

MANAGING OPERATIONAL SUPPLIER RELATIONSHIPS

Daniel Gustafsson och Håkan Jönsson

MASTER'S THESIS

Packaging Logistics

Lund University





LUNDS UNIVERSITET
Lunds Tekniska Högskola

Division of Packaging Logistics
Department of Design Sciences

MANAGING OPERATIONAL SUPPLIER RELATIONSHIPS

- A CASE STUDY AT A MAJOR APPLIANCES
MANUFACTURER

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Managing Operational Supplier Relationships
*-A case study at a major appliances
manufacturer*

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Abstract

- Title:** Managing Operational Supplier Relationships
- A case study at a Major Appliances Europe
- Authors:** Daniel Gustafsson and Håkan Jönsson
- Tutor:** Daniel Hellström, *Associate Professor*
- Background:** The Company is in process of increasing the level of centralisation to make use of the economy of scale and get a stronger buying position. A common supplier relationship process on operational level is part of this process.
- Purpose:** Purpose of the thesis is to review and improve the operational supplier relationship management process at The Company.
- The aim is to define and analyse the process and identify activities in need of improvement in order to achieve a structured and standardised supplier relationship management process for major appliances in Europe.
- Objectives:** In order to fulfill the purpose of this thesis the following objectives need to be met:
- Identify, define and map the current state of the operational supplier relationship process at The Company.
 - Define a structured model, based on the product characteristics, to achieve standardised operational activities in the supplier relationship.
 - Present recommendations aiming to improve the supplier relationship management process by changes in operational activities.
- Method:** This thesis has been conducted using a systems approach. By combining theories from supply chain management and supplier relationship management with empirical studies from The Company operations a operational supplier relationship process was

elaborated and validated with experienced personnel.

Result: The thesis resulted in a supplier segmentation model and a process for operational work with Supplier Relationship Management.

Key words: Supply chain management, supplier relationship management, operational exchanges, supplier segmentation

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We would also like to give a special thanks to our supervisors and chiefs at the Company.

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Stockholm, March 2011

Håkan Jönsson

Daniel Gustafsson

Executive Summary

Background

The Company is in process of increasing the level of centralisation to make use of the economy of scale and get a stronger buying position. A common supplier relationship process on operational level is part of this process.

Purpose of the thesis is to review and improve the operational supplier relationship management process at The Company.

The aim is to define and analyse the process and identify activities in need of improvement in order to achieve a structured and standardised supplier relationship management process for major appliances in Europe.

Method

This thesis has been conducted using a systems approach. By combining theories from supply chain management and supplier relationship management with empirical studies from The Company operations an operational supplier relationship process was elaborated and validated with experienced personnel.

The overall system is determined to the supply chain of The Company. This will be analysed and affected of the changes. Within this, the focus is on supplier relationship management including both internal and external relations. Within the supplier relationship a focus will be the performance on operational level. The focal point of the study will be The Company. The main focus of this study will be related to changes in internal factors but the influence of external inputs cannot be neglected. See Figure 4: Schematic illustration of the system.

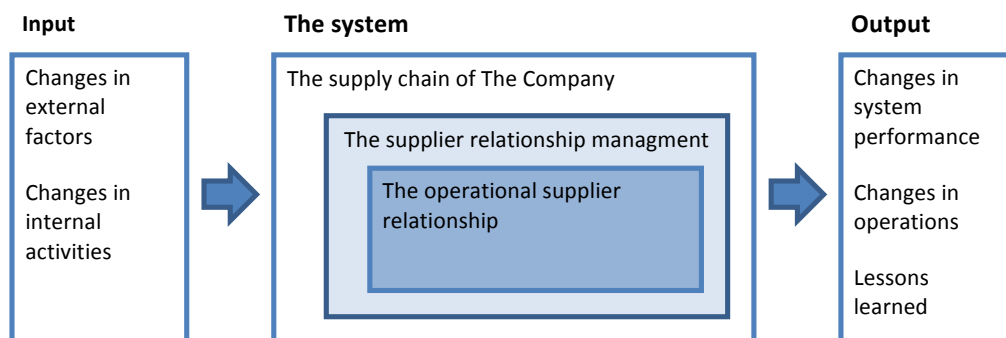


Figure 1: Schematic illustration of the system

Theory

The theory in combining supply chain flows with relationship dimensions.

A supply chain can be described as the flow of material through all activities from raw material to final customer, across functional and organisational boundaries. The major challenge in the supply chain is to manage the integration and collaboration between all activities within and over these boundaries.¹

The inter-organisational supply chain is built up by four basic flows²;

1. Physical exchange
2. Information exchange
3. Financial exchange
4. Juridical exchange³

Relationship can be described combining Van Weele's and Tang's segmentation models, see Figure 2.

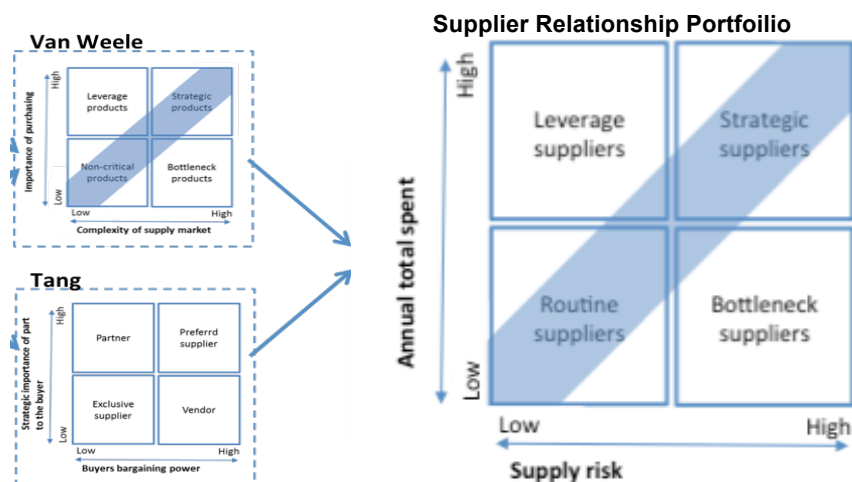


Figure 2; Combination of Van Weele and Tang segmentation models

The Supplier Relationship Portfolio is a model focused on segmenting suppliers and connecting recommendation of operational activities to it. This segmentation model will be used as a base and framework for supplier segmentation in this thesis.

¹ Schary et al., 2002, p.

² Lee, 2000, p.

³ Mattsson, 1999, p. 61

The framework is populated with suitable operational activities for each supplier relationship and presented under the four operational exchanges below. This is the base for the data collection in the empirical phase of the thesis and as a framework for developing an operational supplier relationship process.

Results and discussion

The process is based on segmentation and contains three phases, illustrated in figure below.

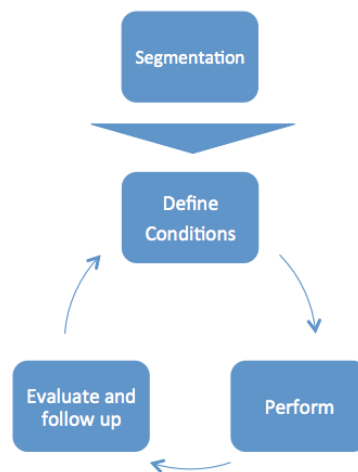


Figure 3: Proposed process model for operational SRM

The segmentation model combines the theoretical framework elaborated with observations at The Company presented in the case study.

Segmentation is performed in two dimensions: Annual total spent and complexity of supply market of the suppliers' products.

The **three phases of the process** can be divided into sub processes to approach the operational activities.

First **conditions are defined** and will affect the following steps. Key activities are to define exchanges and conditions in the relationship. These will all be adapted to segments.

Next step are **execution of operational supplier relationship** is based on the conditions defined in the previous phase. Forecast and call off, Problem solving, phase in and out

The final phase of the process is to ***evaluate and follow up*** both in order to ensure performance and identify areas in need for improvement. This is done both for internal performance of operations and externally for the suppliers.

Gaps and recommendations

The major gap between the present process and the operational supplier relationship process is the centre of gravity, the level of regional guidelines and the ability to follow up in order to ensure high performance and continuous improvement.

To close these gaps the authors has identified five key areas.

- 1. Set process owner for maintain, educate and develop the process.*
- 2. Use of an segment model for supplier base*
- 3. Common supporting tools for operations*
- 4. Standardised ways of communication with suppliers in both media and message*
- 5. Introduce continuous performance measurement*

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1 Introduction

This initial chapter introduce the general context of this thesis and the specific problem. Based on this the purpose, objectives, the focus and delimitations are presented. Finally the disposition and the work process are described.

1.1 Background

Traditionally, purchasing has been considered an administrative occupation but in the last decade the supply side has become increasingly important.⁴ Companies increased focus on core activities as a way to keep up to the higher market demands have increased the share of sourced material and services.⁵ In addition, companies today rely more on suppliers to deliver complex modules of products as well as sharing the involvement of the product development.⁶ This has transformed purchasing into an essential strategic part of the company's business. A company's competitive advantage does not simply reside within the boundaries of what it owns and controls, but also on interfaces it develops with other firms, e.g. its suppliers.⁷ Sheth and Sharma state it as:

"...the source of future competitive advantage will be the type of relationship firms have with their suppliers."⁸

As a consequence the importance of supplier relationship management has increased and recommendations shifted from arm length relationships, to focus on finding the appropriate relationship with each supplier group, spanning from arm length relationship to partnership.⁹

This shift is initiated on strategic level and is to be implemented at all levels in an organisation. Burnes conclude that the characteristics of the supplier relationship are generated on the operational level and argue that the success or failure of the relationship will be worked out in the daily operations with the supplier. The variety of relationships between

⁴ Gadde, Håkansson., 2001

⁵ Van Weele, 2002, p.4

⁶ Ford, p92.

