jan Olsson, at Operational Development ST-Ericsson Mobile Platforms, has been a key person in this work, and the information in this chapter is based on his experiences.

Olsson means that processes should be a support to management by defining workflows, roles, decision points, procedures, guidelines, and templates etcetera. Moreover, the processes should also be an archive for best practice and be a platform for continuous improvements. The definition of a process is according to Olsson; "*a set of interrelated or interacting activities which transforms inputs into outputs"*.

Ericsson Mobile Platforms have identified four main processes and a set of supporting processes out of their company specific operations. Olsson means that it is important to have a certain architectural design as a foundation for the four main processes and that the company's strategy forms this architecture. Beneath these four main processes, there exists a process hierarchy and the organisation is responsible of identifying, describing and mapping the sub-processes as well as their specified demands for input and output. Some processes, for example in the production, are described in detail while other processes are not specifically described and are thus more open. The management is not involved in the details of the sub-processes but it is important to define specific factors at a central level, and secure that all parts work integrated and what is needed in forms of input and output. Olsson believes that it is more important to have processes that reflect the reality rather than having centralised processes that the organisation does not follow or understand.

Based on Olsson's experiences, he claims that there are three aspects that are critical to take into consideration in order to succeed with a process implementation:

- **Anchoring within the top management** – senior management is the key factor in order to ensure that all employees buy-in to the processes and really understand their importance
- **Speed of the effort** – if the implementation process takes too long, the company risk losing motivation. If the employees lose their interest in being a part of the implementation, the implementation risk being a complete failure
- **Strong leadership** - a project leader or a project champion that co-ordinates and leads the implementation process

In order to manage the processes in an efficient way the Operational Development, who also has the overall responsibility for the processes, has developed a process management framework. The process management framework includes rules and models of how to manage the processes as well as roles within the organisation. A big part of management is about measuring, follow up and support the performance of the processes. Compliance measurements are performed every month in order to monitor if the processes are well implemented and suitable for its purpose.

5.2.2.3 Roles and organisation

Ericsson Mobile Platforms has identified three different roles with associated responsibilities aligned with the processes:

- **Process owner** - responsible for process performance
- **Process leader** - drive development close to process users and spread information
- **Process facilitator** – support with process tools and knowledge

Ericsson Mobile Platforms has a process owner for each identified process and it is the CEO, superior process owner, who appoints the process owners on top level. The process owners are the same persons as the managers in the functional-oriented organisation, i.e. the R&D-manager, the sales manager etcetera. All the six process owners are members of the management team at Ericsson Mobile Platforms. The process owner has the responsibility and authority to define and document the process, identify measurements, initiate implementation of the process, follow-up and improve of the process as well as decide and execute process improvements. According to the process hierarchy, the process owner reports to the superior process owner.

The process leader is given the responsibility and authority from the process owner and also reports to the process owner. The process leader's and the owner's main tasks are to manage process improvements, develop and maintain process documentation, conduct training and presentations, follow-up and monitor process performance and participate in process co-ordination work. The role as process leader could be either a full time job or part-time besides the ordinary role depending on the size of the process and its organisation.

The process facilitator supports both process owners and process leaders with general knowledge about the processes, rules and tools for the process, supports upon requests with process workshops and documentation. Operational Development is responsible to co-ordinate and supports the processes with facilitators upon request.

Ericsson Mobile Platforms is organised according to functional departments. The process-oriented structure and the functional-oriented structure should be seen as two separated structures. A line manager can also be responsible for a certain process but it is not necessary. Sometimes, complications between a line manager and a process leader can occur. Conflicts can arise due to that the line manager has the responsibility over resources and the process leader is responsible for the process. The line manager and the process leader must then solve the issue and find an optimal solution together. In order to solve these kinds of complications,there are so called Quality-meetings on a regular basis where the process owner, process leader and senior line managers for the units that uses the processes participates.

Follow-up meetings (in the Quality meetings mentioned above) with the process leaders and the line managers are held every month where the involved parties discuss whether the process is effective and if everyone follows the process or not.

The meetings make it possible to identify possible improvements and suggestions for change.

5.2.2.4 Documentation and support system

In order to visualise the process maps and to get a holistic view of the processes, a place where all updated processes and documents can be found have been created on the intranet. This place is called *the processWeb* and is based on the IT-system SharePoint. The Web is a user-friendly tool where the users can navigate themselves in the process levels by clicking on the process map.The process navigation contains descriptions of the appointed organisation plan, process documentation, process maps, templates and change notes as well as information on how to document processes.

Since it is the people working in the process who are the ones identifying and describing the process, the process documentation needs to be approved by people in a higher level before it gets published on the Web. This is a way to secure that it is the correct process documentation that is published. Each process owner has the right as well as the responsibility to describe the processes good enough in order to support its users, and it is then the process leader who is responsible to update all approved documents.

Ericsson Mobile Platforms uses Visio when drawing their processes. When a process has been drawn in Visio, the picture is saved in a SharePoint server. All saved documents are put in a specific hierarchy and the process leader is responsible to update the documents according to this hierarchy. There are also templates and descriptions connected to each process.

It is important that the process leader performs audits and has regular check-meetings to control that the process users do not have their own versions of the processes. Olsson means that it is not about developing process maps with a nice design but instead, create process maps that are easy to follow and understand, in order to minimise the risk that process users create their own versions that get“hidden in the drawers”.

SharePoint was implemented within the organisation in 2002. According to Olsson, the main strengths are that it is a Microsoft-based system, it facilitates communication forums, is easy to implement and to learn. When looking at document handling, revision handling and linking possibilities in processes, there are potential for improvements. The major drawback is that SharePoint does not visualise different versions of documents in an understandable way. However when choosing a support system, it is important to try to minimise the risk that the support system becomes too centrally heavy to administrate. The system should enable the process leader to document his/her processes in a good way and it should also be easy to find the right information within the system.[233]

[233] Olsson (16/03/2009)

5.2.3 Volvo Aero

5.2.3.1 Company description

Volvo Aero is an entirely owned subsidiary of AB Volvo. In co-operation with the worlds leading aerospace engine manufacturers, the company develops and produces components for aircraft engines, rocket and gas turbinewith high technology content. Volvo Aero's headquarter is located in Trollhättan, Sweden and the company has eight manufacturing sites globally. Volvo Aero also offers extensive aviation services – including leasing, logistics, asset management, inventory sales, distribution and redistribution, as well as overhaul and repair of aircraft engines and gas turbine.[234]

5.2.3.2 Process management framework

This chapter is based on discussions with Bertil Andersson, Manager at Operational Management System & Process Management at Volvo Aero,regarding the company's challenge in becoming a process-oriented organisation.

In the beginning of year 2000 Volvo Aero decided to confront a company-wide challenge since they wanted to eliminate different variants of work processes across the company. According to Andersson, Volvo Aero faced too many varieties of the way their employees really performed work as well as the way it was described in the actual procedural manuals. This resulted in problems of determining which procedure that would be most efficient and correct as well as where to find the best practice procedure. Andersson states that this, which was associated with poor management systems and supporting detail documentation, could account for as much as 10-30 percent of non value added cost of a company's turn over.

Volvo Aero decided to gather the different management systems, both for quality (ISO9001) as well as for the environment (ISO14001), and to improve their work processes through implementation of a web-based Operational Management System (OMS) and increased the use of the system from 10-15 percent to more than 85 percent.

Andersson defines a process as: *"A repetitive sequence of logically linked activities designed to give the customer value added. The customer decides what value added is. The beginning and end are clearly defined and the process should also be possible to measure. The process must have at least one customer and at least one supplier."*

An OMS team was pointed out, which began the journey by mapping the processes at a level that described activities as they took place and the operational view and was then tied to customer requirements, governing regulations, and roles etcetera. In total, Volvo Aero spent 40,000 hours in three years on developing and establishing the OMS within the organisation and as much as 85 percent of this time was spent by the process team on working to define and improve the processes. Volvo Aero believed that it was important that their employees really understood the work of processes and the process team was responsible to make sure to confirm that the processes were

[234] www.volvo.com/volvoaero/ (2009)

being described in an accurate way as well as in an easy-to-use and visually-based way within the OMS. They also established standards to ensure structure, definitions, concepts and management control so that consistency and alignment was assured between the information in the OMS and actual performed work.

According to Andersson, Volvo Aero desired an OMS that would be accepted and used by all employees as to improve overall process documentation. The company also engaged all employees in the OMS project because they believed that it would speed up the learning curve and deliver necessary information to enable new employees with their work. An important factor for Volvo Aero was to cut costs but most importantly, ensure that every customer would be a satisfied customer.

5.2.3.3 Roles and organisation

Volvo Aero has appointed specific roles and responsibilities in order to manage the processes:

- **Process manager** - owner of the process
- **Process leader** – responsible for a main process to manage as well as to standardise, educate and improve of the process.
- **Sub-process leader** - authority to make decisions regarding process changes within one sub-process (part of a main process)
- **Team leader** – support to the main process or sub-process leader
- **Process facilitator** – specialists in the OMS and the methods owner of process management.

Volvo Aero has a decentralised organisational structure based on a process-oriented structure where functions own the resources. Moreover, the process-oriented organisation is also responsible of all top-level KPI's. The process management team form the highest level in the organisation structure. Volvo Aero's corporate management forms this process management team and the CEO of the company is assigned as overall process manager in order to really anchor the processes within the organisation. Most of the people in the management team are situated in Trollhättan, which facilitates the co-ordination and communication between the involved parties.

Volvo Aero has six main processes and one process manager appointed for each process. The process leaders are responsible for each of the main processes and the sub-process leaders, approximately 15-16 in total. By sub-process, Volvo Aero refers to a specific part of the main process. The process has a management team, in which the other process managers for the operations main processes are members as well as the process leader. The assigned process leaders have the mandate to make decisions necessary for the process efficiency and if there are high costs connected to the change, he/she has to discuss the costs and benefits with the process manager in order to make the right decision.

The process leaders have net/live meetings on a regular basis with the employees that work in the actual process and he/she also visits the different sites in order to co-ordinate and to monitor the processes. The process leaders then also have meetings

every second week together with Andersson and the Process Manager responsible within executive management where the interfaces between the processes are discussed as well as changes, obscurities and ownership within the processes.

Process facilitators are responsible to make process changes within the system and they are experts within the area. If the process leader has any difficulties with the process, the facilitator provides the process leader with support. There are also process teams at an operational level that test and evaluate change suggestion. These process teams are more flexible and their formation depends on the range of the change.

5.2.3.4 Documentation and support system

Volvo Aero receives more than 1,100 change requests a year and 85 percent of the requests results in a change. To facilitate the co-ordination of the changes, they have designed five levels of change requests within the system, namely:

1. **Audit findings** – to fulfil regulations etcetera
2. **Customer demands**
3. **Authorities** – new demands from authorities
4. **Cost savings**
5. **Need of change** – changes that are recommended but not necessary to make due to that there are not cost savings by implementing the change

The first three are always prioritised and it is the process leader who is responsible to handle the change requests. According to the procedure, the person who first initiated the change receives an automatic reply within 15 minutes saying that the request has been received and is under progress. The overall process could then take everything from 72 hours to 60 working days. In some cases the time of implementation is defined in the new or changed demand.

Volvo Aero chose to implement QualiWare LifecycleManager (QLM) for the development and improvement of their management system because this system was considered to best meet the needs and demands from the company. QLM was installed and implemented as a part of a process-oriented knowledge management system in 2001 and it is still used today to provide support for effective and efficient audit, evaluation and change management of the OMS.

The investment of QLM has provided Volvo Aero with greater flexibility as well as efficiency and effectiveness in changing the business when market conditions dictate change should be initiated. The documented customer requirements connected to specific activities ensures quality and customer satisfaction and finally, the system has also resulted in greater employee satisfaction in working with processes and greater employee involvement of improvement in daily work. The major strengths and benefits with QualiWare as a support system are according to Andersson:

- It is an integrated system with linking possibilities within the processes

- It is an object-based system, which means that it updates automatically when making a change. When changing input in a part of the process, output updates in another part of the process, which facilitates the maintenance of the processes.
- QualiWare visualises the processes in an understandable way and thereby reduces the use of documents and misunderstandings
- It has an extensive potential to progress even more in the future
- Licenses are bought to the people that make changes in the process. The users does not need any licenses in order to look in the system

Drawbacks on the other hand are:

- It is important to "think before you act" due to the fact that the system is so integrated
- It is an expensive system
- The users need training and competence within process management in order to learn the system

All in all, Andersson believes that QualiWare gives value for the invested money and that the benefits exceed the drawbacks. Concrete examples of results delivered by Volvo Aero's OMS are presented below:[235]

- A 1.5 million dollar cost savings per year in direct operating costs of the management system as well as cost savings in training lead time when introducing an employee to a new work area
- A 50 percent reduction in people required to manage process and procedure documentation and as much as an 85 percent reduction in written text compared to the previous management system
- More than 200 external audit days per year resulting in just two findings, which is less than 1/10 of before, and an increase in relevant process improvements suggestions from employees from an average of 50 per year to more than 1,100 per year
- Documented customer requirements connected to specific production activities, ensuring quality and customer satisfaction

[235] Andersson (19/03/2009)

5.3 Summary

Table 4 below summarises the information given by the benchmarked companies and will be further analysed in chapter 6 according tothese six dimensions.

Table 4 -Six analysed dimensions from the benchmarked companies.

Dimensions	Alfa Laval - PARTS	ST-Ericsson	Volvo Aero	Alfa Laval- SCP-project
Organisational structure	Functional-oriented structure combined with identified roles and responsibilities connected to the main processes.	Functional-oriented structure combined with roles and responsibilities connected to the main processes.	Process-oriented structure but the functions own the resources.	Functional-oriented structure combined with identified roles and responsibilities connected to the SCP-processes.
Roles connected to the processes	- Global process owner - Local process owner - Super users - Application manager	- Process owner - Process leader - Process facilitator	- Process manager - Process leader - Sub-process leader - Team leader - Process facilitator	(Temporary roles) - Process chairman - Global process owner -Local process owner
Meeting structure	Meetings on regular basis according to a fixed structure.	Meetings on regular basis according to a fixed structure.	Meetings on regular basis according to a fixed structure.	No meeting structure.
Support system	QuickPlace	SharePoint	QualiWare	None

Dimensions	Alfa Laval - PARTS	ST-Ericsson	Volvo Aero	Alfa Laval- SCP-project
Why processes?	To achieve a common way of doing business across all DC's. To enable the utilisation of one global logistic system. This will lead to better service for both internal and external customers, increase synergies and the ability to implement new KPI's.	To standardise the way everyone works within the company. The processes should be a support to the management by defining workflow, roles, decision points, procedures, guidelines and templates. The processes should also be an archive for best practise and be a platform for continuous improvements.	To eliminate the variation of how the employees really perform work and the variation of ways it is described in the actual procedural manuals. To find best practise procedures.	To standardise work according to best practise, reduce costs, make resources more available, benchmark KPI's between sites and product groups, create a common language.
Definition of a process	*"The systematic activities by which a firm conducts its affairs, i.e the standard practises to accomplish common tasks. An example could be a standardised way of picking, packing and invoicing orders."*	*"A set of interrelated o interacting activities which transforms inputs into outputs."*	*"A repetitive sequence of logically linked activities designed to give the customer value added. The customer decides what value added is. The beginning and end are clearly defined and the process should also be possible to measure. The process must have at least one customer and at least one supplier."*	*"A process is a chain of activities, with a start and an end, with the purpose to achieve a result."*

6 Analysis

This chapter presents the analysis of our theoretical and empirical findings. Firstly, the development of a management system framework is analysed and is followed by a discussion of how Alfa Laval has worked with and implemented the SCP-project. Lastly, the process maturity of Alfa Laval and our theoretical contribution are presented

By using the SCOR-model, OD has designed Alfa Laval Operations' supply chain processes. As SCOR only cover activities related to purchasing, manufacturing and delivery, other external corporate functions such as Sales Companies and R&D have not been included. By only focusing on Operations, the customer focus is missing. The process design has merely focused on identifying best practice, standardising activities and improving internal performance within Alfa Laval's logistic activities. SCC means that customer value is added at the most by improving operational efficiency that will reduce cost and improve assets utilisation. This can probably be right, but how can a company really know which activities that create customer value if it is not aware of its customers needs? In this case, Alfa Laval has to integrate all of its corporate functions, especially those who have the direct contact with customers and redesign its processes based on those needs. Until then, we believe it to be more fair to refer to the Source, Make and Deliver processes as workflows. By workflows, we have defined it according to Hammer (2007): *"who does what task, in what location and in what sequence"*.

When comparing the process definition of Ljungberg& Larsson (2001), OD's common processes fulfil the demands of having designed chains of activities and defined inputs and outputs. However, the processes have been designed without considering the customers needs as first priority. As Davenport (2005) states, *"existence of the process is entirely based on the process' ability to satisfy customer need"*. Once again, if you do not know what the customer wants, then you cannot guarantee that the process satisfies that need and therefore it is difficult to call these common processes for just processes.

Further, OD does not wish to reorganise Operations to that extent that functional boundaries are crossed. As a result of this, the measuring of performance and the development of the processes Source, Make and Deliver will be done separately. One of the main purposes of having processes is thereby lost. Additionally, OD claims that the organisation is not yet ready for a transformation of this size. Instead, OD wants to overlay a new structure on the already established functional organisation, which is something that many other organisations also tend to do. This increases the risk that the employees will interpret the new processes as nothing else but as instructions of how to complete different tasks in a certain order. These facts imply that OD might not have truly understood the benefits of being process-oriented, which is why we consider yet again that the common processes should be called workflows.

6.1 Management system framework

One of our ambitions with this thesis is to create a management system framework including a management structure with defined roles and responsibilities, a meeting structure, a decision-making tree and lastly recommendations regarding a suitable support system that will secure the sustainability of Alfa Laval's new set of common workflows. The results from the benchmarking in chapter 5 have been used as an inspiration during the development of the management system framework. The key findings have been divided into six dimensions, summarised in **Fel! Hittar inte referenskälla.** in chapter 5. A management structure that OD has agreed upon has been developed and will later be presented in Figure 9.

6.1.1 Organisational structure

The intention of the SCP-project has not been to move away from Alfa Laval's traditional functional-oriented structure (shown in
Figure 1, chapter 1), but rather find a structure that can complement it in the support of the common workflows. In the SCP-project, a temporary structure (Figure 8, chapter 4) that overlays the existing structure has been created earlier. We believe that the temporary structure has improvement potential and have therefore redesigned it in order to better support OD's purpose of having common workflows globally. Within the benchmarked companies, cultural aspects have had high influence on the design of the organisational structure of each company. Therefore it is not possible to apply any of their structures on Alfa Laval Operations but rather get inspiration. The new management structure is illustrated in Figure 9 below and is designed for Alfa Laval Operations specifically.

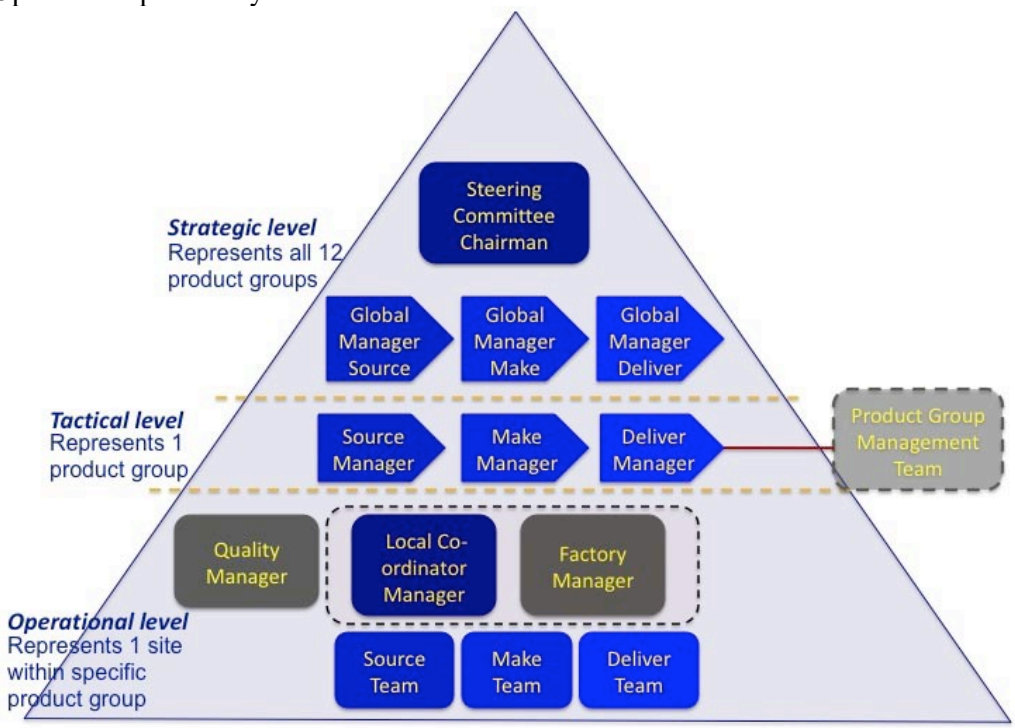

Figure 9 – New management structure for the Source, Make and Deliver workflows.

The new management structure for the Source, Make and Deliver workflows consists of three levels according to the traditional hierarchical structure: strategic, tactical and operational level. Based on this structure, different roles and responsibilities as well as a meeting structure and decision-making tree have been identified. When studying the benchmarking companies, they have all chosen to organise themselves according to different levels since they believe that levels are necessary for simplify co-ordination and communication within the organisation. A benefit of having clear levels is that the structure becomes easier for everyone to understand.

There is a strong focus and demand from OD of having roles appointed on strategic, tactical and operational level. OD is, in the initial phase of implementing the workflows, focusing more on controlling them and securing that the employees are working according to these rather than focusing on finding workflows improvements. The hierarchical focus goes in line with how the management structure is developed. However, we believe that this structure should focus more on the lower levels and thereby give more responsibility and authority to the tactical and operational levels, if not immediately then within a reasonable time horizon.

Our developed management structure should be seen as a complement to the already existing functional-oriented organisational structure. The characteristics of the functional-oriented structure become very transparent in this management structure because of the traditional triangle-shaped structure. Further, by developing a management structure where roles are pointed out according to the Source, Make and Deliver workflows there will not be a focus on creating a holistic mindset within Alfa Laval Operations. Further critic to the management structure is that the customer focus is missing and that there are many new managers compared to the number of workflow performers. Due to the domination of the functional-oriented structure, it results in a vertical way of thinking where the main objective in the end is to satisfy the manager, which is in contrast to a more process-oriented way of thinking where the goal is to satisfy the customer. The structure will allow Alfa Laval's employees to focus on specialised areas more than giving them a holistic perspective of the business and emphasise the importance of customer focus.

6.1.2 Roles and responsibilities

In all of the three benchmarking cases, a hierarchy occurs between the roles where the highest level consists of one or several people who are members of the senior executive team. These people have an overall responsibility for the process, its development and for optimising the process in a holistic manner. The responsibilities of these people correspond with the theoretical description of a process owner. Both Volvo Aero and ST-Ericsson have delegated authority and responsibility concerning their processes, which also is recommended by most theories. Parts tries to delegate authority within their process organisation but has not yet reached to that point since the global process owner still has to make the final decisions if the local process owners cannot come to terms with each other.

ST-Ericsson and Volvo Aero have identified process facilitators that support the people working in the processes but are not involved in the daily business. The

process facilitators belong to a department that equals a lot with OD's position within Alfa Laval. However, none of the companies have identified any resource owners and mean that it falls on the line managers' responsibility, which are the owners of the resources, to also develop the resources.

In the new management structure, roles have been appointed to the Source, Make and Deliver workflows on three levels. A major difference between the previous temporary structure and the new one is that Quality and Finance are not included since they are considered as supporting functions to the workflows. Nevertheless, it is important to involve the quality manager at each site since the new workflows will have great impact on the ISO9001 certification.

6.1.2.1 New roles at strategic level

The strategic level consists of a steering committee that exists of three global workflow managers and a steering committee chairman for all product groups. Their main responsibilities are to secure that the workflows are followed on all sites globally and to synchronise the workflows with other strategic concepts within Operations. Further, the steering committee is the one that decides which workflow variances that are accepted on site level as on product group level (for example national legal aspects).

Due to that OD are the ones who have mapped the workflows they possess a good understanding of the details, interfaces and interactions between Source, Make and Deliver. Therefore, they are suitable to be assigned roles in the steering committee. Although there is a risk to appoint OD as global workflow managers since they are not involved in daily business activities. In the long-term perspective when more sites and product groups have implemented the new workflows, it might not be sustainable to let OD have the overall responsibility. If not sooner but at least then, they should hand over the responsibility of the steering committee to managers within Operations that are able to work with and develop the workflows full-time.

6.1.2.2 New roles at tactical level

The tactical level consists of three workflow managers who are representatives from operational level and is a part of the product group management team on tactical level. Their main responsibilities are to enable a cross-functional way of working between the sites within a product group. The workflow managers at tactical level will have a holistic view of the business but will at the same time be a specialist in one of the workflows. It is vital that the workflow manager on tactical level has the authority, the knowledge and understanding of the characteristics of the product group. Therefore, it is highly recommended that this person is a member of the product group management team. The product group manager needs to take a more apparent role in a workflow context. This is due to that the product group manager has the capacity to stress the benefits of the new workflow and the ability to co-ordinate the three workflow managers in connection with the product group management team meetings. These meetings will hopefully encourage a holistic view.

According to the temporary structure the role as process chairman has been appointed for the product group HSS. In an attempt to minimise the number of levels in the management structure, this role was eliminated. We believe that too many levels would hinder the communication between operational and strategic level and would also make the meeting structure even more complex.

Alfa Laval has, in contrast to Volvo Aero and ST-Ericsson, chosen to have roles within each product group instead of having a workflow manager on tactical level that is responsible for an isolated part of the workflow for all product groups. This functional mindset may hinder a cross-functional way of working between the product groups, thus the strategic level will have an important role to play regarding this integration.

6.1.2.3 New roles at operational level

The operational level consists of one local co-ordinator as well as a core team for each workflow. It is necessary to assign someone at operational level whose main tasks are to unite the three workflows and actively diminish sub-optimisation. The core teams consist of workflow performers with relevant competence.

Conflicts may arise between the traditional functional structure and the new management structure regarding the allocation of resources. In order to avoid this, the factory manager should be responsible for the workflows on site level whenever possible. The factory manager will then enable a cross-functional way of working through the workflows at the site. While the factory manager also is part of the product group management team, he/she has an understanding of the tactical perspective as well.

The quality manager at operational level plays an important role concerning the ISO9001 certification, which is why the quality manager and the factory manager must have a continuous dialogue regarding workflow updates.

6.1.2.4 Risks with the new roles

We see a risk with having roles appointed on strategic, tactical and operational level since it may be perceived as a way of controlling the employees rather than facilitate an environment that supports continuous improvements. It can also be questioned why new roles have been defined in the management structure since it in many ways is the same that already exists due to the three hierarchical levels. We believe that it is of greatest importance to assign people who are believers of this project and have some basic knowledge in process management and thereby understands the reason of working according to common workflows. They should also be strong leaders that can involve and encourage the workflow performers.

6.1.3 Meeting structure

Volvo Aero, ST Ericsson and Parts all have appointed different roles in a process context that meet on regular basis according to a given meeting structure. The frequency of the meetings differs among the organisations and between types of roles.

All three organisations have regular face-to-face meetings at least once a year on strategic level.