⁷ Dyer, 1998, p 660-679

⁸ Sharma, 1997, pp.91

⁹ Gadde, Snehota, 2000, pp.305

buyer and supplier on operational level has increased by the new possibilities enabled by new information technology.¹⁰

Even if a segmented approach toward supplier relationship is frequently argued models and guidelines of managing relationship on operational level are rare. The frequently used Kraljic model¹¹ tends to link the differentiation in the market and product variables rather than relationships and therefore give limited guidance concerning the involvement in a specific relationship.¹²

1.2 Problem

The Company is a multinational company that traditionally, starting in the seventies, grown through acquisition.^{13, 14} This has resulted in a company with many systems and working processes. The company has been organised in a decentralised way with power located at the factories.

A change from a production-oriented company to a consumer oriented has created new demand in the organisation and a movement towards centralisation has started. A more centralised organisation will meet the new orientation and take advantage of scale, which make a common way of working is essential.¹⁵

In addition, a more centralised organisation unites a strategy of continuous cost reduction.¹⁶ As a part of this strategy, a project in changing locations of production was introduced 2003. More production sites were aimed to be located in low cost countries with the goal to have 60% of production in these countries in 2011.^{17, 18} At the same time many new suppliers were introduced which created new demands for the supply chain management.^{19, 20} To achieve an efficient inbound process, a common way to work and a possibility to transfer experience from existing relations to the new, in a structured way, is needed.

¹⁰ Burnes, 1997, p.16

¹¹ Kraljic, 1983pp. 109

¹² Gadde, 2000, p311

¹³ The Company annual report 2009

¹⁴ Internal presentation, The history of The Company, 2010-11-02

¹⁵ Martinsson, 2010-10-25

¹⁶ www.group.the Company.com, 2010-11-02

¹⁷ Haring, 2010-09-13

¹⁸ www.group.the Company.com, 2010-11-04

¹⁹ Van Dongen, 2010-10-28

²⁰ French, 2010-11-01

During this period of transaction a change in the global market of some components appeared. In the recession 2008 suppliers made cut downs in capacity and when the purchasing power of the market returned a situation of allocation appeared due to inability to scale up production. This resulted in a shortage of material for The Company.¹⁶ The situation led to an insight of the importance of structure and visualisation through the supply chain.

The new strategy of a more centralised organisation, together with the complexity in supplier base and market structure, has revealed a need for guidelines and a standardised way to operationally manage suppliers. This is especially important in a time when the competitive advantage is built upon the performance of the supply chain rather than the individual company.²¹

1.3 Purpose

The purpose of the thesis is to review and improve the operational supplier relationship management process at The Company.

The aim is to define and analyse the process and identify activities in need of improvement in order to achieve a structured and standardised supplier relationship management process for major appliances in Europe.

1.4 Objectives

In order to fulfil the purpose of this thesis the following objectives need to be met:

- Identify, define and map the current state of the operational supplier relationship process at The Company.
- Define a structured model, based on the product characteristics, to achieve standardised operational activities in the supplier relationship.
- Present recommendations aiming to improve the supplier relationship management process by changes in operational activities.

²¹ *Yi-Chan, Unhelkar, 2006*

1.5 Focus and delimitation

Aligned with the purpose of this thesis focus will be on the operational activities in the SRM process. Strategies will be inputs to this process and seen as defined and fixed. The mapping of the present situation will focus on the operational SRM process performed by the supply chain organisation. Only limited time will be spent with other departments.

For the study a comprehensive mix of factories has been put together. These are chosen in cooperation with professionals at The Company and illustrative for the process. The collection of data will be focused and delimited to these unit's. In the same way, six first tier suppliers are chosen. These are from different product groups and can be seen as a good representation of the suppliers of the Company. However, the recommendations will be aimed for the whole organisation.

The interaction between the Company and suppliers will be in focus and the physical structure in terms of distribution channels; production and warehouse localisation together with choice of transportation mode are seen as fixed. Neither will spare parts or return flow be taken into the study.

The existing technical solutions as EDI, webEDI and the ERP system, SAP, are seen as an enabler for improved supplier communication and will therefore not be studied in particular but the recommendations will be aimed to be aligned with the presented systems.

The thesis will generate recommendations for improvement but not generate a business case to determine the economical potential in the changes.

1.6 Target Group

The target group for this thesis are twofold; first and foremost this report aims itself for concerned employees at The Company involved in the operational supplier relationship. Secondly it aims itself for students and persons within academia with interest in supplier relationship management.

The report is built to be read by persons with basic knowledge in the areas of supply chain management and economy.

2 Methodology

For a scientific study to attain sufficient credibility and rigour it is imperative to address issues of research metrology. This chapter present the general methodology of this thesis. The aim is to describe the scientific context and assumptions of the study as well as to describe, and motivate, the selected mode of procedure in order for the reader to interpret and assess the thesis.

2.1 Research perspective

Researchers make different interpretations and assumptions of the reality and therefore view scientific work from slightly different perspectives. The methodology becomes not only influenced by the nature of the research question, but also by the researcher's view of reality.²²

There are three main metrological approaches; the analytical approach, the systems approach and the actor's approach, which all describe the reality from different perspective.²³

With a *analytical approach* there is an objective reality with summative character²⁴. This means that the whole is the sum of its parts and the reality can be explained objectively in quantified terms²⁵. Researcher can therefore get to know the different parts of the whole and by adding these together to get the whole picture²⁶.

In contrast to the analytical approach, the *systems approach* state that it is not adequate to describe the reality as the sum of its parts. Instead it takes a holistic approach is needed and not only the parts but also their relations are essential, as they give rise to synergy effects.²⁷

The researchers' task is then:

“... to create an understanding of a given part of the world, to identify the system parts, links, goals and feedback mechanisms in order to improve the systems ... The systems approach is pragmatic in nature, and the search for

²² *Arbnor, Bjerke, 1997 pp.21*

²³ *Ibid. p.65*

²⁴ *Gammelgaard, 2004 p. 480*

²⁵ *Arbnor, Bjerke 1994 p.62*

²⁶ *Ibid, pp.50*

²⁷ *Holme, Solvang 1997 p.35*

an absolute truth is replaced by the search for a problem solution that works in practice.”²⁸

The third approach, the *actor’s approach*, argues that no objective truth exists. The description of the reality will be the individual actors experience, interpretation and action of it. To understand the actions in the social reality the perspectives of the involved actors need to be understood.²⁹

2.1.1 The research perspective of this thesis

The purpose of the thesis is to review and improve the operational supplier relationship management process. Gammelgaard concludes that the nature of logistic management is pragmatic, systemic and does not show clear summative characteristics. Some aspects would be possible to isolate and analyse individually but to take the synergy effects into consideration a holistic, system perspective is needed. This process involves many actors with more or less easy, or even possible, relationships to distinguish. The direct effects of a change in the system is therefore hard, or even impossible, to identify. Gaamelgarrrds description of logistic management fit’s well on our system and advocates the use of a *systems approach*.

In our system three levels can be identified, the supply chain of The Company, the supplier relationship management and the individual supplier relation. See Figure 4: Schematic illustration of the system.

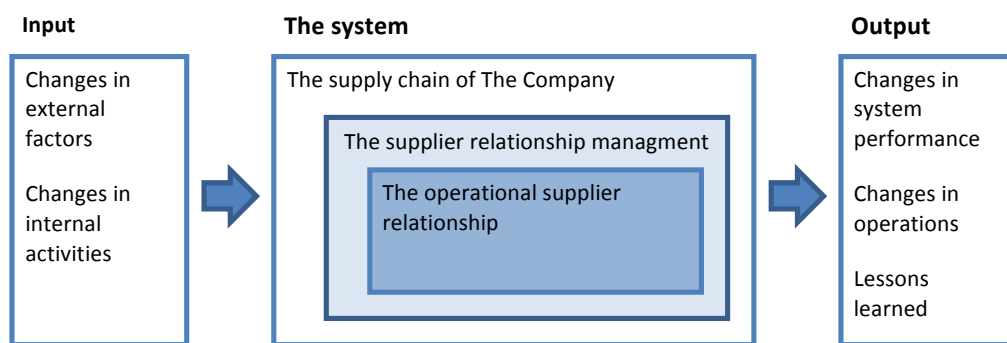


Figure 4: Schematic illustration of the system

The overall system is determined to the supply chain of The Company. This will be analysed and affected of the changes. Within this, the focus is

²⁸ Gammelgaard, 2004 p.481

²⁹ Persson, 1982, p.

on supplier relationship management including both internal and external relations. Within the supplier relationship a focus will be the performance on operational level. The focal point of the study will be The Company.

Changes will be made in the individual relationship between The Company and their supplier but the interest is the effect on the whole system, the supply chain, and the focal company, The Company.