In order to get a holistic perspective and prevent sub-optimisation within an organisation, it is important for workflow managers to have aneffective communication on all levels: strategic, tactical and operational. Therefore, it is crucial for Alfa Laval to have a meeting structure that secures a good communication as well as assists decision-making between and within the different levels. As one of Alfa Laval's objectives with the SCP-project is to standardise working procedures and find synergies between sites, OD wants to enable communication within a certain workflow (Source, Make or Deliver) that will help the workflow managers to share experiences and develop their skills within the specific area. Therefore, there should be a meeting structure that supports both meetings that integrates all workflows as well as meetings that only focuses on one workflow at a time on all levels. We have developed a meeting structure consisting of five meetings, namely: *Steering Committee Meeting, Product Group Workflow Meeting, Product Group Management Team Meeting, Local Site Management Meeting* and *Whiteboard Meeting*. These are further described in chapter 7.2 Meeting Structure.

The workflows are executed on operational level, thus most issues concerning the workflows will be the most evident on this level. It is relevant to have meetings that involve all three workflows and that address issues that can optimise the entire workflow. To communicate issues on operational level to managers on tactical level and vice versa in an efficient way, there should be meetings that involve participants from both tactical and operational level. To ensure standardisation between product groups, one solution is to have meetings where representatives from each product group communicate with people responsible on strategic level. In order to reduce the number of meeting delegates to a manageable number, these meetings can be divided according to specific workflow. This can also help create expertise within each workflow. At the same time this will further encourage a functional-oriented mindset.

By having frequent meetings on regular basis, it can help to ensure that the work actually is performed according to the workflow maps and that they are continuously improving and maintained. It is important to keep the number of meetings to a realistic level in order for the meeting structure to work successfully. However, there might not be enough meetings on operational level, which is due to that there is not any local workflow manager within the management structure. We see a risk that the lack of meetings on operational level will fail the encouragement needed in order to make the workflows sustainable.

6.1.4 Decision-making

When implementing standardised workflows, opportunities, problems and crisis will most likely be identified on all levels at some point. Conflicts of interest may differ between product groups and sites and it can be difficult to agree upon common solutions. Hence, it is necessary to have some sort of decision control routines regarding change request. A decision-making tree has been developed and is presented in Appendix 3, due to its large size. Three different levels (operational,

tactical and strategic) of which suggestion can arise from have been taken into consideration. The decision-making tree also involves a testing activity as well as an implementation activity of a change request. By having a decision-making tree that describes the flow of activities from the time that a change request is initiated to the rejection, approval, testing and implementation of the request, the quality of the decision is secured as well as justified within the organisation. This postulates that the people who finally make the decision have the authority, competence and ability to evaluate the request, as well as credibility.

It can sometimes appear easier to have a small group of people that are in charge of the final decision-making if the objective is to have common workflows globally. However, when the common workflows will affect more product groups, it is most likely that the number of change request will increase and become very time consuming for a small group of people to manage on their own. As for example Volvo Aero gets 1,100 improvement suggestions per year regarding their processes.

When implementing the new workflows at a site, OD seem to prefer to have the main control of the design of the workflows, and therefore the strategic level will allow minimum amount of decisions to be made on tactical and operational level regarding change requests, except for legal reasons in the initial phase. Later on, as more sites and product groups are involved, it will be necessary for OD to release some of their control by giving authorities to both tactical and operational level to make their own decisions regarding change requests in order to increase the speed of the decision-making process. Otherwise, the risk is that OD becomes a bottleneck and that the decision-making process is seen to be too bureaucratic which can inhibit the creativity and motivation among employees to come up with improvement suggestions, which also will affect the possibility to achieve best practice. A filter, stating what kind of decisions will be allowed to make on the tactical and operational level, will be discussed during the implementation phase. The decision-making tree is adopted to put these filters in action.

When change requests occur, there is a need of a good tool that encourages faster information gathering and communication regarding the decision-making process of the request. This can be done by having a web-forum connected to the support system, which will function as a communication forum in extent to the meeting structure. In the web-forum, affected parties can comment specific requests. At times, it will be mandatory for some parties to comment on a request, which is shown in the decision-making tree. A time frame, of when a comment needs to be given in the web-forum should be set at all three levels. The web-forum will increase the decision-makers ability to evaluate the specific request. A web-forum will also enable the search for ready-made solutions for the decision-maker, as different sites can explain how they have chosen to deal with similar issues before. It is important to keep all the affected parties on all levels updated regarding the status of change requests and approved changes.

6.1.5 Support system

We have chosen to classify and analyse the three systems, SharePoint, QualiWare and Documentum, on a rating scale of three levels when applicable depending on to what extent the system answers to the given capabilities.The ratings are based on how the users from the benchmarking companies experience and think of their own system that they operate in. Table 4 below illustrates the match between demands and capabilities. *Low* indicates that the system does not live up to the capability. *High* indicates that the system fully meets the demands and *medium* indicates of a performance somewhere in between low and high. When evaluating the speed of the support system, *normal* indicates that system users believe that the support system is as fast as any other system, which means that they cannot complain of the speed. A supporting IT-department is more difficult to evaluate. It is possible to get help and support from retailers of the support systems, but as of today, Alfa Laval only has expertise of SharePoint internally. Therefore they would need education in how to use QualiWare and Documentum.

Table 4 - Results from analysing the three different support systems according to Alfa Laval's demands.

Demands on a support system	Ranked by the potential users	SharePoint	QualiWare	Documentum
1. Is user friendly	4,3	High	Medium	Low
2. Has a supporting IT-department	4,3	Yes	Possible	Possible
3. Is fast	4,2	Normal	Normal	Normal
4. Shows the latest updated version of the common processes, when it was updated and by whom	4,2	Medium	High	High
5. Facilitates a fast and clear communication of any change or update regarding the common processes to the organisation	4,2	High	Medium	Low
6. Visualises the processes in a good and understandable way, including visualisation of different process versions	4,1	Low	High	Low

7. Supports a simple navigation in the system	3,9	Medium	High	High
8. Provides educational material of how to use the support system	3,9	Low	High	Medium
9. *Includes a organisational structure explaining whom to contact with a question and who is responsible for what*	3,8	-	-	-
10. Updates automatically within the whole system when making a change at a specific site/ product group (object-based system)	3,7	Medium	High	High

As can be seen in Table 4 above, SharePoint does not visualise the processes in an understandable way or provide the same quantity of educational material in comparison to QualiWare. SharePoint's strength is that it facilitates a fast and clear communication whilst QualiWare has a superior focus on process management. Documentum's major strength is that it is an effective document-handling system that makes it possible for the user to track different versions made in documents. However, we do not believe that Documentum is a good alternative for Alfa Laval due to its complexity and lack of process management. Criteria 9 that is written in cursive, is an important factor for Alfa Laval to take into consideration when developing and installing a support system. It is however not a demand that will affect the decision regarding which support system to choose.

We propose a two-step recommendation plan to Alfa Laval regarding a support system. Initially, we find that SharePoint will be an acceptable support system since it is easy to learn and already exists internally within the organisation. Since they already have started implementing the SCP-project, there is a need of an up-and-running system that facilitates the communication and maintenance of the common workflows in an early phase. However, in the long-term perspective, we find that Alfa Laval should invest in QualiWare because it is considered as the system that best develops and upholds a clear and effective processes management. Since QualiWare is an object-based system it facilitates the maintenance of the workflows and enables a smooth and controlled updating of the workflows as well as the connections and interfaces between the workflows. QualiWare stands out in comparison to SharePoint

when it comes to visualising of the workflows and navigating in the system. It is also possible to measure workflow specific KPI's with QualiWare, which should be interesting for Alfa Laval in the long-term.

6.2 Change management

Another aspect of this study has been to examine how OD can secure the sustainability of the developed supply chain workflows. The SCP-project has been analysed by applying Kotter's 8-step change model and recommendations for the continuing implementation of the SCP-project have been suggested.

6.2.1 Kotter's 8-step framework applied on the SCP-project

Step 1 - Create a sense of urgency
OD has established a sense of urgency among each other since they have realised that synergies can occur between sites and product groups by working more standardised. However, the urgency has not been strong enough in order to spark the initial motivation for change among everyone affected by the SCP-project, which decreases the possibility of succeeding with the project. Even though OD has understood the need of change, the SCP-project has not been prioritised in question of time and resources as recommended. Theories state that most companies fail to create a sense of urgency when starting a transformation program, and management often underestimates how difficult it really is to implement a successful change. Since it seems as if the promotion to the organisation of the needs and benefits of the project is vague, it is difficult to create an understanding as well as a feeling that the change is something of serious matter.

Step 2 - Creating aguiding coalition
As of today, there is no assigned project leader for the SCP-project with the purpose of motivating the employees and to get them to understand the objective with the new standardised workflows. The lack of leadership may jeopardise the project in the long-term due to that the important aspects of direction setting and delivering the change in an appropriate way not have been taken into consideration. In order to drive and implement the new Source, Make and Deliver workflows efficiently, we recommend OD to create a change team consisting of a good mix of people that represents all levels within Alfa Laval, from senior executives to operational level. The people that form the change team should also have the status and authority necessary to drive the change successfully.

It seems as if the senior management team of Alfa Laval Operations has not been involved in the project to that extent that is recommended, which is considered as necessary and a critical first step in order to gain people's support and to speed up the implementation process. Volvo Aero assigned the CEO of the company as overall process manager in order to show on the importance of the change and to really anchor the new way of working within the organisation.

As we perceive it when comparing our experiences regarding the SCP-project with theories and benchmarking towards other companies, the project seems to lack a

structured way of working with change management. As many people within organisations in general feel unsecure or resistant to change, strong leadership is required in order implement the new supply chain workflows successfully.

Step 3 - Develop a clear vision

OD's vision of the SCP-project has been developed and changed over time. One version of the vision is to increase the performance of all sites by working according to standardised working procedures and best practise. As OD's vision has sometimes changed direction, it is difficult get a clear understanding of what they aim to accomplish with this project. At some occasions, the main vision has been to standardise common workflows while other times the focus has been on promoting continuous improvements in order to unite around a common best practice. Interesting for Alfa Laval is also not only to focus on finding best practise but also to find next practise in order to stay competitive. We recommend them to once again have a discussion with the objective to decide upon a united vision that easily can be transmitted throughout the organisation.

Step 4 - Share the vision

OD has arranged two kick-off meetings related to the SCP-project in order to involve everyone in the change. The meetings have resulted in that the people affected by the change within HSS on operational and tactical level have become more committed and engaged towards the new workflows. In order to reduce the risk that people's personal goals disagree with OD's or that people misunderstand the purpose with the change, these types of meetings are important. The meetings have helped the employees to understand what OD is trying to achieve by the SCP-project. Nevertheless, some people still do not understand the true purpose of the SCP-project and have thereby mixed up the workflows with the implementation of the new ERP-system. This proves that the project lacks an effective communication channel as well as strong and consistent leadership. OD must communicate their vision more frequently and clearly throughout the implementation process. When implementing and starting to use a support system, it can help sharing the vision in a more successful way.

Step 5 - Empower people to act

OD has mapped the workflows on tactical level together with the sites in Monza, Krakow and Eskilstuna. However on operational level, OD mapped the workflows in solitary collaboration with the employees in Monza. This may cause problems at the other sites when the workflows are going to be implemented on these as well. There is a risk that these sites feel like they are steamrollered, which may lead to that they become more resistant to change

When it is time for the HSS-sites in India and China to start getting involved in the SCP-project, it can cause strong reactions from these people, as their opinions have never been taken into consideration when mapping the workflows. On the other hand, the characteristics of the national cultures of China and India are of that nature that they tend to accept low involvement in higher degree than Western countries. Therefore, they may accept the workflows without resistance. It is important to bear

in mind that the main reason for the delays in the PULSE project within Parts was that people were not involved during the development of their processes. As a result, the project was regarded as a "Kolding-project" instead of as a global project, which increased the resistance among the sites. Once again, it is important to consider the existence of cultural differences between sites and understand how these can affect the implementation.

Employees must get the opportunity to come up with improvement suggestions and feel involved. Otherwise there is a risk that the employees are put on autopilot, which will reduce their motivation when not having the possibility to act independently in comparison to before. This also stress the importance to identify change leaders at all sites whose role is to deliver the change and take action to remove barriers that may affect the project negatively. In order to synchronise the product groups, OD wants to be in charge of the evaluation and approval of the change requests. There is a risk that the number of change requests will be too high for OD to handle within reasonable time frame. This can make people unmotivated if they notice that the time until a decision is made is unreasonably long. Therefore, we recommend OD to define some decision-points so that decisions can be made on lower levels as well. Another risk by not empowering the people working in the workflows, is that all improvement suggestions may be strangled instead of fostered. We recommend Alfa Laval to empower the employees on operational level in a higher extent by pointing out decision-points in the developed decision-making tree.

Step 6 - Secure short-term wins
It will take a long time before the SCP-project is fully implemented on all sites within HSS as well as within all product groups. As an effect of that, employees may lose their motivation in case they do not see or hear about the present status and how the project is progressing. In order to secure the continuance of the project, OD must be able to announce positive results and spread this information among the people. Otherwise, if not informing of the project's success, critics and negative thinkers may damage the progress of the implementation. Implementing and actively using a support system can enable this.

Step 7 - Consolidate and keep moving
It is important not only to declare short-term wins but also focus on the long-term perspective. The implementation at every new site will be a challenge, and OD will have to keep looking for improvements continually. In order to facilitate the upcoming of new ideas and inspiration, it would be wise for OD to bring in new people, change agents that are motivated and see the project with new eyes.

Step 8 - Anchor the change
To secure the last step and to truly establish the standardised working methods within the corporate culture, OD should make sure that leaders continue to support the new way of working. If losing their support, the new way of working will not become *"the way we do things around here"* and the sites will fall back to their old traditional working methods. By having a clear plan and continually replace leaders of change as they move on, it ensures that their legacy is not lost nor forgotten.

6.2.2 Further analysis of the SCP-project

All change management models recommend clear communication and involvement of everyone affected by the change. However our perception is that a structured plan containing a clear strategy of the implementation process and how to best communicate and spread information is lacking in the SCP-project. The project is also missing to some extent three things necessary according to ST-Ericsson's experiences in order to create a successful change, namely: *stronganchoring with the top management, speed of the effort* and *strong leadership*. Even if they have already been discussed when analysing the SCP-project according to Kotter's 8-step change model, they are worth mentioning again. Parts also highlights the importance of involving the employees in the change and considering differences in both cultures and age. It is essential for OD to increase their focus on these aspects mentioned above in order to be successful with their implementation.

OD's work with mapping their supply chain workflows according to the SCOR-model has been a time-consuming effort and the work has not always been easy. This is due to the complexity of the model and the high attention the model puts on details. The work has not been easier due to the small faults that Alfa Laval has found in the model, which has increased the complexity even more. Due to the high complexity of the SCOR-model, the motivation among the employees have been lacking during the mapping of the workflows. It is easy to assume that the maintenance, updating and document handling connected to the workflows will also become complicated, especially as the involvement of number of product groups will increase gradually.

6.3 Process maturity

The journey towards creating a process-oriented mindset within an organisation is long and as Hammer (2007) expresses himself: "*All change projects are tough to pull off, but process-based change is particularly difficult*." A process maturity analysis has been performed according to Hammer's PEMM in order for us to better understand the challenges that OD and the company is facingwhen becoming a process-oriented organisation.

When analysing why Volvo Aero and ST-Ericsson chose to become more process-oriented, the major difference in comparison to the SCP-project at Alfa Laval Operations is that both Volvo Aero and ST-Ericsson started off by mapping their main business processes before continuing mapping the processes in detail. Further, none of the three benchmarked companies used any framework like the SCOR-model when mapping their processes. The purpose of working with processes as well as the definition of a process differ somewhat between the three companies, but what they have in common is that they want to standardise their working procedures in some degree and achieve best practise.

6.3.1 PEMM-analysis

The evaluation of the enablers and the capabilities in PEMM has been done from our own perspective and experiences of the company during the time we have been collaborating with Alfa Laval. To study the entire evaluation of the enablers and capabilities and to read what each of them includes in each level, please see Appendix 4 and 5.

6.3.1.1 Enablers

The five enablers have been evaluated below. It is the enablers' strength that determines the level of maturity of a process and how capable it is of delivering higher performance over time.

Design *– The comprehensiveness of the specification of how the process is to be executed*

To qualify to the first level P-1, Alfa Laval Operations needs to identify the customers more clearly as well as to identify the suppliers. As can be seen in Alfa Laval's organisational chart, Operations is separated from the Sales Companies (see Figure 1, chapter 1). The workflows (Source, Make and Deliver) have only been designed within Operations, which means that no end-to-end basis has been reached as the communication with the customer go through the Sales Companies. When Alfa Laval Operations has reached level P-1 and wants to proceed to level P-2, the company must then redesign its workflows from end-to-end basis based on customer needs, meaning that the workflows also will be spread across functional boundaries. It is not until this point that the workflows can be called processes in its true meaning as discussed earlier.

Performers *- The people who execute the process must have appropriate skills and knowledge*

When analysing the second enabler, the focus has mainly been put on the HSS-site in Monza, as it is the first and so far the only site to have implemented these workflows. To qualify to level P-1, the performers in Monza must become more familiar with the new workflows and the metrics that measure workflow performance than they are today. This is important in order to ensure that the performers understand how their work affects customers and know how to evaluate their own performance. Also, they must increase their loyalty to the workflows and letting go off their primarily devotion to their function. Also the performers must improve their skills in problem solving and process improvement techniques.

Owner *– A senior executive who has responsibility and authority to ensure that the process delivers results*

When Alfa Laval has successfully implemented the management structure, they will reach level P-1 regarding the SCP-project. They will then have owners whose main

tasks are to improve the workflow performance by continuously identifying best practice and ensure that this is communicated to all performers, as well as someone who promotes the benefits of having globally standardised workflows towards the performers. However when wanting to take it to the next level, the owner that we call sub-workflow managers must get more responsibility and authority over the processes that they are in charge of regarding process performance and the budget. This means that there will be a shift of focus from the traditional functional organisation towards a more horizontal process focus.

Infrastructure *– Companies must align their information technologies and HR systems to support the process*

Before reaching level P-1, the Human Resource systems must be aligned in some way with the SCP-project. Even if Alfa Laval Operations in this stage still can entirely keep their functional organisational structure, the managers must in some extent reward functional excellence as well as resolve problems in a process context. This is yet to be done. In the next level, there must be both an IT-system that is designed to support the processes as well as a more developed HR-system supporting job descriptions, training, defining competence profiles supporting the processes.

Metrics *– Companies must use the right measurements to assess the performance of the process over time*

OD has developed some metrics connected to each workflow: Source, Make and Deliver. So far, there are not any metrics that measure the workflow from start to end: Source – Deliver. As there are not any metrics that have been implemented, managers cannot track the workflow performance in order to evaluate and find improvements. Hence, Alfa Laval Operations has not reached level P-1 yet. Next step towards P-2 will be to measure end-to-end metrics and compare and benchmark them in order to find best-in-class improvements. This is in line with the ambition that OD has, but there are many things that need to be in place before this is even possible.

Summary of process enablers

So far, none of the five process enablers have reached level P-1 and Alfa Laval Operations is therefore left in the default level called P-0. As the five enablers determine how well a process is able to work over time, the conclusion is that the SCP-project will fail if OD does not take any measures against these gaps that have been identified above. As all enablers are mutually interdependent, it is crucial to focus on all of them, as the others will prove to be ineffective if one of them is missing.

6.3.1.2 Capabilities

The capabilities help institutionalise the enablers. Therefore, we have analysed them with the objective to see how mature the organisation is to transform.

Leadership *– Senior executives who support the creation of processes*

In order to reach level E-1, the senior executive team must get introduced to the concept of business processes and understand at least on a basic level the benefits and the power of having processes. The main issue regarding the SCP-project is that the buy-in and involvement from senior management should have been stronger. If the front-line leaders of Alfa Laval do not completely show that they support the project, it is difficult to transform the way of working as much as the SCP-project strives for: to implement standardised workflows on all product groups globally. Before Alfa Laval is ready for a transformation of this extent, the executive team must also start shifting their management style from a top-down, hierarchical style, to an open and more collaborative style on horizontal level and decrease the number of vertical layers.

To take it to the next level, at least one executive leader must have a thorough understanding of the concept of business processes and thereafter take responsibility for the process program and be passionate for change.

Culture *– The values of customer focus, teamwork, personal accountability and a willingness to change*

We find that Alfa Laval's corporate culture has reached level E-1. Teamwork exists on project basis and on occasional terms. Employees know that customer needs are important to consider but there seems to be limited appreciation of what that means in some departments within Alfa Laval and how customer needs are connected to individual work performance of employees. The employees are used to change as OD often introduces new concepts. However, to reach next level, the customer focus needs to improve by everyone within Alfa Laval Operations and link tasks and performance to how it adds customer value. The employees must also be prepared for significant change in how work is performed. Teamwork is something that should be natural and exist on cross-functional basis.

Expertise *– Skills in, and methodology for process redesign*

Alfa Laval Operations has not yet qualified to the E-1 level regarding process expertise. Even though OD has developed something they refer to as supply chain processes, we have been questioning if it is correct to call it processes as well as the approach they used when designing them. We find that too much focus was put inside the product group on internal efficiency rather than designing them from a customer perspective. However, they have a basic understanding of the concept of processes but should continue to develop their knowledge. OD's strength is that its entire focus lies on continuously improve the organisation and to provide it with methodologies and tools that can support solving execution problems and support incremental improvements.

Governance *– Mechanisms for managing complex projects and change initiatives*[236]

[236] Hammer (2007), p. 113

Regarding the capability governance, Alfa Laval Operations has reached level E-1. The reason to that is that OD's ambition was to start identifying common processes. Today, accountability for performance lies on functional managers and for improvements on project managers. There are also distinct operational improvement techniques such as Six Sigma that is used within Alfa Laval. To increase by one level, Alfa Laval must develop a complete enterprise process model that the senior executive team accepts, and then appoint process owners that is accountable for the process performance.

Summary of capabilities

Alfa Laval Operations has reached level E-1 for both culture and governance and the other two, expertise and leadership, are still at level E-0. The capabilities are needed in order to perform well in the processes as well as to secure their sustainability. Stronger organisational capabilities make for stronger enablers, which allow for better process performance. When all four capabilities have met E-1 level, the enterprise is ready to advance all its processes to the P-1 level.

6.3.1.3 How to qualify to the first levels

By effective change management and the process endorsement of senior executive team, Alfa Laval has great potential of becoming more process oriented. It has to map its processes on the highest level and do it from a customer point of view as well as to be ready to think more horizontally and slim the number of organisational layers. It is a challenging transformation, but with the right competence and expertise it is possible, if not necessary.

6.4 ACE – Model for Business Process Implementation

6.4.1 Background

The focus in this thesis has been on process management theories and change management. During our study, we have not yet found any model that explains the transformation process of an enterprise that wishes to become more process-oriented. We perceive Hammer's PEMM to be an excellent tool for enterprises to use when wanting to investigate how mature one's enterprise and processes are. PEMM explains which criteria need to be fulfilled in order to qualify to a certain level of maturity, but it does not explain how this transformation, from one level to another, should be carried out. Kotter's 8-step model can be very useful for organisations that want to successfully perform a change. Even if these two models are well known and well applied among companies, the models are not sufficient on their own when moving towards a process-oriented mindset.

Enterprises who decide to leave their traditional functional mindset and move towards a process-oriented mindset will face a dramatic change. In order to benefit from the process-orientation, enterprises cannot only focus on their processes but they also have to do a major shift in the paradigm. This includes a change of the fundamental values. When facing a change of this extent we argue that a comprehensive analysis model, which considers both enablers and capabilities as well as provides with instructions of how to make the transformation successful are necessary. Therefore,

when combining Kotter's 8-step model with PEMM, it will improve the possibility for enterprises to become more process-oriented. This is the reason why the new model is called *ACE – Model for Business Process Implementation*.

6.4.2 Purpose

The purpose with theACE-model is to help enterprises improve its enterprise performance. The model helps enterprises to reach one step further in their progression of becoming more process-oriented by providing a framework of change in a process transformation context.

6.4.3 Target group

ACE – Business Process Implementation Model aims at enterprises that wish to improve their enterprise performance by:

- Increase customer value/satisfaction
- Become more flexible to environmental changes: decrease the adjustment time
- Increase profitability
- Increase efficiency and/or effectiveness: decrease lead times (i.e. time to market and time to customer)

The model has mainly two target groups. The first target group is the senior executive managers that want to transform their enterprise by themselves. The second group is external management consultants that are aiming to help enterprises with their journey to become more process-oriented in order to satisfy its client's demands.

One important criterion before using this model is that the senior executive team wants and is prepared to, at least in some extent, transform its traditional functional organisation towards having a more cross-functional structure with a clear customer focus. The level of transformation is up to the executive team to decide upon. The model is flexible and can be used on enterprises that already have reached higher levels of process and enterprise maturity, as well as organisations that are only in the very beginning of this transformation journey.

6.4.4 How to use the ACE-model

The ACE-model is based on Hammer's PEMM and Kotter's 8-step model. The entrance into the model has its origin when the enterprise acknowledges that it needs to improve its performance and starts seeking for options, an initial sense of urgency has been created.

When discussing different levels, we refer to Hammer's four process and enterprise maturity levels mentioned in PEMM. The ACE-model describes how enterprises can go from level 1 to level 2, as well as transforming from level 2 to level 3 and so on. For each level of maturity (level 1–4), the enterprise needs to go through 12 stages, starting with creating a sense of urgency, in order to increase the enterprise performance by becoming more process-oriented.To further simplify the ACE-model

for future users, we have clustered the 12 steps into four phases: *Prepare*, *Define*, *Execute* and *Establish*. Prepare includes steps 1-3, Define steps 4-6, Execute steps 7-10 and Establish steps 11-12. The 12 stages are visualised in Figure 10 below and followed by a detailed presentation.

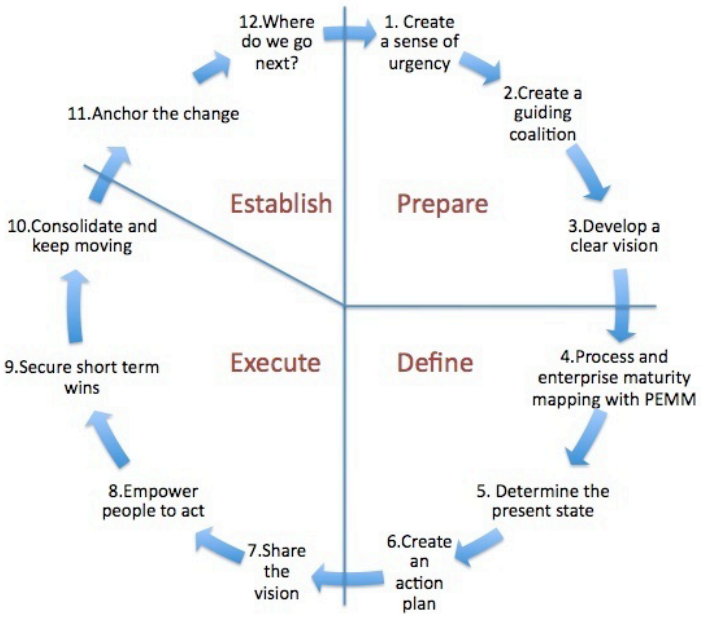

Figure 10 - *ACE – Model for Business Process Implementation*: Identifying the 12 steps that an enterprise needs to go through when becoming more process-oriented.

1. *Create a sense of urgency*
   - The initial sense of urgency has already been created by the fact the enterprise is seeking to improve its performance.
   - The following sense of urgency is to communicate the need of transformation towards being a more process-oriented enterprise to everyone in the company.
   - The enterprise stands in front of a massive transformation process that will require everyone's commitment.
   - Highlight both success stories and examples of failure of other enterprises. Emphasise that there are no shortcuts to success. Patience and hard work are key words.