This is obstructed by the fact of this being an open system, meaning that it can be given inputs from external factors. This can for example be change in macroeconomics, market situation and politics. The main focus of this study will be related to changes in internal factors but the influence of external inputs cannot be neglected.

2.2 Research approaches

The research approach is dependent on the extent of the predefined theory for the study. It is about whether theory should be tested or built.³⁰

2.2.1 Inductive, deductive and abductive methods

Research methods are commonly based on either an empirical or a theoretical approach. *Inductive* research methods begin with empirical observations without theoretical background and are then shaped into theories, i.e. building theory. Contrarily with *deductive* research methods conclusions are formed from theories and then tested in an empirical environment with data and facts, i.e. testing theory.^{31, 32}

A combination between an inductive and a deductive method is an *abductive* method that allows the research to move back and forth between theory and empery. This is schematically illustrated in Figure 5: The abductive research process .³³

³⁰ Saunders et al., 1997, p. 124

³¹ Björklund,Paulsson 2003, p. 62

³² Saunders et al., 1997, p. 124-126

³³ Kovács, Spens 2005

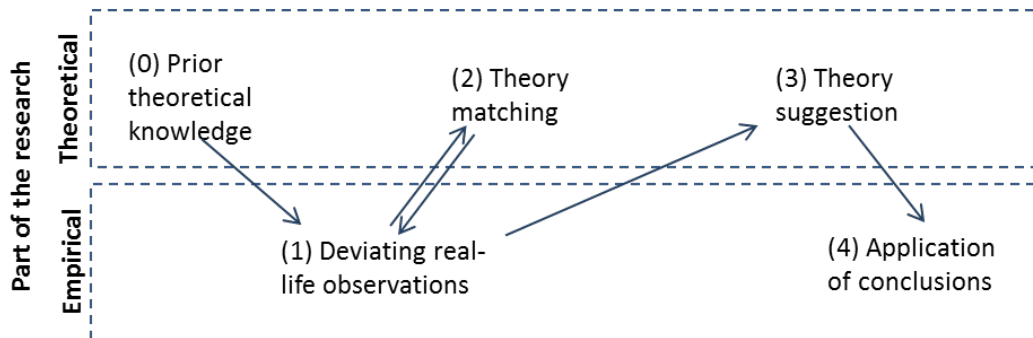


Figure 5: The abductive research process ³⁴

Like the inductive research method, the abductive approach is initiated by real-life observations (point 1, Figure 5). However, in most cases the research starts out with a background of prior perception and a prior theoretical knowledge (point 0, Figure 5). The empirical real-life observations are matched with theory (point 2, Figure 5) and the theory is used as a framework for further empirical observations. Final conclusions, hypotheses and proposition are putted together (point 3, Figure 5) with the base of the previous observations and in the end the conclusions are applied (point 4, Figure 5).³⁵

2.2.2 Qualitative and quantitative studies

Two distinct types of approaches exist, qualitative and quantitative. Both of these can both coexist in the same research. ³⁶

Quantitative studies cover information that can be measured and evaluated numerical. The quantitative method is characterised by a high level of structure and formalisation and is applicable when the purpose of the research is to draw high-level conclusions and be descriptive. ³⁷

In the *qualitative* case, the researcher is interested in investigating unknown or insufficiently known phenomena and focuses on structures and variations. The qualitative method uses a less structured way of data collection and aim to go on the depth and create an understanding.

³⁴ *Ibid.*

³⁵ *Kovács, Spens 2005*

³⁶ *Saunders et al., 1997, pp. 153*

³⁷ *Björklund, Paulsson 2003 p.*

Compared to the quantitative approach, the possibility of generalizing is inferior.³⁸

2.2.3 The research approaches of this thesis

This thesis use an *abductive research approach* as the research will be initiated by an empirical exploratory study to give an understanding of the problem. The exploratory study will be based on the author's prior theoretical knowledge of supply chain management, supplier relationship management and with the awareness of the unavoidability of prior pre-perceptions. A framework of theories will be established and matched to the exploratory study and used as a structure for the continued empirical research. A theoretical operational SRM process will be elaborated. Finally, conclusion will be developed from a comparison between the empirical and theoretical processes in order to give recommendations.

This thesis will perform as a *qualitative* study method to create an understanding and get an in depth of the actual problem, the background and the related issues.

2.3 Research strategy

The choice of research strategy is based on the purpose and objectives of the research project, the existing knowledge, time and resources. There is no inherently superior strategy and the selection is always associated with trade-offs. Different strategies shall not be seen as mutual exclusive and can beneficially be used in combination.³⁹

2.3.1 Case study

Case studies as research strategy allow the researcher to get a holistic view over real-life events and can be used in purpose to explore, describe and explain a process or organisation and also have the potential ability to answer the question "why" in addition to "what" and "how".^{40 41} The use of case studies in logistics research is limited although it has big potential for contributing to further development of the research.⁴²

³⁸ *Ibid.*

³⁹ Yin, 2007, pp. 26

⁴⁰ Yin, 1984, pp. 14

⁴¹ *ibid.*, p22.

⁴² Näslund, 2002, p. 321.

Frequent concerns about case studies as research strategy regard the ability to draw general conclusions. The question is how general conclusions can be generated based on a single case? The same question can be addressed to experiments. To improve their generalisation the experiment is often replicated to strengthen the conclusion. The same approach can be used for case study. The sum up of this discussion is that case studies as well as experiments can be used for generalising to theoretical patterns but not to generalise to larger populations.⁴³

For design or a case study, four different types of cases can be distinguished. A study can be focusing either on a single or multiple cases and have a holistic or embedded approach. See Figure 6: Design types of case studies below.⁴⁴

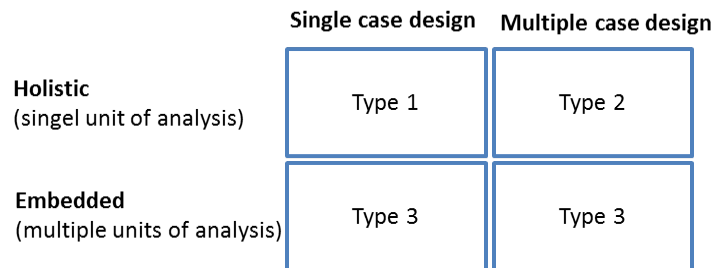


Figure 6: Design types of case studies

A single case study is often used when the case is unique, is representative for a bigger category or when the aim is to study changes in state between points in time. The selection of case becomes critical for the study. To generalise the result multiple case studies is needed. Multiple case studies can also help to compare organisations⁴⁵

In either of these cases the study can have more than one unit of analysis. This can be the case when studying a bigger organisation where natural subunits exist. In contrast a study can aim itself at the global nature of the organisation and take a holistic perspective.⁴⁶

For any type of study a clear definition of the unit of analysis is vital. The unit of analysis should reflect the research question and help the researcher to limit the amount of data relevant for the study.⁴⁷

⁴³ *ibid.*,pp.27

⁴⁴ *ibid.*,p.60

⁴⁵ *ibid.*,pp.61

⁴⁶ *ibid.*,pp.64

⁴⁷ *ibid.*,pp.41

2.3.2 Benchmarking ⁴⁸

Benchmarking is a systematic method to improve organisations and processes through comparison. The method allows the company to determine how well it performs relative other organisations with similar processes. At the same time it allows the company to set goals and plan for systematic improvement.

Four different types of benchmarking are to be found, which all differ in focus and the need for access:

- *Internal*, compare internal processes
- *Comparative*, benchmark performance with competitors
- *Functional*, compare similar processes inside an industry
- *Generic*, compare processes between unrelated businesses

2.3.3 Research strategy of this thesis

An objective of this study is to map up the present processes of the supplier relationship. This involve answering the question how the supplier relationship is conducted today and why it is done in this way. The study focuses on contemporary events why a *case study* is beneficial research strategy.

The study will be performed as an *embedded single* case study where the *unit of analysis* is the operational relationship between The Company and its supplier, see Figure 7: Schematic illustration of the system. Each of the four studied factories is natural subunits of the organisation and is seen as the *unit of analysis* in this thesis.

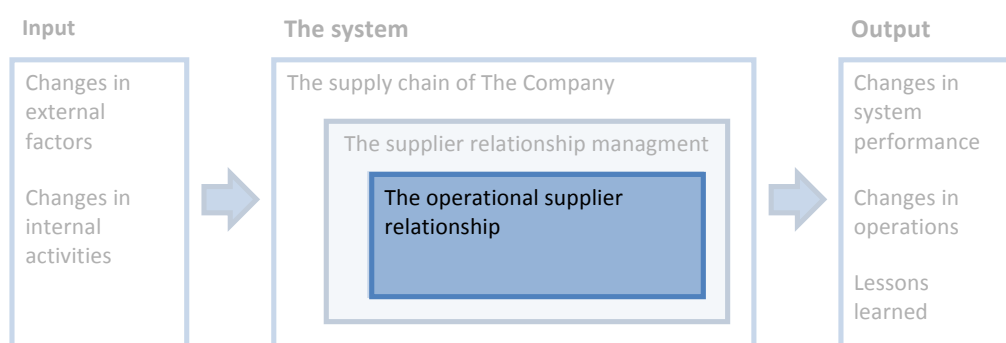


Figure 7: Schematic illustration of the system

⁴⁸ www.valuebasedmanagement.net, 2010-11-29

The results from the individual relationships are *benchmarked* against each other in order to identify differences, strengths and weaknesses.

2.4 Data collection

2.4.1 Primary and secondary data

Data collected for a study can be of two types; *primary*- and *secondary data*. *Primary data* are new, undocumented information collected for the specific purpose of the research. This can be collected through interviews, observations or surveys. By the use of primary data underlying values and reactions from the interviewees or respondents can be observed.⁴⁹

Secondary data is data collected from already existing documentation. Secondary data can create a broad knowledge base but is not enough to give an in-depth knowledge within the area of the study. It is important to reflect over the purpose of the data collection and be aware that secondary data might be angled.^{50, 51}

2.4.2 Data collection methods

Data can be collected in different ways. For this thesis the main sources for information have been literature and interviews.

2.4.2.1 Literature studies

Literature is defined by Björklund & Paulsson as all *written material* including books, journals, brochures, essays, etc. All literature is defined as secondary data. Difficulties associated with literature are how the search routines should be performed, what database to choose and what search words to use. All these difficulties should likewise be considered to obtain a comprehensive literature basis.⁵²

2.4.2.2 Interviews

Interviews are normally conducted as a dialogue with single objects or as a group interview. Practically it can be performed in person or on the phone but might also be performed as e-mail correspondence.⁵³

⁴⁹ Björklund, Paulsson, 2003, p.

⁵⁰ Saunders et al., 1997, p. 256-258

⁵¹ Björklund, Paulsson, 2003, p.

⁵² Björklund, Paulsson, 2003 p.67

⁵³ *ibid*, p.

The structure of the interview varies depending of its purpose. A *structured interview* is composed of predefined questions in a predefined order. If the interviewer chooses to formulate the questions eventually during the interview the method is referred as an *unstructured interview* and is similar to a discussion. The combination of the two methods is the *semi-structured interview* where some questions are predefined in order to start a discussion. Based on the purpose of the research, the need of flexibility is determined which will indicate appropriate interview method.⁵⁴

In addition to how the questions are formatted a reflection over the interviewee is needed it's common to separate a *respondent interview* from an *informant interview*. A respondent interview refers to an interview with a person involved with the phenomena studied. Contrarily an informant interview describes an interview with a person outside of the expressed studied phenomena but who is knowledgeable in the field. *Magne Holme and Krohn Solvang (1996)* describe the advantage of including as diversified range of interviewees as possible.⁵⁵

In general, interviews are used to obtain qualitative data but they are time consuming and the answers can sometimes be hard to interpret.^{56, 57}

2.4.3 Data collection of this thesis

Primary data will for the most part be gathered from *interviews* with personnel at The Company and their suppliers. At The Company, employees from Supply Chain department will be in focus, but other department of interest will also be involved, i.e. the Purchasing department. Persons participating will both be on strategic and operational level in order to map the operational activities and see its alignment with strategy. In this way the study will cover the unit of analysis and its influencers.

To get a broad and valid picture of the supplier relationship a range of respondents and informants with different perspectives of the supplier relationship will be interviewed. The respondents are mainly operational personnel working with suppliers in their daily work. Informants, in the other hand, are characterised by the personnel on a strategic level with

⁵⁴ *ibid*, p.

⁵⁵ *Magne Holme, Krohn Solvang, 1996, p.99-108*

⁵⁶ *Björklund, Paulsson, 2003, p.68*

⁵⁷ *Arbnor, Bjerke 1997, p.*

knowledge in the field. These will contribute to the study with the present guidelines for the operational processes and with the strategic framework. Each of the factories are seen as a unit of analysis and studied and evaluated individually.

After extensive discussions with Johan Martinsson, *Material Handling Engineering & Business Process Development Director*,⁵⁸ and John Van Dongen, *Demand Flow Planning and Scheduling Director*⁵⁹ four factories in Europe were chosen for the study: Susegana in Italy, Satu Mare in Romania, Nyíregyháza in Hungary and Olawa in Poland. These four factories are representative for The Company 17 factories because of its divert characteristics; *country* (different culture and language), *division* (different production and business culture) and *factory age* (different history and routines). The four factories characteristics are displayed in Table 1.

Table 1; Characteristics of the four chosen factories

Factory	Country	Division	Factory age	Specific characteristics
Susegana	Italy	Food Preservation	Old	Long history from Zanussi
Satu Mare	Romania	Food Preparation	Old	Many local suppliers
Nyíregyháza	Hungary	Food Preservation	New	No local purchasing department
Olawa	Poland	Fabric Care	New	New factory with new methods

⁵⁸ Interview 2010-10-27

⁵⁹ Interview 2010-10-28

17 industrial sites:

- ❄️ Food preservation
- 💧 Fabric care
- 🔥 Food preparation
- 🟡 Dish care



Figure 8: Geographical illustration of the chosen factories Susegana, Satu Mare, Nyiregyhaza and Olawa

As discussed, both people working on operational and strategic level will be interviewed. At the factories; Supply Chain Manager, Local Purchaser and Call Off Planner will be interviewed to triangulate the operational process. The personnel interviewed from The Company are presented in Table 2.

Table 2; Interviews with operation and managerial staff

Name	Title
Central organisation	
Local organisation	

Data from interviews will be collected following the qualitative approach. The purpose of each interview will be sent out in advance and presented in the beginning of the interview to prepare the interviewee and to keep focus on the subject. Questions are formalized in advance to function as a frame according to the semi-structured method with the goal to gain insight of the main issues and understand the interviewee’s opinion. Therefore the interviewee will have the possibility to control the development of the interview to some extent.

The interviews main topics are aligned with the theoretical framework described in chapter 3.3 Operational exchanges in SRM.

- *Organisation*
- *Supplier differentiation*
- *Physical Exchanges*
- *Information Exchanges*
- *Financial Exchanges*

- *Juridical Exchanges*

These exchanges are studied to understand how the operational challenges in Supply Chain Management discussed in Chapter 3.1 can be faced. An example of an interview guide is presented in Appendix 0.

The interviews will be led by one of the authors that ask all the questions while the other will be present as an observer. The interviews will also be recorded and notes will be taken from both authors during the interview in order to avoid misapprehension. In addition, the collected data will be discussed and documented directly afterwards to evaluate and validate the data.

The secondary data in this study will be collected from *literature*. The theoretical foundation is going to be collected primary from books and articles from the Library at Lund University, its database ELIN and the search engine Google Scholar Search words used are for example; “*supplier relationship management*”, “*supplier segmentation*” and “*supply chain management*”.

For the empirical studies, internal The Company documents will be included in the study to understand the organisation and its processes.

The data from the empirical study will be analysed and compared internally among the factories and externally by a gap analysis comparing the theoretical framework presented in chapter 3.5 with the empirical findings.

2.5 Analysis

Collected data and information from the units was analysed and processed from a number of perspectives. Initially an analysis of existing company common processes, guidelines and structures will be performed in order to identify a baseline and internal reference point for further discussions and evaluations.

Based on the theoretical created framework, comparing analysis will be performed on each of the units of analysis. At the same time an overall analysis will be performed to indicate the status of the overall process. This relate to the used process with the, by academia, recommended approach.

Benchmarking will be performed between factories in order to compare the units and to identify best practices in different areas within The Company.

2.6 Rigour

Since the analysis and conclusions depends on the result from an empirical research it can only be truthful if the methods used to achieve the result are considered with awareness of validity and reliability. ^{60, 61}

2.6.1 Validity

Validity is divided into two forms *internal*- and *external*. Internal validity is used to recognize what is measured is in fact what is intended. External validity concern what is measured on a specific object at a specific time also is valid in a different context and can be generalized. ^{62, 63}

2.6.2 Reliability

Reliability is defined as to what degree the measurement is trustworthy and to what degree the result is replicable when the same method is performed. The same study that is used according to the same method should give the same results. ^{64, 65, 66}



Figure 9: Left: low validity and reliability. Middle: high reliability and low validity
Right: high reliability and high validity ⁶⁷

2.6.3 Rigour of this study

The *internal validity* is addressed in this thesis by using multiple sources of data in order to triangulate the findings. The primary data for will be collected directly from both The Company and its suppliers. Within The Company, employees from both Supply Chain department and purchasing department as well on strategic and operational level will be interviewed

⁶⁰ Ejvegård, 1996, p.67

⁶¹ Jacobsen, 2002

⁶² Bryman et al. 2003

⁶³ Björklund, Paulsson 2003 p. 59-62

⁶⁴ Abnor, Bjerke, 1994, p.248

⁶⁵ Björklund, Paulsson, 2003, p.59

⁶⁶ Jacobsen, 2002

⁶⁷ Björklund, Paulsson 2003 pp. 59

to triangulate. In addition, having two authors in this study being present at all interviews, aware of each other and making sure validity is not compromised, from initial purpose to final conclusions sustain internal validity.

External validity is one of the challenges of the case study methodology. In order to have a good external validity the research process has been structured and involved multiple units of analyse.

In order to increase the *reliability* verification questions will be used for interview material for literature multiple sourcing is used and information provided from well-known papers and books.

Since interviews are used to a large extent to collect data in this study, it's vital to be sure that the data collected from the interviews has both a high reliability high validity.

2.7 Research process overview

The workflow of this project can be divided into five phases, illustrated and presented below.