2. *Creating a guiding coalition*
   - Appoint a change team containing at least one senior executive manager, one process expert and a project champion with a burning desire to deliver and lead the change.
   - The senior executive team must be involved and support this initiative.
   - The change team must have authority to lead the transformation work. The team members need to have both authority and respect.

3. *Develop a clear vision*
   - The change team must together with the senior executive team create a future and realistic vision with clear goals related to the improvement of performance.

4. *Process mapping with PEMM*
   - The change team is responsible for mapping the process and enterprise maturity by using the templates provided by PEMM.

5. *Determine the present maturity state*
   - Where are we now? Based on results found in step 4.
   - Which level do we strive to obtain?

6. *Create an action plan*
   - Re-connect to the vision in step 3.
   - Study the gaps found in step 5.
   - Determine what needs to be done in order to fulfil the vision.
   - Break down the gaps into distinct actions. Appoint people responsible and decide upon a deadline

Action	***Deadline***	***Responsible***	***Status***

7. *Share the vision*
   - Communicate the vision to all employees: make them understand in what way they contribute with creating customer value.
   - Inspire people to change.
   - Stress the importance and reasons of change.

8. *Empower people to act*
   - Give the employees authority to solve potential problems on their own.
   - Delegate actions identified in stage 6 to related employees.

9. *Secure short term wins*
   - Announce successful examples in order to motivate the people. Relate to the vision and the action plan.
   - Reward & Recognition!

10. *Consolidate and keep moving*
   - Do not lose patience; carry out all tasks identified in the action plan.

11. *Anchor the change*
   - Ensure that the transformation to this new level is considered as "*the way of doing things around here*".

12. *Where do we go next?*
   - Does the enterprise want to continue to improve performance even more?

- If yes, start the transformation process again at step 1.

In order to explain the four maturity levels in PEMM, Figure 11below illustrates that an enterprise must fulfil all capabilities and enablers at one level before it is possible to move on to the next one. Since it is a demanding transformation that the enterprise is facing, the enterprise needs to increase its performance step-by-step and let the transformation take the time it requires. The size of the transformation and the time frame of the implementation vary depending on the numbers of gaps found in each maturity level when mapping the enablers and capabilities in step 4 in the ACE-model.

When following the 12 steps in each maturity phase, the enterprise will increase customer satisfaction and be able to move stepwise from the initial *"As-Is"* state to the desired *"To-Be"* state.

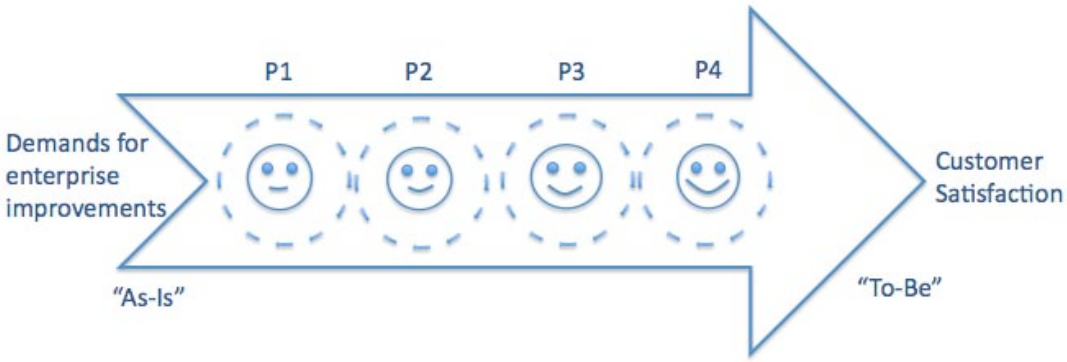

Figure 11-*ACE – Model for Business Process Implementation*: Customer satisfaction can be reached in different degrees depending on the level of process and enterprise maturity. For every additional level of maturity that is reached, the customer satisfaction is improving.

6.4.5 Credibility of the ACE-model

Our ambition when developing the ACE-model has been to create a general model for enterprises that wish to move towards a process-oriented mindset. The model should facilitate for senior executives management and external management consultants when wanting to make this transformation. Since we have chosen to combine Hammer's PEMM with Kotter's 8-step change model, which are two well known and scientifically accepted models, we consider the reliability of the model to be strong.

When developing this model we have begun with Kotter's 8-steps and have then extended these with the process and enterprise maturity mapping with the help of PEMM. We have decided to add some additional steps (step 6 and 12) based on our experiences at Alfa Laval, in order to make the ACE-model even more comprehensive. The model is an iterative process meaning that when reaching step 12, enterprises start over with step 1 in order to reach the next maturity level. The implementation of a process-oriented mindset is to be seen as a continuous process that strives to satisfy the customer in an even greater extent.

7 Delivery of management system framework

In this chapter we present the developed management system framework starting with the roles and responsibilities and thereafter the meeting structure, the decision-making tree as well as the recommendations of support systems.

7.1 Roles and responsibilities

The roles have been defined on three levels: strategic, tactical and operational and are visualised in Figure 12 below. The new structure and roles should be seen as a complement to the already existing organisational structure and roles that Alfa Laval has today. The main purpose of the structure is to ensure that the newly defined workflows are getting fully implemented and to secure that employees start and continue to work according to the standardised workflows.

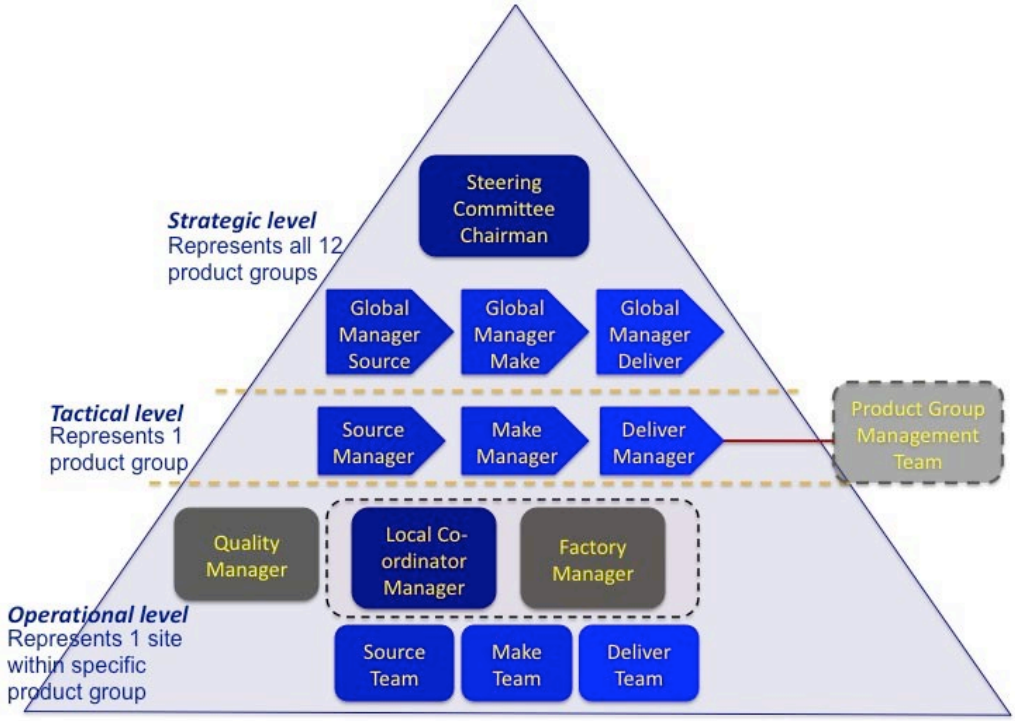

Figure 12 -Management structure defining roles for the new workflows developed with help of the SCOR-framework.

7.1.1 Strategic level

Steering Committee

The steering committee consists of a steering committee chairman, three global managers and three supporting global managers for each workflow (Source, Make and Deliver). The steering committee will monitor and ensure that the workflow (activities within the workflow) are followed on all sites globally and secure that the common workflow activities are co-ordinated with Alfa Laval Operations strategy package. It is also the steering committee that decides on which workflow variances

that are accepted on site level as well as on product group level.

Steering Committee Chairman
The steering committee chairman is a member of OD and has the overall ownership of the workflows (Source, Make and Deliver) on strategic level. The chairman's responsibility is to secure that the interfaces between Source, Make and Deliver run smoothly and also to prevent factors that can lead to sub-optimisation. The steering committee chairman communicates with the global managers of source, make and deliver on regular basis.

Global Manager Source, Global Manager Make and Global Manager Deliver
The global managers for each workflow belong to OD and represent the strategic level. They are specialists within each workflow that he/she has ownership of. Furthermore, their responsibilities are to develop the workflows, not only to support "best practise" but also "next practise". The global manager has the responsibility and authority to:

- Define and draw/visualise the workflow
- Define measurements
- Initiate implementation of workflow
- Follow-up on workflow performance audits
- Suggest and approve workflow improvements
- Approve change request within the workflow

When a proposal of change is to be implemented, the global manager should contact the workflow managers and the workflow managers are then responsible to secure that the change gets executed at all sites affected by the change within its product group.

7.1.2 Tactical level

Product Group Manager
In addition to the responsibilities that a product group manager within Alfa Laval normally has today, he/she will have new areas of responsibility regarding the new workflows. The product group manager has an own team in the functional organisational structure that is called Product Group Management Team.

The product group manager has an overall responsibility of the workflows on product group level and will function as a co-ordinator between Source, Make and Deliver on tactical level. Through the already existing and regular Product Group Management Team meetings, the product group manager is able to secure that the sites are working according to the workflows and that the target performance is being reached.

Manager Source, Manager Make, Manager Deliver (Workflow Managers)
Every product group has three managers responsible for each workflow (Source, Make and Deliver) and they have an overall responsibility for the execution of the workflow. The workflow managers are representatives from operational level at different sites in order to have an understanding of how the workflows work in

reality. The workflow manager is responsible of securing that all sites within the product group understands as well as works according to the workflow maps. He/she is also responsible of ensuring that everyone within the workflow possesses the right competence and is offered the education needed in order to perform well, which should be discussed with the local co-ordinator at every site. The workflow manager should also encourage and remind the local co-ordinator to create customer value at operational level.

The manager is given responsibilities and the authorities to:

- Manage workflow improvement/tasks delegated from strategic level
- Maintain and update workflow documentation
- Conduct training and presentation of workflow changes/improvements when visiting sites within the product group
- Follow-up and monitor workflow performance while making audits
- Communicate with the two other workflow managers in order to optimise workflow performance and minimise sub-optimisation within the product group
- Inform all concerned on system changes within the process

In order to secure the interfaces in-between the sub-workflows at tactical level, it is important that workflow managers communicate with each other on regular basis. The manager also needs to have a continuous dialogue with the local co-ordinator on each site in order to secure the interfaces in-between the workflow also run smoothly at operational level.

7.1.3 Product Group Management Team

The product group management team already exists today and meetings are held on regular basis. The team consists of the product group manager, all factory managers within the product group, as well as a controller, a quality manager and a representative from Human Resources.

The three workflow managers should become a part of the product group management team on tactical level. In cases where the factory manager is assigned the title *local co-ordinator* on operational level, this person will be attending the product group management team as factory manager. There are some new items that should be added to the agenda, such as the performance, status and improvements of the three workflows.

7.1.4 Operational level

Local co-ordinator
Every site has a local co-ordinator who is responsible for uniting the three workflows (Source, Make and Deliver) at operational level by having a holistic view. He/she secures that the interfaces between each workflow run smoothly and diminishes the risk of sub-optimisation. In every case possible, the local co-ordinator should be the same person as the factory manager depending on the size of the site and how much

work that is on his/her normal agenda. The local co-ordinator is not a member of the product group management team unless he/she also has the role as factory manager.

Team Source, Team Make and Team Deliver (Workflow Team)
A core team consists of representatives from operational level that belong to the specific workflow. The team members should be employees that work within different areas in the specific workflow.It is the team leader of the workflow who is responsible for assigning relevant people to the core team together with the local co-ordinator.

7.2 Meeting structure

7.2.1 Steering Committee Meeting

Purpose
The purpose of the steering committee meeting is to discuss how new strategic concepts will affect the existing workflows and if so, update the workflows based on these concepts. Furthermore, the purpose is to update and improve the workflows when environmental changes occur that will have an impact on Alfa Laval's strategy. These discussions should address best practise as well as next practise regarding the workflows. The chairman calls for meetings once every quarter at Operations Development.

Participants*(in total 7 people, see* Figure 13*):*

- Steering Committee Chairman (1 person)
- Global Manager Source, Global Manager Make, Global Manager Deliver (3 people)
- Global Manager Support Source, Global Manager Support Make, Global Manager Support Deliver (3 people)

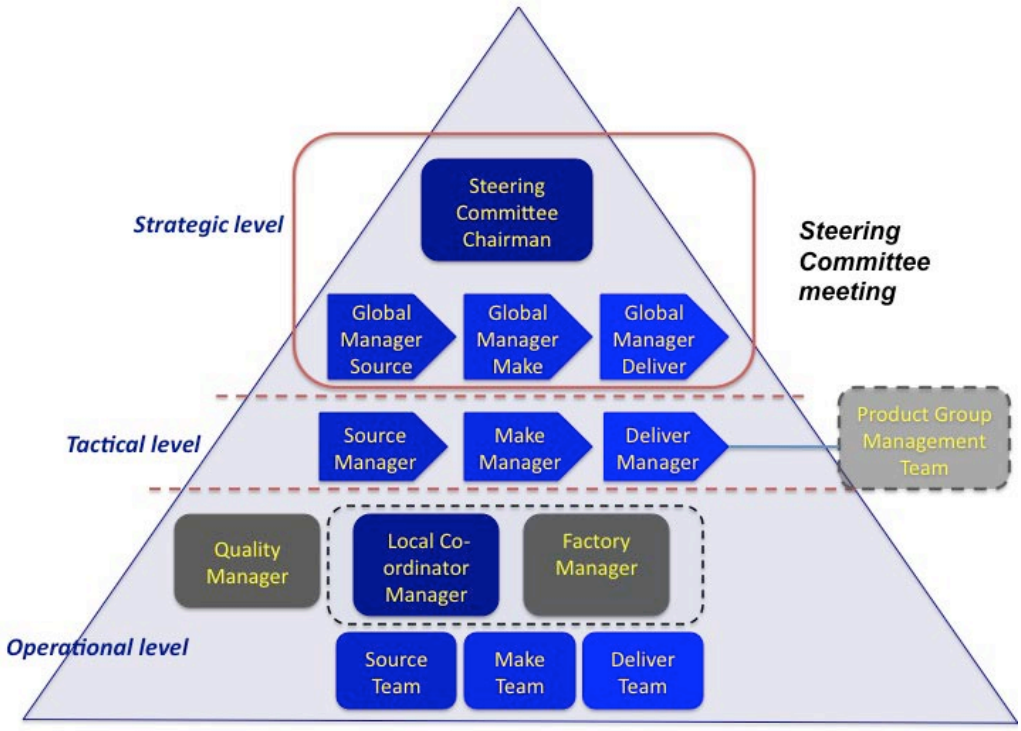

Figure 13 - Participants of the Steering Committee meeting.