The project initiates with an exploratory phase where information about The Company and its supply chain is collected in order to get a deep understanding for the challenges to be met by in this project. In parallel, an exploratory literature study was performed and theories collected. The foundation for the project and the approach is then set.

A deeper theory study is then performed to make use of existing knowledge and experience. By collecting literature around the problem a wide knowledge base is created. With a foundation of recognized theory a theoretical framework is elaborated. This matches challenges seen in the supply chain with activities in the operational supplier relationship.

With the theoretical framework as base, empirical studies are performed. Empirical data is collected to be able to map up the conditions of the present process. The data is collected through studies of internal documentation and interviews. Interviews are conducted on both operational and strategic level.

By combining the knowledge gathered in the theory phase and the empirical conditions a process is created. The process will combine the earlier theories with the conditions and needs collected through the empirical studies. The process will be validated through discussion with people involved in the operations.

Finally a reflection over the result will be presented. Does it fulfill the needs from the operations and does it meet the purpose. A reflection about the next step and recommendations for further research is generated. Finally the result is communicated to the stakeholders of the project.

3 Theory

This chapter will present the theoretical background of this thesis. Initially, supply chain management is presented and defined together with common challenges. The Second part of this chapter presents supplier relationship management and exchanges between parties involved. Further, the importance to handle these exchanges and activities in an adapted way for each type of supplier relation is introduced. Finally the link between the fields are illustrated and summed up.

3.1 Supply chain management

Supply chain became a part of top management's vocabulary in the middle of the 1990s.⁶⁸ The concept is a development of physical distribution and integrated logistic management in response to changed demands driven by globalisation, technology, organisational consolidation, the empowered customer and government regulations.⁶⁹ These new conditions forced companies to look beyond their internal processes and focus on the whole chain to achieve competitive advantages.⁷⁰

A supply chain can be described as the flow of material through all activities from raw material to final customer, across functional and organisational boundaries. The major challenge in the supply chain is to manage the integration and collaboration between all activities within and over these boundaries.⁷¹

The inter-organisational supply chain is built up by three basic flows; information, material and financial. These flows are all interdependent and need to be managed in order to create an efficient supply chain.⁷²

⁶⁸ Langley et al., 2008, p. 14

⁶⁹ Ibid., p. 7

⁷⁰ Lee, 2000, p.

⁷¹ Schary et al., 2002, p.

⁷² Lee, 2000, p.

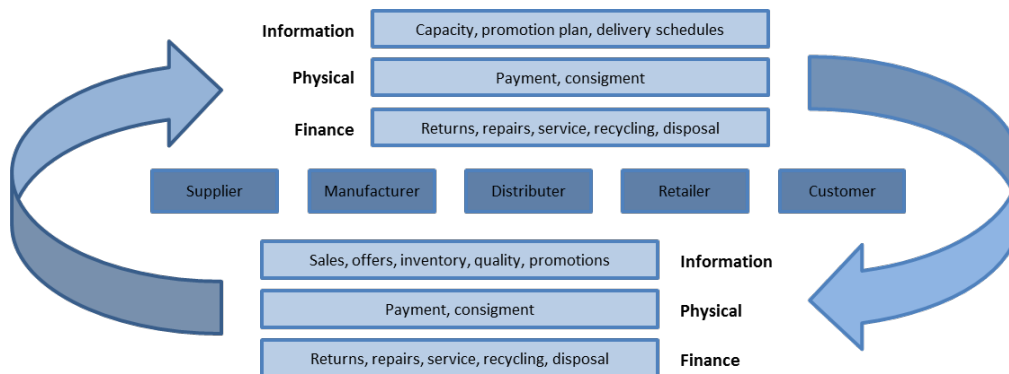


Figure 10: Illustration of the flows in the supply chain.⁷³

Supply chain management does not have a consistent definition. Researchers and other experts define it different depending on purpose and boundaries. A frequently quoted definition is Christopher's (1998) that defines supply chain management as:⁷⁴

*"The management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole"*⁷⁵

This definition highlights the vital part of relationships in the supply chain management, which is the focus of this thesis and will be further discussed in the coming section.

3.1.1 Operational challenges in SCM

To achieve an effective and efficient supply chain a few challenges need to be addressed. Challenges that are present in supply chains are:

⁷³Lee, c., 2000

⁷⁴ Google scholar, 2010-12-21

⁷⁵ Christopher, 1998, p.18

1. *Variations in demand*
2. *Loss of flexibilities*
3. *Transaction Costs*
4. *Accumulation of money*
5. *Time delays*
6. *Supply time and accuracy*

The two dominant paradigms for supply chains, the agile and lean supply chains, are focusing on different parts of these challenges. These challenges are interrelated and will direct and indirect affect each other. In the following sections these challenges will be introduced.⁷⁶

3.1.1.1 Variations in demand

In order to serve the customer a supply chain need the handle variations in demand from the final market. These variations use to be limited in most branches but tend to grow when going upstream the supply chain. A phenomenon called the bullwhip effect, see *Figure 11*. The effect is well known for being closely connected to the relation companies have with each other. It has been seen that even smaller changes in production planning will generate effects in the chain. Studies shows that a 10% increase in costumer demand creates a 40% of increases demand one level up in the chain.⁷⁶

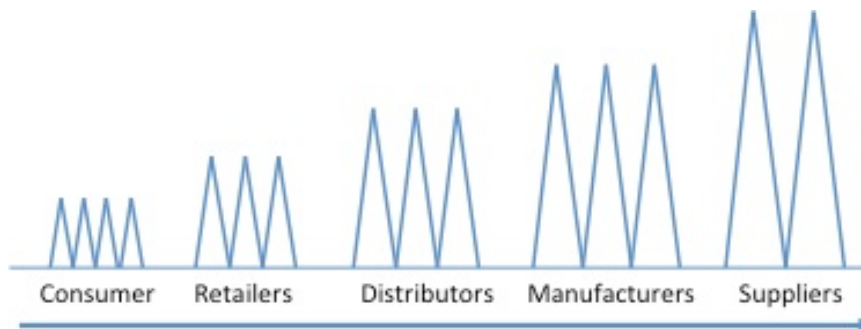


Figure 11: The bullwhip effect.

⁷⁶ *Mattsson, 2001, p. 28-33*

Lee, Padmanabhan and Whang (1997) found four drivers of the bull wimp effect to be; demand forecast updating, order batching, price variation and rationing and shortage gaming.⁷⁷

Today's trends in supply chain management are further strengthening the bullwhip effect. The economy of scale in production creates fewer but bigger costumers. In addition, the trend of increased outsourcing generates increased order costs compared to internal ordering. This two effects lowers the level of frequency in orders, which has flattened out variations before. Lower order frequency leads to increased order quantities and increased variations, which leads to an increased bullwhip effect in the supply chain. ⁷⁸

3.1.1.2 Loss of flexibility

Flexibility can be defined as the companies' ability to adapt to changes in demand with limited use of time and recourses. The limited use of recourses is a vital to determine the flexibility of a company. ⁷⁹ A flexible supply chain can be a competitive advantage through better availability for the end costumer.⁷⁹ Mattson (2001) divides flexibility into four categories;⁷⁹

7. *Product flexibility* is the ability to customise products to meet the demands of the costumers.
8. *Product mix flexibility* is the ability to adjust the mix of produced products in accordance to the market needs.
9. *Volume flexibility* is the ability to adjust volumes according the market changes.
10. *Supply flexibility* is the ability to adjust delivery times and quantities within the delivery time.

Low flexibility is closely connected to the time delays both within and between companies. Low flexibility also has a negative effect when costumers are forced to build stock to manage low flexibility of the supplier. ⁷⁹

⁷⁷ Lee et al. 1997 p. 546

⁷⁸ Mattsson, 2001, p13

⁷⁹ Mattsson, 2001, p. 28-33

3.1.1.3 Transaction cost

The transaction cost is the costs associated with acquiring material and components. This is for example; order, order confirmation, invoice and activities connected to the physical transaction of the material.⁸⁰

The trends of more outsourced activities and just in time deliveries are increasing the amount of transactions and highlighting the importance of effective transaction processes.⁷⁹

3.1.1.4 Accumulation of money

Money is accumulated in supply chain through material and products. This can be divided in two parts; products that are processed and stocked material. A product spends a majority of its time in stock. Stocks are needed to handle the fact that the flow in supply chains is not ideally and perfectly synced.⁷⁹

Uncertainty, in customers demand and suppliers supplies increase stocks and accumulation of money.⁷⁹ Also higher transaction costs in the supply chain will have the same effect. To achieve low accumulation of money stock must be kept on a low level, which can affect the service level.

3.1.1.5 Time delays

Time is an important factor in supply chains and has the ability to create competitive advantages.⁸¹ Long lead times are close connected with other challenges for the supply chain such as flexibility and accumulation of money.⁸² The physical movement of products is concerned with trade off between time and money. Faster transportations are in general more expensive and less environment-friendly.⁸³ A more common approach is to focus the improvements to the information flow.

Both historically and in present supply chains a lot of information is transferred by orders. In this way the information is transferred step-by-step upstream the chain, which increases the risk of delayed and corrupt information.⁷⁹ Time is a central factor for the quality of information. To distribute information to early increase the risk of quality in the

⁸⁰ *Mattsson, 2005, p. 34*

⁸¹ *Lummus, Vokurka 1999*

⁸² *Mattsson, 2005, p. 115*

⁸³ *OECD report, 1997*

information and if it is distributed too late, the information doesn't allow the receiver to act on it.

Longer supply chains and faster changes result in a need for more efficient information distribution. This is not just relevant in the downstream direction but also in the upstream direction to handle disruptions problems with the supplier's supplier.⁷⁹

3.1.1.6 Supply time and accuracy

The importance of lead times and the delivery performance has increased with the trend is to lower stock and to produce just in time. The bigger share of outsourced components and material has made the companies more dependent of their suppliers to serve the market. The lead-time and delivery performance is therefore directly affected of the relation between the customer and supplier. The number of actors involved in the supply of a product will increase the uncertainty and need accumulation of money.⁸⁴

Routines and information system is a vital part to handle the concerns and achieve an effective flow.⁷⁹

3.2 Supplier relationship management (SRM)

The increased focus on core competencies has restructured the supply chains of many companies and increased the level of outsourcing. This has resulted in an increase of the numbers of suppliers and the importance of leveraging on the supplier base.⁸⁵

Like supply chain management supplier relationship management have no single definition. Herrmann and Hodgson (2001) describe supplier relationship management as:

“...a process of managing preferred suppliers in order to reducing cost, making procurement predictable and repeatable, pooling experience and take the benefit's from the relationship.”⁸⁶

Supplier relationship management is about maximizing the value of the supply base by use of integrated and holistic set of tools focused of integration and cooperation between supplier and buyer.⁸⁷ Supplier

⁸⁴ Mattsson, 1999, p.33

⁸⁵ Herrmann, Hodgson, 2001. p1

⁸⁶ Hus et al., 2008

⁸⁷ Choy et al. 2003. p. 88

relationship management is today a vital part of the supply chain management process. The base in Supply chain management is the connections and integrations between the involved parts. The technical development is a driving force, which allows companies to look outside their own boundaries and allow tighter integration with their suppliers.⁸⁸ However, technical connections are only one part of a successful relationship. For truly successful relationships, active and structured work is needed.⁸⁹

In the following chapters, a framework for handling supplier relations is developed by linking existing theories. First, in Chapter 3.3, operational exchanges in SRM are defined and linked with operational challenges in SCM. Second, in Chapter 3.4, a new supplier segmentation model is developed. Finally, in chapter 3.5, the supplier segmentation model is populated with activities in the areas of operational exchanges to handle the different types of supplier relationships in a structured way.

3.3 Operational exchanges in SRM

For a supply chain one of the biggest challenges is to create a cooperation and integration between the organisations. This activity start on a strategic level but the result will be based on the performed operational activities.⁹⁰ Lee defines the main flows in the supply chain as physical flow, information flow and financial flow, illustrated in Figure 10: Illustration of the flows in the supply chain.⁹¹ To get the whole picture of the connections and exchanges these need to be complemented with a juridical perspective.⁹²

The challenges in the supply chain, presented in Chapter 3.1 Operational Challenges in Supply Chain, can be addressed with good supplier relationship management. The performance and efficiency of the relation is to a big extent dependent on the level of coordination and integration achieved between the chain members.⁹³

⁸⁸ Choy et al. 2003. p. 87

⁸⁹ Hus et al., 2008

⁹⁰ Burnes 1997, p.16

⁹¹ Lee, 2000, p.

⁹² Mattsson, 1999, p. 61

⁹³ S.E. Fawcett, p. 360

3.3.1 Physical exchanges

The physical exchange refers to the physical material flow between the supplier and the customer. Besides returns, related to reclamations, the flow is always one-way from the supplier to the customer.⁹⁴

Traditionally, the physical material exchange has, within supply chain management, been the most important exchange because it representing large direct values and great challenges in exchanges between supplier and customer, such as service level and customer satisfaction. Today, when competition grows stronger, a need for faster material flows, shorter lead-times, and higher flexibilities has developed. In addition, the importance of other exchanges has increased.⁹⁵

Common procedures to control and regulate the physical material exchange contribute to an increase of variations in demand in the supply chain. For example, large order quantities, frequently recalculated economic order quantity, and late re-planning of production, contribute to the bullwhip effect.^{96, 97}

3.3.2 Information exchanges

Information sharing is a key to coordinate the inter-organisational process and often also a reason behind failure.^{98, 99} It's vital to identify what information that needs to be shared to whom, in what way and when.¹⁰⁰ The information exchange needs to be adapted for the receiver to make the use of the information easier. In addition, there are risks involved with information sharing, like leakage to unauthorised persons or creation of an unfavourable negotiation situation.⁹³ However, to enable effective information sharing a certain level of trust is needed.¹⁰¹

Apart from the actual information that is exchanged, is the mechanism of which the information is shared with. This involves the mechanism for information sharing, level of system integration, frequency and cost for

⁹⁴ *Mattsson, 1999, p. 63*

⁹⁵ *Mattsson, 1999, p. 63-65*

⁹⁶ *Mattsson, 1999, p. 28-30*

⁹⁷ *Disney S.M., Towill D.R. (2003) p. 199-215*

⁹⁸ *Fink, 2008. p177*

⁹⁹ *Gosh, Fedorowicz., 2008 p.453-456*

¹⁰⁰ *Sun, Yen, 2005, p422*

¹⁰¹ *Fawcett, pp. 360*

the interaction. The choice of interaction mechanism will effect risk, cost and quality of the information sharing and is associated with trade-offs.¹⁰² It is important to find a balance between the supply chain practice and the level of technical information sharing in order to achieve improvements. A system is not a solution in it self but rather a tool to solve it.¹⁰³

The trend is to bigger extend atomise the information sharing and EDI is today a frequently used way to communicate information between companies.¹⁰⁴ The use of EDI allows fast information sharing. Time is a central factor in the quality of information as information fast fall out of date.

It is important to communicate both information of the past and the future.¹⁰⁵ For a good relationship the governance structure and expectations must be determined in common and clearly communicated. On the other hand feedback shall be communicated in order to have a learning organisation.¹⁰⁶

Information sharing has connections to many of the operational challenges described in previous section. An effective information sharing will reduce the bull wimp effect. A frequently suggested method is to centralise the demand information and supply each part of the supply chain with complete information.¹⁰⁷ Effective information sharing has potential to reduce the accumulated money by more frequent deliveries and contribute to better phase in and out of products.

An important exchange between companies is the personal contact. When an informal relationship is present the ability to solve conflicts, ad hoc problems and requests are much better.¹⁰⁸ Social exchanges can be in the everyday relation but also in more structured ways as annual supplier meetings and seminars.¹⁰⁹

¹⁰² Ghosh, Fedorowicz,, 2008, p 457

¹⁰³ Fawcett, pp. 366

¹⁰⁴ Mattsson 1999, p 180, 206

¹⁰⁵ Håkansson, Waluszewski 2002, p 36

¹⁰⁶ S.E. Fawcett, pp. 366

¹⁰⁷ Chen et. al 2000

¹⁰⁸ Fink, 2008, p. 183

¹⁰⁹ Mattsson 1999, p. 62

3.3.3 Financial exchanges

The operational financial exchange refers in general to payments of deliveries and is associated to transaction costs and accumulation of money.¹¹⁰ Other financial exchanges are shared investments and exchange of key personnel.^{111, 112}

3.3.4 Juridical exchanges

Both sides in a transaction are accurately to protect them self to hazard and opportunistic behaviour and trying to implement safeguards.¹¹³ A safeguard has the objective to bring a level of control and commitment to perform the transaction. The most used safeguard in western economies is juridical contracts.¹¹³ In other cultures are trust and personal relation more important.¹¹⁴ These are not mutually exclusive and have the possibility to strengthen each other. Contract can be useful in absence of trust in the early phase of a relationship and over time be replaced by other relationship-specific factors.¹¹⁵

Trust is developed over time and creates bindings between organisations that will result in a higher level of commitment.¹¹⁶ Trust is an important factor in building an effective relationship and has positive effects on other exchanges. A higher level of trust will lower the transaction costs, stimulate adoption of production and increase the level of shared information Trust is also often pointed out as the reason when relations fail.¹⁰³

In absents of trust contract are highly useful. The objectives for contracts in supplier relationships and responsibility structure in the chain and share risk between parts involved in the supply chain.¹¹⁷

3.3.5 The linkage between challenges and interorganisational exchanges

The challenges seen in the supply chains can be addressed and improved through structured supplier relationship management. In previous

¹¹⁰ *Mattsson 1999, p. 34-36, 63*

¹¹¹ *Lambert et al. 1996, p. 10-13*

¹¹² *Wynstra, ten Pierick 2000, p. 49-57*

¹¹³ *Dyer, 1997. p.535*

¹¹⁴ *Hofstede, 2004.*

¹¹⁵ *Fink, 2008, p. 183.*

¹¹⁶ *Mattsson, Jonsson, 2008. pp. 225*

¹¹⁷ *Ghosh A, Fedorowicz J., 2008, p 459*

sections the relationship between these challenges and the exchanges are presented. In Figure 12 a schematic illustration is given of the connections and illustrates the many interactions and the complexity in the system. To identify an effect of a change is difficult, or even impossible in a system like this with many dependent connections.