The Agenda includes the following subjects:

- Discuss and decide upon relevant improvement suggestions form the organisation
- Discuss concept development strategy packages and how to synchronise them with the workflows
- Decide on criteria, methods and BI-metrics that should secure the efficiency of the workflow
- Updated SCOR-version: what is new and how can Alfa Laval benefit from it?
- Plan and initiate yearly audit visits within all product groups and sites

7.2.2 Product Group Workflow Meeting

Purpose

The purpose of the product group workflow meeting is to compare and share experiences within the specific workflow between all product groups (12). It is also to find synergies and best practice through discussions and benchmarking of BI-metrics between sites and product groups. The purpose is also to communicate the benefits of having standardised working methods and activities globally. The global manager calls for meetings at least once per quarter and invites all sub-workflow managers for that specific workflow in question. There should be at least two face-to-face meeting every year.

The objective is to come up with improvement ideas, ensure that the workflow works in a satisfying way and to inform about changes that recently have been made as well

as new concept developments that will affect the workflow. Additionally, the objective is to create a global network between the workflow managers.

Participants*(three groups of 13 people in each divided after each workflow, see*Figure 14*):*

- Global managers (3 people)
- Source Manager (12 people), Make Manager 12 people) and Deliver Manager (12 people)

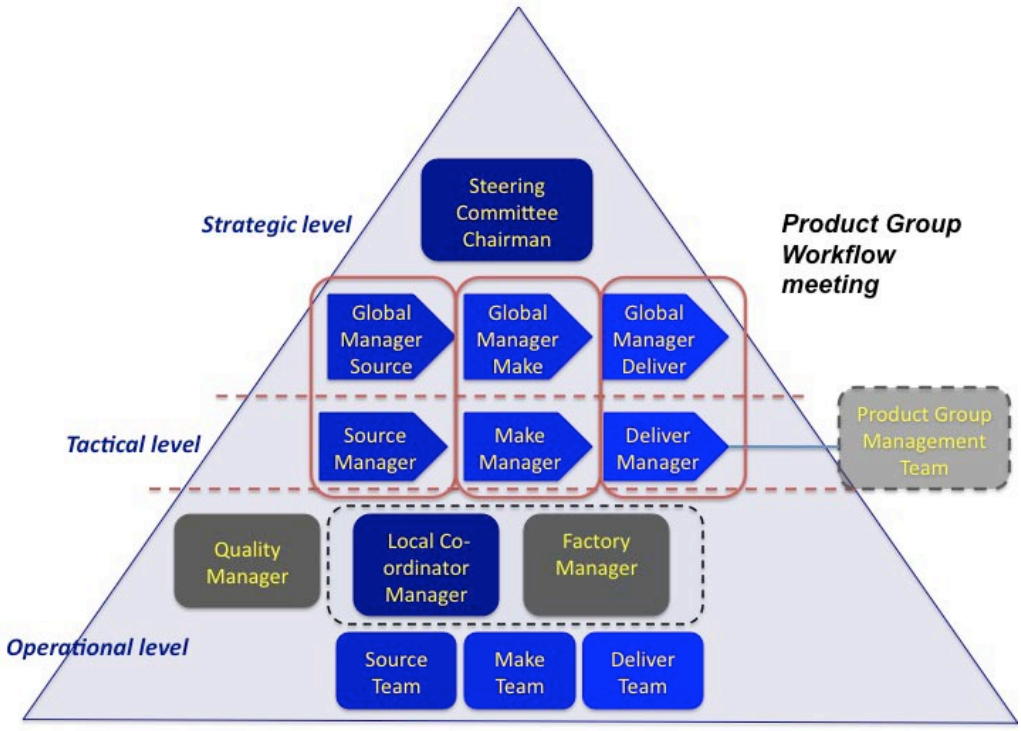

Figure 14 - Participants of the Product Group Workflow meeting.

The Agenda includes the following subjects:

- Inform and introduce new strategic concepts and explain how they are related to the workflows
- Communicate the benefits of having standardised working methods
- Discuss workflow status
- Compare BI-metrics
- Different tailor-made workshop activities (at the face-to-face meeting)
- Ensure that process changes have been approved by everyone affected by the change

7.2.3 Product Group Management Team Meeting

Purpose

Every product group has management meetings where product group management meet and discuss topics concerning the product group globally. As of the

implementation of the workflows, the management team will enlarge with two/three new roles and therefore the number of items on the agenda will increase as well.

The purpose of the product group management meeting is foremost to discuss workflow status and *relevant* workflow complications that have occurred on sites. Furthermore, the purpose is to involve and synchronise the resources within the functional organisation with the workflows. The objective is to optimise the entire workflow and actively diminish sub-optimisation. This meeting should also discuss how the workflow is synchronised with the quality management system's general requirements. The meeting frequency should be the same as before and it is up to the product group manager to decide upon.

Participants*(in total 7-13 people, see* Figure 15*):*
New members of the management team are the sub-workflow managers. The actual number of team members does not have to increase since it is possible that the existing members can take on more than one role.

- Product Group Manager (1 person)
- Factory Managers (3-5 people depending on number of sites)
- Financial Controller (1 person)
- Human Resource (1 person)
- Quality Manager (1 person)
- Source Manager, Make Manager and Deliver Manager (3 people)

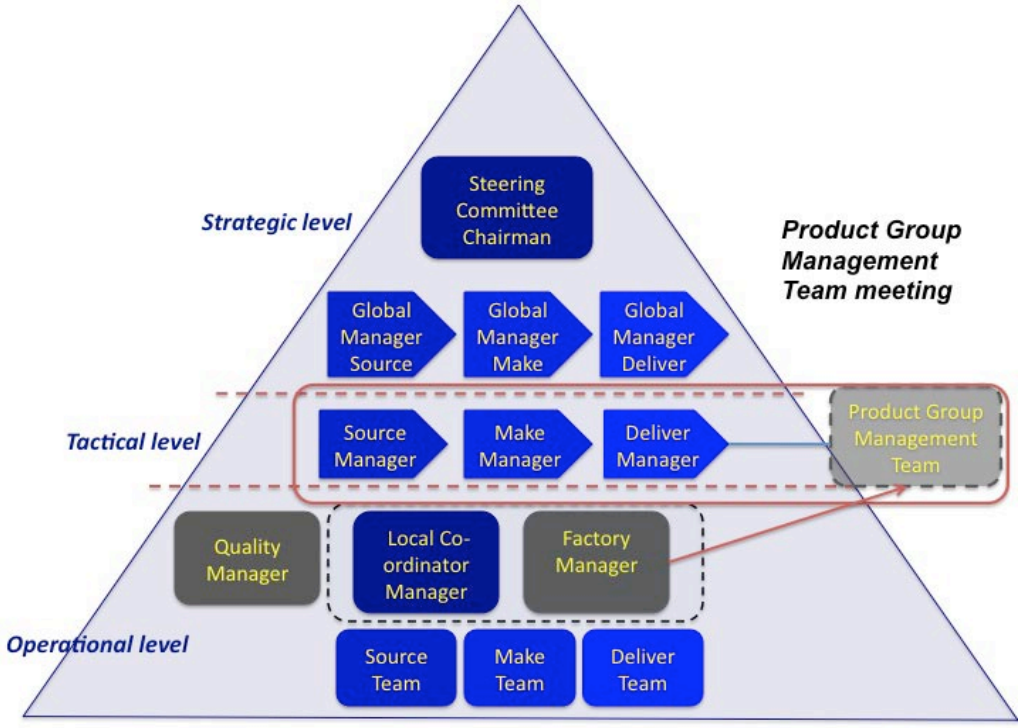

Figure 15 - Participants of the Product Group Management Team meeting.

The Agenda includes the following subjects <u>in addition to the existing agenda</u>:

- Present and analyse BI-metrics and status in each workflow
- Discuss reasons of potential failure in-between the interfaces of the workflows and come up with solutions to prevent future failure
- What resources are needed in order to obtain decided results for each workflow?
- Set up a priority list of proposed changes/improvements
- Ensure that the workflow is synchronised with the quality management system's general requirements

7.2.4 Local Site Management meeting

Purpose:
Every site has management team meetings on regular basis where the *site management team* meet and discuss topics concerning the site locally. As of the implementation of the workflows, the number of items on the agenda will increase.

The purpose is to discuss the status of the workflows and follow-up on the performance of the workflows by comparing it with already set goals. Furthermore, the purpose is to prevent sub-optimisation of the workflows by discussing how the interfaces can be dealt with in the best way in order to create a holistic view on operational level. In addition, the workflows should be connected with the existing quality management systems (ISO 9001 and ISO 14001) on site level.

This meeting can also be considered to be a bridge between the tactical and operational level. The factory manager should brief the site management team with key-information from the product group management team meeting. The line managers should inform further down to the three different workflow teams about relevant conclusions/output from this meeting.

Participants: *(In total 5-8 people, see* Figure 16*)*

- Site Management team including factory manager and line managers
- Local Co-ordinator (when it is not the same person as factory manager)
- Quality Manager (1 person)

Figure 16 - Participants of the Local Site Management meeting.

The Agenda includes the following subjects in addition to the existing agenda:

- Summary of Product Group Management Team meeting
- Workflow status and performance update
- Interface status/complications
- Change requests
- Quality issues
- Monitor that process documentation is maintained

7.2.5 Whiteboard Meeting

Purpose

The purpose with the whiteboard meeting is to secure that everyone involved in the workflow actually works according to the workflow maps and understand the reasons of why they should work after globally standardised working methods. Moreover, the meetings should inform about new approved workflow. Meetings should take place on a weekly basis at operational site level.

Participants *(in total approximately 4-9 people, see* Figure 17*):*

- Core Team (4-9 people including the line manager)

Figure 17 - Participants of the Whiteboard meeting.

The Agenda includes the following subjects:

- Discuss process status: how is work going?
- Challenges/goals
- Take action on specific abnormalities
- Improvements: which suggestions have been approved? Are there any new suggestions?
- Update Standard Operation Procedures (SOP) documents if necessary

7.3 Decision-making tree

A flowchart, or a decision-making tree, has been developed in order to support the management structure when improvement suggestions or change requests regarding the workflows occur. The decision-making tree is found in Appendix 3, due to the size of it.

The decision-making tree manages change requeststhat can occur on different levels: strategic, tactical and operational. It explains in detail the whole decision-making process, which starts with an idea and ends with either a rejection or implementation. As the strategic level would like to have the main authority to approve a decision, the tree has been developed to match that wish. However, there are also some filters that have been identifiedin order to help the strategic level to delegate some authority to lower levels.What the filters includehas not been decided upon today since it is hard to determine at this point.

7.4 Support system

After analysing and comparingpotential support systemsfor Alfa Laval's new structure we propose a two-step recommendation plan. As a fist step, in the initial phase of the implementation, we believe that Alfa Laval should develop a SharePoint application that supports the common workflows. SharePoint's major strengths are that it is easy to learn and use as well as it is a convenient system regarding distribution and sharing information within organisations. Moreover SharePoint will become Alfa Laval's new intranet, which means that the internal IT-department willbe able to support the users when help might be requested.

Later on, when the time is ready and more sites and product groups have implemented the common workflows, we believe that QualiWare should be implemented as a complement to SharePoint due to its superior ability to facilitate the maintenance of the workflows. It is also a system thatstrongly supports process management. However, SharePoint will still remain as a support system since it will be the new intranet at Alfa Laval. Given the results from the surveys, QualiWare is the system that best correspond to the top ten demands over specific capabilities requested by the potential users. In addition, the system beats SharePoint when it comes to speed of the system, ability to visualise the workflows and its automatic update capacity since it is a highly integrated system.

8 Conclusion

In this final chapter, the key findings of this study will be presented. We will also return to the purpose and how it has been fulfilled, which is followed by a presentation and discussion regarding our theoretical contribution. The chapter ends with our recommendations to Alfa Laval and suggestions on interesting areas for further research.

8.1 Key findings

The common supply chain processes developed by Alfa Laval according to the SCOR-model does not take the customer focus into consideration as much as is recommended in an end-to-end way. The focus of these processes are in a higher extent on standardisation than on customer satisfaction. The way Alfa Laval defines processes differ from the definition given in process theory. We question the way of using the word process and believe it to be more fair to refer to Alfa Laval's supply chain processes as workflows: *"who does what task, in what location and in what sequence"*.

8.1.1 Management system framework

The first purpose in this thesis is to create a management system framework for Alfa Laval. The framework includes a management structure with roles and responsibilities (see Figure 18below) as well as a meeting structure, a decision-making tree and recommendations of a support system, which are presented in chapter 7.