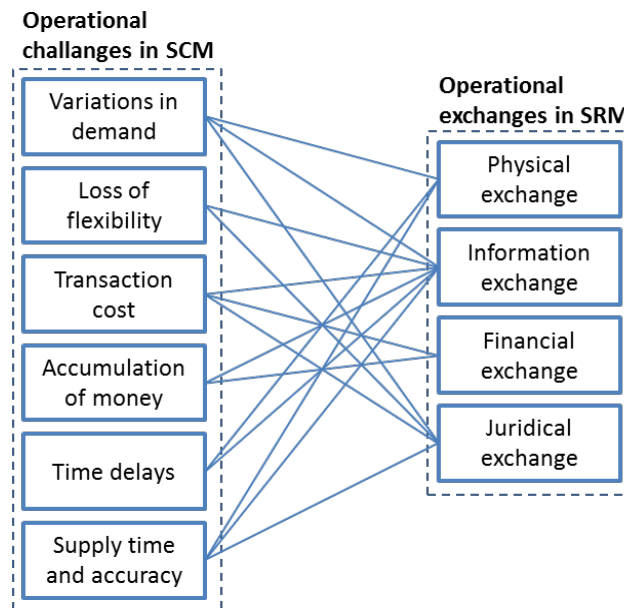


Figure 12: The relation between supply chain challenges and operational exchanges

3.4 Adoption of operational supplier relationship

Companies' suppliers has become of great contributor for their success. Therefore, the choice of suppliers and how the company approach them has become essential for the company's performance and competitiveness.¹¹⁸

Traditionally the approach towards suppliers has been uniformed model similar to arm's-length relationships, characterised by low levels of information sharing, low levels of trust and frequent rebidding. Today a system of supplier segmentation and adopted relationships is promoted.¹¹⁹ Companies have limited recourses and are only able to have high involvement with a limited number of suppliers.¹²⁰ The selection of the right relation to respective supplier needs a holistic view because the

¹¹⁸ *Mattsson 1999b, p.105*

¹¹⁹ *Svensson, 2004, p.12*

¹²⁰ *Gadde et al. 2000. p 305*

larges value flow doesn't necessary account for the largest transaction costs. Moreover, other important factors for the company like; technical development, risks, distance and quality have to be evaluated to select the suppliers appropriate for partnership.¹²¹

Kraljic (1983) is often considered the pioneer in the area and his work a breakthrough in developing a model for supplier segmentation and has been replicated and elaborated in different forms ever sense.¹²²

3.4.1 Kraljic model

To minimize supply vulnerabilities and make the most of potential buying power Kraljic (1983) presented a product segmentation model and a purchasing portfolio matrix. The product segmentation model classifies products into four segments and the purchasing portfolio matrix divides the buyer-supplier relationship into three segments. Eventually, these segments are linked with guidelines for appropriate strategies and action plans.

3.4.1.1 Product segmentation

Kraljic (1983) define two dimensions that the supply strategy and the segmentation model depend on. The first, *importance of purchasing* in terms of value added activities, total cost, impact on profitability, etc. The second dimension is the *complexity of the supply market* evaluated by supply scarcity, pace of technology, entry barriers, logistics cost or complexity, etc. Those dimensions are put together in a matrix show in Figure 13; Kraljics Portfolio of ProductsPortfolio of Products. By determine the suppliers' situation in these to variables one can determine the type of supply strategy needed in terms of both reducing risks and define the purchasing power and important suppliers.¹²³

¹²¹ Mattsson 1999b, p.108-116

¹²² Svensson, 2004 p. 13

¹²³ Kraljic. 1983 p. 1-8

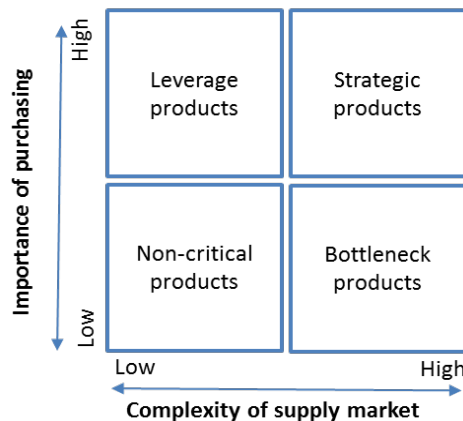


Figure 13; Kraljics Portfolio of Products

Strategic products are often supplied by customer specification and are characterised by high-volume products. Usually only one supplier is available, which is complex to replace in a short term often associated with extensive costs. The cost of these products also often represents a large portion of the end product's cost price.

The *leverage products* are usually products that can be purchased from various suppliers at a standard level of quality. Similar to the strategic products they represent a relatively high share of the end product's cost price. A small change in price has a relatively large effect on the total cost and the buyer tends to have a large supply base to purchase from.

The items that represent a limited value of the total purchasing volume but have a relatively critical supply risk are the *bottleneck products*. The products can sometimes only be purchased from one supplier and in general spare parts for equipment are placed in this category.

The last product segment is the *non-critical products*. These products are associated with few technical and commercial problems and have in general a low value per unit and there are many alternative suppliers. Usually products in this group have higher handling costs compared to the value of the actual products. According to *van Weele (2002)* 80% of the time and resources of purchasing is used for these products.

3.4.1.2 Define negotiation position

The buyer-supplier relationship can also be differentiated into three different segments by plotting company buying strength against the

strength of the supply markets. This will identify areas of opportunity or vulnerability.¹²⁴ Van Weele (2005) later named these segments *buyer-dominated*, *supplier-dominated* and *balanced relationship*.¹²⁵ See Figure 14; Balance of Power.

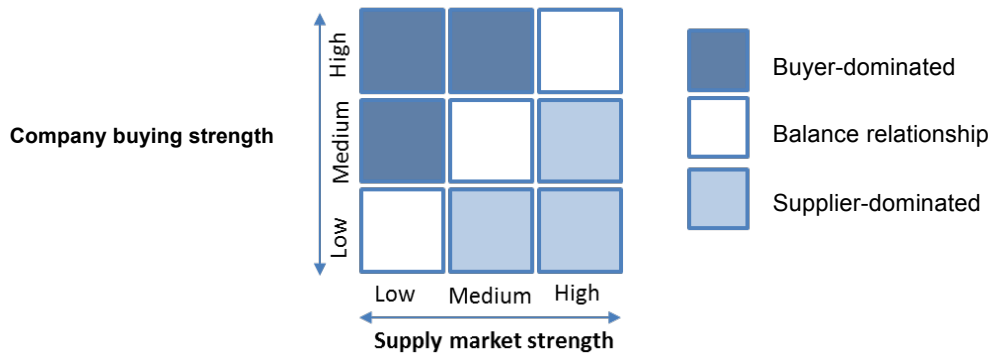


Figure 14; Balance of Power

For products where the suppliers' strength is low and the buyer plays a dominated market role are placed in the *buyer-dominated segment*. Because of the low supply risk in this segment, the buyer has a greater chance of achieving favourable prices and contract agreements. An aggressive exploit strategy is therefore suited for these types of products.¹²⁶

In the automotive industry its common that manufactures develops partnership programs with their suppliers in this segment, although the suppliers experience a fairly one-sided relationship.¹²⁷

Products that are represented buy a strong supplier market and weak buyer roles are placed in the *supplier-dominated segment*.¹²⁶ The supplier may actually have "locked in" their buyer in the relationship through either its technology or carefully designed marketing strategies.¹²⁷ The strategy has to be a more defensive diversified strategy where the buyer has to look for material substitutes or new suppliers.¹²⁶

The supply products with neither high risks nor potential benefit's are placed in the *balanced relationship segment* and a balanced intermediate

¹²⁴ Kraljic (1983) p.1-8

¹²⁵ van Weele (2005) p.148

¹²⁶ Kraljic, 1983, p.5

¹²⁷ van Weele, 2005, p.148

approach should be pursued.¹²⁸ Neither the buyer nor the supplier dominates the other and they both aim to keep the relationship balanced.

3.4.2 Development of the Kraljic segmentation model

The work performed by Kraljic has been replicated and elaborated in different forms since its introduction.¹²⁹ Two of the most notable is the work of van Weele (2005) and Tang (1999).

3.4.2.1 Van Weele

Van Weele (2005) combines Kraljic's (1983) matrixes of the balance of power and the product portfolio, into a united purchasing product portfolio. Product segmentation and the power balance between supplier and buyer can now be read from the same matrix, see Figure 15: van Weele's purchasing product portfolio¹³². Moreover, van Weele (2005) argues that the segmentation can be done, not only on a product basis but also on a supplier basis.¹³⁰

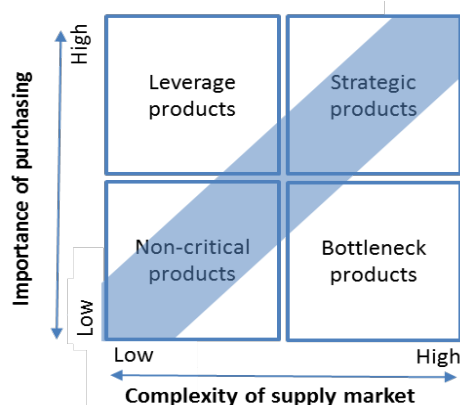


Figure 15: van Weele's purchasing product portfolio¹³²

Based on the work performed by Kraljic Van Weele advanced the strategic recommendations for the product segments. He also concluded that it also was possible to segment suppliers.