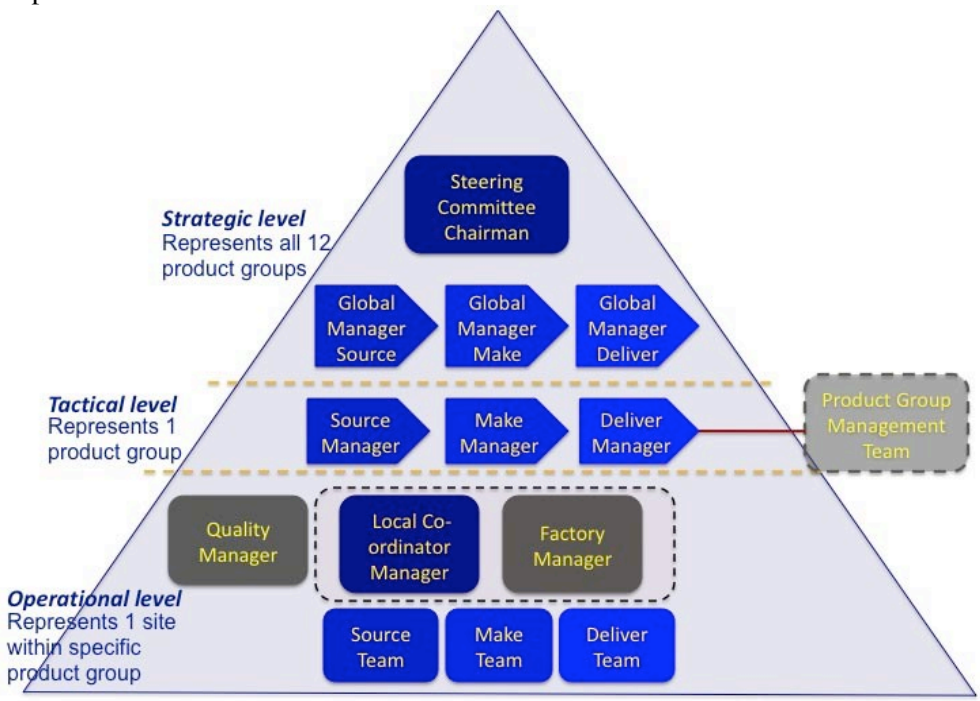

Figure 18 - Management structure created for Alfa Laval.

The management system framework has been conducted with the objective to secure the sustainability of Alfa Laval's standardised workflows. However, there is a risk that the management structure will limit the important aspect of continuous improvements because of its top-down focus where employees at operational level are not able to come up with suggestions. The way of organising according to the three workflows - Source, Make and Deliver - appears clearly in the management structure which may lead to a continuing silo thinking within Alfa Laval. This does not foster a process-oriented mindset where focus lies on the customer instead of on the manager. This is a weakness of the management structure and is therefore an important aspect to be aware of.

8.1.2 Implementation of the SCP-project

The second purpose is to study the implementation of such a management system framework as well as the standardised workflows at Alfa Laval, and to give recommendations to further improvements. We used Kotter's 8-step model as a tool in order to shed light on the difficulties that Alfa Laval has and will face when implementing the SCP-project. As Kotter states, leadership is important regarding direction setting during a transformation, which seems to be lacking in the SCP-project. Development of a clear vision and strategy as well as an effective communication strategy of getting people to understand, accept, and move in a chosen direction are also needed in the SCP-project. Motivation and inspiration, which are created by involving and empowering people to act, are critical factors in order to create employee commitment. Moreover, there must be an internal project leader that has a desire and ability to create that strong commitment for change. Lastly, increase the support from senior management of Operations as it is vital to have in order to create the urgency needed to change the way the employees historically always have been working.

Additionally, Alfa Laval's process maturity is mapped according to PEMM in order to give further recommendations regarding what capabilities to focus on improving in the SCP-project so it can reach level P-1 and E-1. If focusing on creating an effective change management and getting even more support from senior management, Alfa Laval has great potential of becoming more process-oriented and reaching a higher level of process maturity than today. As a first step, we recommend Alfa Laval to map its processes on an overall level and to do it from a customer point of view as well as try to think more horizontally and slim the number of organisational layers.

8.1.3 Theoretical contribution

An important part of this thesis is to contribute the academy with theoretical improvements. This is done by creating a model which combines Kotter's comprehensive 8-step model for change with Hammer's Process Enterprise Maturity Model, PEMM. Using these two models as inspiration, we have created a comprehensive analysis model called*ACE – Model for Business Process Implementation* (see Figure 19below), that enterprises can use when moving away from being a functional-based organisation to becoming a more process-oriented organisation. The model involves both perspectives; the demanding challenges of

change as well as identifying the enterprise's level of process maturity and the factors that the enterprise needs to improve.

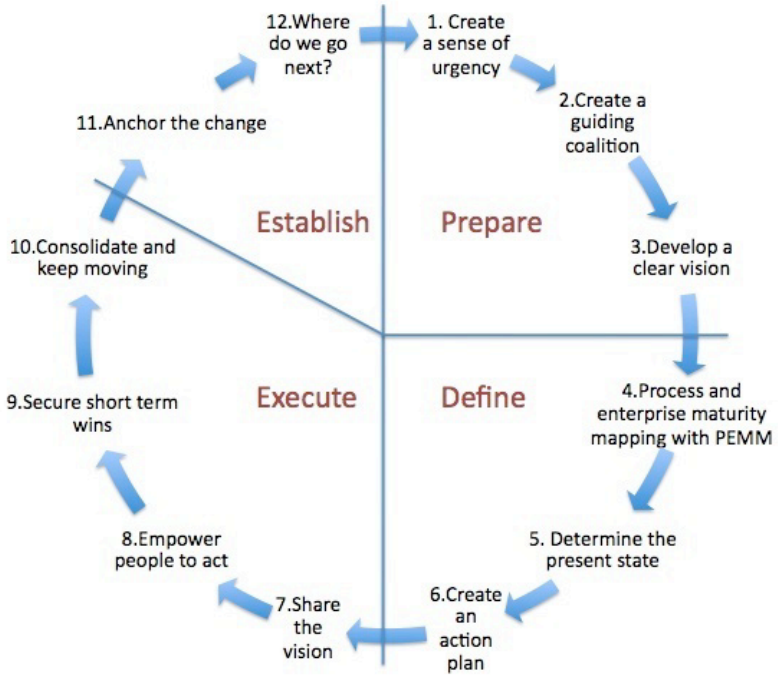

Figure 19 – The ACE-model illustrating the 12 stages, clustered into four phases that an enterprise needs to go through when becoming more process oriented.

8.2 Recommendations for Alfa Laval

During the case study of the SCP-project at OD, a number of strengths and weaknesses have been found regarding Alfa Laval's work with implementing the common workflows. In order to improve the implementation of the SCP-project in the long-term perspective, we advise Alfa Laval to focus on the following eight recommendations:

- Clarify the purpose and vision of the SCP-project and communicate it to all involved parties. Reconsider if it is necessary that all sites work homogeneously and what effect this may have on continuous improvements.

- Involve the senior management team of Operations in the implementation in a greater extent as well as senior executives of Alfa Laval.

- Appoint a strong project leader - a project champion - with a burning desire to deliver and lead the change and who has a consistent leadership.

- Appoint a change team that supports the project leader. The members of this team need to have authority and respect within Alfa Laval and represent different departments of the company.

- Delegate responsibility regarding the implementation to lower levels, and try to reduce the top-down focus in the developed management structure.

- OD has had the ambition to gather all three sites - Krakow, Monza and Eskilstuna - through the kick-off meetings. This has increased the global mindset among these sites at the same time as they have been able to exchange experiences and ideas in a way that they did not do before. Our recommendation is that they continue to have face-to-face meetings between sites.

- Exchange experiences with other companies that have gone through a similar transformation as the SCP-project.

- Exploit the findings of the ACE-model if Alfa Laval seeks to become more process-oriented in the future. It is important for Alfa Laval to realise that becoming process-oriented is not only about mapping their activities, but also about changing their basic values and shift the paradigm.

8.3 Recommendations for further study

Since no known Swedish company have implemented processes mapped by the SCOR-model before, it would be intreresting to investigate how companies outside of Sweden are working with the SCOR-model and what their learnings are.

To increase the future users' confidence in the ACE-model, additional studies and testing of the model are needed in order to verify its strengths.

An interesting area to study within the context of implementation is how to best handle diverse national cultures when introducing and implementing a new way of working.

We further believe that a new era has begun in how companies choose to organise itself. This era focuses on the important matter of process-orientation and customer focus and the benefits that comes by making this transformation. How these transformations will affect the business world globally will be left for further research.

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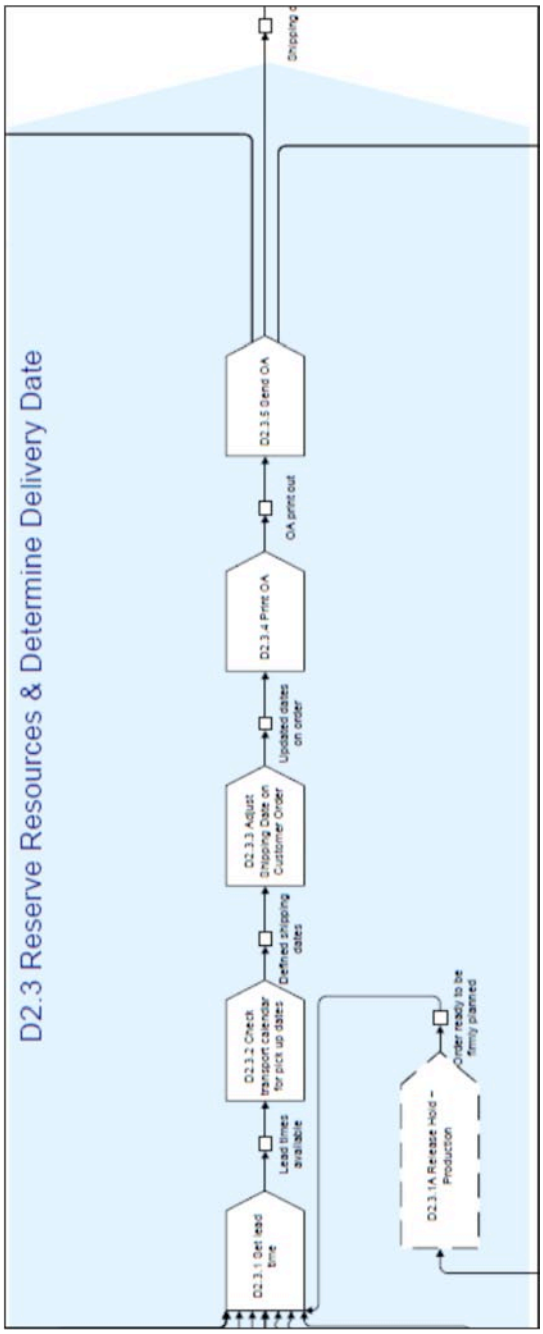
Appendices

Appendix 1: Deliver process mapped according to SCOR by Operations Development



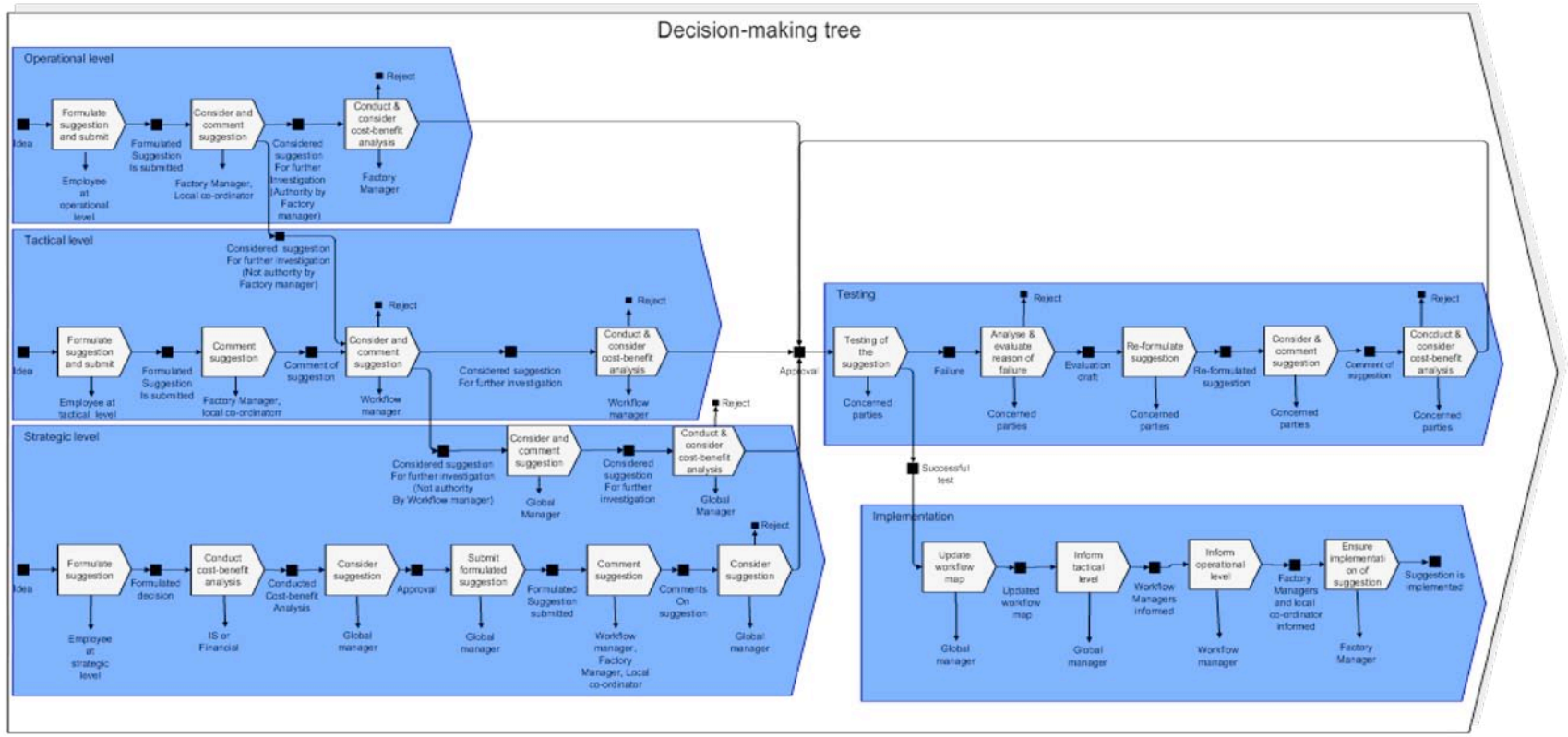
Appendix 2: Results from survey and respondents

Capabilities of a system support	Rank (1-5)
Is user-friendly	4,3
Has a supporting IT-department	4,3
Is fast	4,2
Shows the latest updated version of the common processes, when it was updated and by whom.	4,2
Facilitates a fast and clear communication of any change or update regarding the common processes to the organisation	4,2
Visualises the processes in a good and understandable way, including visualisation of different process versions	4,1
Supports a simple navigation in the system	3,9
Provides educational material of how to use the support system	3,9
Includes a organisational structure explaining who to contact with a question and who is responsible for what	3,8
Updates automatically within the whole system when making a change at a specific site/product group (object-based system)	3,7
Shows the present status of a change request	3,6
Is connected to a document handling system	3,5
Visualises a priority list of the change suggestions	3,5
Makes it easy to come up with new change requests	3,5
Makes it possible for everyone to measure the efficiency and	3,1
Is accessible for everyone within the organisation	3,1
Is able to manage different language-versions of documents	3,1
Is connected to other systems and programs within Alfa Laval.	3,0
Is connected to Alfa Laval's e-mail system	3,0
Has a nice design	2,5
Includes a discussion forum that facilitates communication	2,5
Is a Microsoft-based system	2,0

Number of respondents: 15

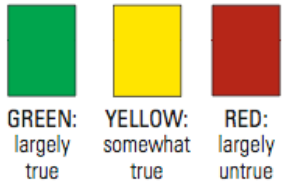
Arvidsson P.,*Quality and Environmental manager, Tumba. Manufacturing,*Alfa Laval, Eskilstuna
Brenna L.,*Purchasing manager,* Alfa Laval, Monza, Italy
Contato V.,*Supply unit 2 manager,* Alfa Laval, Monza, Italy
Ekendahl M.,*Project manager Operations Development,* Alfa Laval, Lund
Ekström L.,*Planning manager CU,* Alfa Laval, Tumba
Gehr S.,*IT-manager and production engineering manager,* Alfa Laval, Krakow, Poland
Jacobsson M.,*Project manager Operations Development,* Alfa Laval, Lund
Johansson S.,*Business controller PHE & HSS,* Alfa Laval, Lund
Lundqvist R.,*Factory manager,* Alfa Laval, Eskilstuna
Marchetti R.,*Factory manager,*Alfa Laval, Monza, Italy
Mikolajczyk K.,*Manager financial department,* Alfa Laval, Krakow, Poland
Myslowska A.,*SU manager,* Alfa Laval, Krakow, Poland
Perego D.,*Production manager,* Alfa Laval, Monza, Italy
Piloni L.,*Shipping and QSE manager,* Alfa Laval, Monza, Italy
Salvioni C.,*Factory controller,* Alfa Laval, Monza, Italy

Appendix 3: Decision-making tree



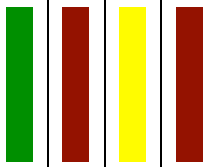
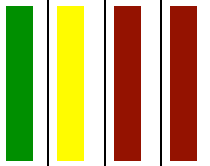
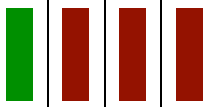
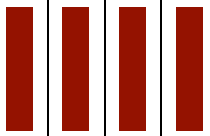
Appendix 4:PEMM - How mature are your processes? (Hammer 2007)

You canevaluatethe maturity of a business process and determine how to improve its performance by using this table. Decide how the statements defining the strength levels, from P-1 to P-4, for each enabler apply to the process that you are assessing. If a statement is largely true (at least 80% correct), colour the cell green; if it is somewhat true(between 20% and 80% correct), shade it yellow; and if it is largely untrue (less than 20% correct), mark the cell red.



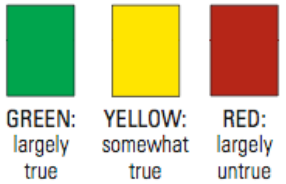
		P-1	P-2	P-3	P-4	P-1	P-2	P-3	P-4
Design	*Purpose*	The process has not been designed on an end-to-end basis. Functional managers use the legacy design primarily as a context for functional performance improvement.	The process has been redesigned from end to end in order to optimise its performance.	The process has been designed to fit with other enterprise processes and with the enterprise's IT-systems in order to optimise the enterprise's performance.	The process has been designed to fit with customer and supplier processes in order to optimise interenterprise performance.				
	Context	The process's inputs, outputs, suppliers, and customers have been identified.	The needs of the process's customers are known and agreed upon.	The process owner and the owners of the other processes with which the process interfaces have established mutual performance expectations.	The process owner and the owners of customer and supplier processes with which the process interfaces have established mutual performance expectations.				
	Documentation	The documentation of the process is primarily functional, but it identifies the interconnections among the organisations involved in executing the process.	There is end-to-end documentation of the process design.	The process documentation describes the process's interfaces with, and expectations of, other processes and links the process to the enterprise's system and data architecture.	An electronic representation of the process design supports its performance and management and allows analysis of environmental changes and process reconfigurations.				

Performers	*Knowledge*	Performers can name the process they execute and identify the key metrics of its performance.	Performers can describe the process's overall flow; how their work affects customers, other employees, in the process, and the process's performance; and the required and actual performance levels.	Performers are familiar with fundamental business concepts and with the drivers of enterprise performance and can describe how their work affects other processes and the enterprise's performance.	Performers are familiar with the enterprise's industry and its trends and can describe how their work affects interenterprise performance.				
	Skills	Performers are skilled in problem solving and process improvement techniques.	Performers are skilled in teamwork and self-management.	Performers are skilled in business decision-making.	Performers are skilled in change management and change implementation.			?	
	Behaviour	Performers have some allegiance to the process, but owe primarily allegiance to their function.	Performers try to follow the process design, perform it correctly, and work in ways that will enable other people who execute the process to do their work effectively.	Performers strive to ensure that the process delivers the results needed to achieve the enterprise's goals.	Performers look for signs that the process should change, and they propose improvements to the process.		?	?	?
Infrastructure	*Information systems*	Fragmented legacy IT systems support the process.	An IT system constructed from functional components supports the process.	An integrated IT system, designed with the process in mind and adhering to enterprise standards, supports the process.	An IT system with a modular architecture that adheres to industry standards for interenterprise communication supports the process.			?	?
	Human Resource systems	Functional managers reward the attainment on functional excellence and the resolution of functional problems in a process context.	The process's design drives role definitions, job descriptions, and competency profiles. Job training is based on process documentation.	Hiring, development, reward, and recognition systems emphasise the process's needs and results and balance them against the enterprise's needs.	Hiring, development, reward, and recognition systems reinforce the importance of intra- and interenterprise collaboration, personal learning, and organisational change.				
Owner	*Identity*	The process owner is an individual or a group informally charged with improving the process's performance.	Enterprise leadership has created an official process owner role and has filled the position with a senior manager who has clout and credibility.	The process comes first for the owner in terms of time of allocation, mind share, and personal goals.	The process owner is a member of the enterprise's seniormost decision-making body.				

	Activities	The process owner identifies and documents the process, communicates it to all the performers, and sponsors small-scale change projects.	The process owner articulates the process's performance goals and a vision of its future; sponsors redesign and improvement efforts; plans their implementation; and ensures compliance with the process design.	The process owner works with other process owners to integrate processes to achieve the enterprise's goals.	The process owner develops a rolling strategic plan for the process, participates in enterprise-level strategic planning, and collaborates with his or her counterparts working for customer and suppliers to sponsor interenterprise process redesign initiatives.				
	Authorities	The process owner lobbies for the process but can only encourage functional managers to make changes.	The process owner can convene a process redesign team and implement the new design and has some control over the technology budget for the process.	The process owner controls the IT systems that support the process and any projects that change that change the process and has some influence over personnel assignments and evaluations as well as the process's budget.	The process owner controls the process's budget and exerts strong influence over personnel assignments and evaluations.				
Metrics	*Definition*	The process has some basic cost and quality metrics.	The process has end-to-end process metrics derived from customer requirements.	The process's metrics as well as cross-process metrics have been derived from the enterprise's strategic goals.	The process's metrics have been derived from interenterprise goals.				
	Uses	Managers use the process's metrics to track its performance, identify root causes of faulty performance, and drive functional improvements.	Managers use the process's metrics to compare its performance to benchmark, best-in-class performance, and customer needs and to set performance targets.	Managers present the metrics to process performers for awareness and motivation. They use dashboards based on the metrics for day-to-day management of the process.	Managers regularly review and refresh the process's metrics and targets and use them in strategic planning.				

Appendix 5:PEMM - How mature is your enterprise? (Hammer 2007)

To determine if your organisation is ready to support a process-based transformation, evaluate the statements in this table. They show the strength levels, from E-1 to E-4, of the capabilities that enterprises need in order to develop their business processes. If a statement is at least 80% correct, colour the cell green; if it is between 20% and 80% correct, shade it yellow; and if it is less than 20% correct, make it red.



		E-1	E-2	E-3	E-4	E-1	E-2	E-3	E-4
Leadership	*Awareness*	The enterprise's senior executive team recognises the need to improve operational performance but has only a limited understanding of the power of business processes.	At least one senior executive understands the business process concept, how the enterprise can use it to improve performance, and what is involved in implementing it.	The senior executive team views the enterprise in process terms and has developed a vision of the enterprise and its processes.	The senior executive team sees its own work in process terms and perceives process management not as a project but as a way of managing the business.				
	Alignment	The leadership of the process program lies in the middle management ranks.	A senior executive has taken leadership of, and responsibility for, the process program.	There is strong alignment in the senior executive team regarding the process program. There is also a network of people throughout the enterprise helping to promote process efforts.	People throughout the enterprise exhibit enthusiasm for process management and play leadership roles in process efforts.				
	Behaviour	A senior executive endorses and invests in operational improvements.	A senior executive has publicly set stretch performance goals in customer terms and is prepared to commit resources, make deep changes, and remove roadblocks in order to achieve those goals.	Senior executives operate as a team, manage the enterprise through its processes, and are actively engaged in the process program.	The members of the executive team perform their own work as processes, centre strategic planning on processes, and develop new business opportunities based on high-performance processes.				

	Style	The senior executive team has started shifting a top-down, hierarchical style to an open, collaborative style.	The senior executive team leading the process program is passionate about the need to change and about processes as the key for change.	The senior executive team has delegated control and authority to process owners and process performers.	The senior executive team exercises leadership through vision and influence rather than command and control.				
Culture	*Teamwork*	Teamwork is project focused, occasional, and atypical.	The enterprise commonly uses cross-functional project teams for improvement efforts.	Teamwork is the norm among process performers and is commonplace among managers.	Teamwork with customers and suppliers is commonplace.				?
	Customer focus	There is a widespread belief that customer focus is important, but there is limited appreciation of what that means. There is also uncertainty and conflicts about how to meet customers' needs.	Employees realise that the purpose of their work is to deliver extraordinary customer value.	Employees understand that customers demand uniform excellence and a seamless experience.	Employees focus on collaborating with trading partners to meet the needs of final customers.			?	?
	Responsibility	Accountability for results rests with managers.	Frontline personnel begin to take ownership of results.	Employees feel accountable for enterprise result.	Employees feel a sense of mission in serving customers and achieving ever-better performance.		?	?	?
	Attitude toward change	There is growing acceptance in the enterprise in the need to make modest change.	Employees are prepared for significant change in how work is performed.	Employees are ready for multidimensional change.	Employees recognise change as inevitable and embrace it as a regular phenomenon.				
Expertise	*People*	A small group of people has a deep appreciation for the power of processes.	A cadre of experts has skills in process redesign and implementation, project management, communications, and change management.	A cadre of experts has skills in large-scale change management and enterprise transformation.	Substantial numbers of people with skills in process re-design and implementation, project management, program management, and change management are present across the enterprise. A formal process for developing and maintaining that skill base is also in place.				

	Methodology	The enterprise uses one or more methodologies for solving execution problems and making incremental process improvements.	Process redesign teams have access to a basic methodology for process redesign.	The enterprise has developed and standardised a formal process for process redesign and has integrated it with a standard process for process improvement.	Process management and redesign have become core competencies and are embedded in a formal system that includes environmental scanning, change planning, implementation, and process-centred innovation.				
Governance	*Process model*	The enterprise has identified some business processes.	The enterprise has developed a complete enterprise process model, and the senior executive team has accepted it.	The enterprise process model has been communicated throughout the enterprise, is used to drive project prioritisation, and is linked to enterprise-level technologies and data architectures.	The enterprise has extended its process model to connect with those of customers and suppliers. It also uses the model in strategy development.				
	Accountability	Functional managers are responsible for performance, process managers for improvement projects.	Process owners have accountability for individual processes, and a steering committee is responsible for the enterprise's overall progress with processes.	Process owners share accountability for the enterprise's performance.	A process council operates as the seniormost management body; performers share accountability for enterprise performance; and the enterprise has established steering committees with customers and suppliers to drive interenterprise process change.				
	Integration	One or more groups advocate and support possibly distinct operational improvement techniques.	An informal co-ordinating body provides needed program management while a steering committee allocates resources for process redesign projects.	A formal program management office, headed by a chief process officer, co-ordinates and integrates all process projects, and a process council manages interprocesses integration issues. The enterprise manages and deploys all process improvement techniques and tools in an integrated manner.	Process owners work with their counterparts in customer and supplier enterprises to drive interenterprises process integration.