¹²⁸ Kraljic, 1983, p.6

¹²⁹ Svensson, 2004 p. 13

¹³⁰ van Weele, 2005

3.4.3 Strategic positioning of products

Kraljic (1983) argue that for each one of the different product segments of the portfolio, different supply strategies are appropriate.¹³¹ The emphasis should lie with the strategic and leverage products, as they makes up 80% of the turnover, in the same time, work related to non-critical products should be limited as much as possible.¹³²

For the strategic product segment a *partnership* strategy is most suitable. As small changes in price has an immediate impact on the product's end cost as well as the supply risk is high, the development in the in the supplier market and the development of the price and cost has to be monitored closely. These issues justify a central or a co-ordinated purchasing approach. The goal is to create a mutual participation relationship based on co-operation with the supplier including efficiency and cost reduction programmes, quality improvement, process improvements and improved product development. Such collaboration can in the end lead to fading borders in the buyer-supplier relationship.¹³²

For leverage products a *competitive bidding* strategy is appropriate. No long-term supply contracts are applied since the suppliers and products are correspondent and easily exchangeable. Priority is frequent scanning of the market and buying at a minimum cost because of the large profit opportunities by just small price reductions.¹³² Negotiations and agreements are performed co-ordinated or by corporate with preferred suppliers which can be used operationally by the local units.¹³²

Securing continuity of supply is the strategy applied for bottleneck products. Additional costs are acceptable if necessary to secure the supply. Active work is performed to reduce risk. This can be activities to reduce dependence on these suppliers by developing alternative products and suppliers. On the other hand, the price profit obtained rarely exceeds the cost of these activities.¹³² Action plans are also made to be prepared if the supply risk actually arise. Examples of these activities are: consigned stock agreements, preparing alternative modes of transportation and actively exploring new product alternatives.¹³²

The fourth strategy, *systems contracting*, is most suitable for non-critical products and is aimed to reduce administrative and logistic complexity.

¹³¹ Kraljic (1983)1-8

¹³² van Weele (2002) p. 149-151

The goal is to elaborate uncomplicated and efficient ordering and administrative routines between the buyer and the supplier by systems contracts or kitting contracts. Examples of these activities are: standardising the product assortment, reducing the number of suppliers, systems contracts for MRO items (office supplies, maintain products, cleaning products, etc.), ordering through Internet technology or contract out the purchasing of these articles.¹³²

3.4.4 Supplier Relationship Map ¹³³

Based on Kraljics product segmentation model Tang (1999) mapped different types of supplier relationship for different business environments. The result was a four-field matrix with the two dimensions of Strategic Importance of the Part to the buyer and the Buyer's Bargaining Power. Tang elaborated operational characteristics four the types of supplier relationships; *Partner*, *Preferred Supplier*, *Exclusive Supplier* and *Vendor*. See Figure 16 below.

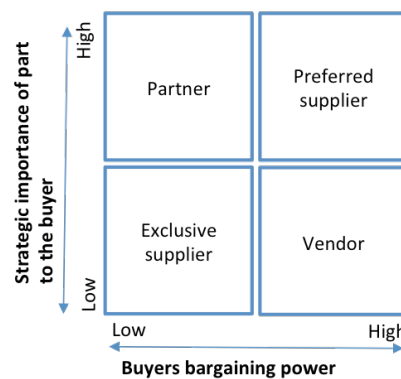


Figure 16: Tang (1999) segmentation matrix

3.4.5 The combined Supplier Relationship Portfolio

By combining Van Weele's and Tang's segmentation models, the Supplier Relationship Portfolio is created, see Figure 17.

¹³³ Tang, 1999, p.39-56

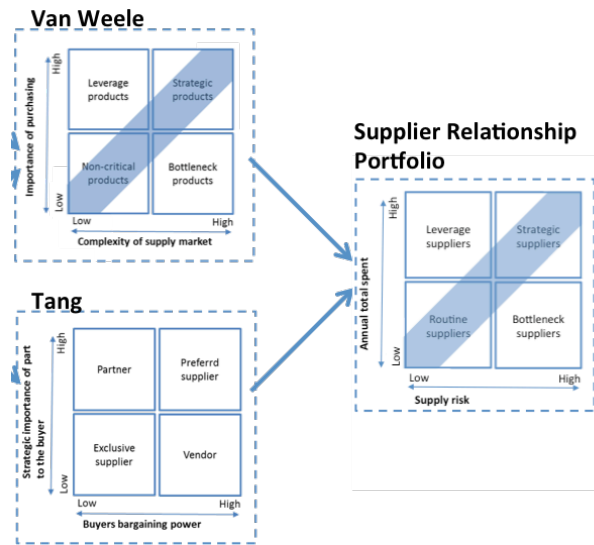


Figure 17; Combination of Van Weele and Tang segmentation models

The Supplier Relationship Portfolio is a model focused on segmenting suppliers and connecting recommendation for operational activities to it. This segmentation model will be used as a base and framework for supplier segmentation in this thesis. The supplier segments are named based on van Weele's (2005) purchasing portfolio; *Strategic Suppliers*, *Leverage Suppliers*, *Bottleneck Suppliers* and *Routine Suppliers*. See Figure 18.

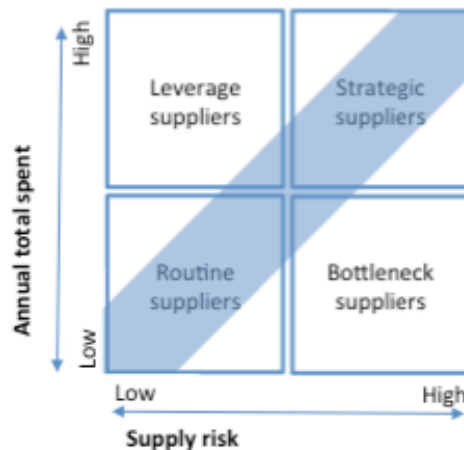


Figure 18; The Supplier Relationship Portfolio

3.5 Activities in Supplier Relationship Portfolio

To make the Supplier Relationship Portfolio practical for operational work, a structured way to link operational activities to the supplier

segments is needed. Therefore the authors developed a framework using the operational exchanges in SRM, described in *chapter 3.3* as one axis and the type of Supplier Relationships as another axis. The framework is illustrated in Figure 19.

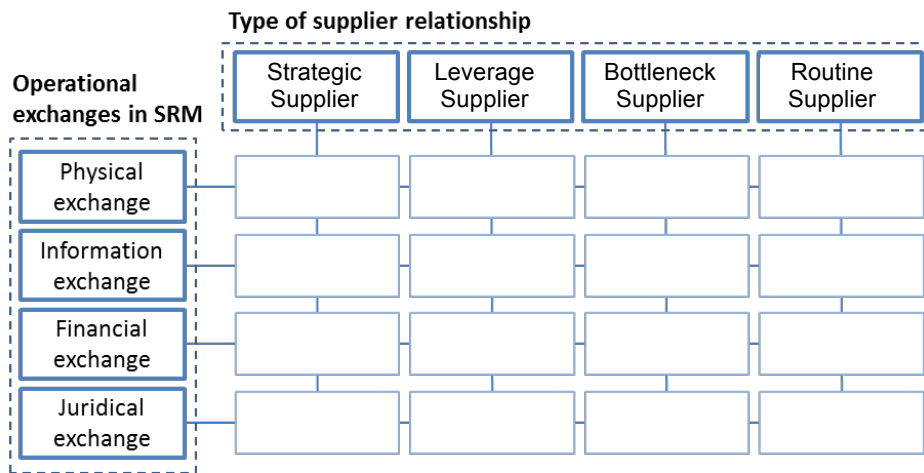


Figure 19: Framework of operational exchanges and types of Supplier Relationships

The framework is populated with suitable operational activities for each supplier relationship and presented under the four operational exchanges below.

This framework is used as base for the data collection in the empirical phase of the thesis and as a framework for developing an operational supplier relationship process.

3.5.1 Physical exchange

The physical exchange is one of the basic flows in the Supply Chain.¹³⁴ Gunasekaran et al. (2004) express the importance of Supply Chain performance measurements on tactical and operational level and should be implemented in all supply chains. Performance measurements on the operational level require accurate data and can be used as operational objectives to evaluate the personnel and the decisions of low-level managers. Examples of performance measurements are the supplier delivery performance, supplier lead time against industry norm, supplier

¹³⁴ Lee, 2000

pricing against market, supplier booking in procedures, efficiency of purchase order cycle time, etc.¹³⁵

In a *Strategic Supplier* relationship the performance measurements are jointly developed and shared with focus on the joint performance.¹³⁶ Supply risk analysis is performed to secure supply¹³⁷ and inbound delivery schedules are very frequent.¹³⁸ In addition, strategic suppliers are preferably highly involved in research and development activities including developing new packaging designs and other product alignments.^{146, 139, 140}

For the *Leverage Suppliers* the purchasing activities are performed on a high central level within the competitive bidding strategy and handed over to operational call off activities. Purchased volumes are reallocated over multiple suppliers and delivered on a frequent delivery schedule.¹⁴¹ In addition, low stocks are preferable because of the low risk involved with these types of suppliers.¹⁴²

High involvement of Leverage Suppliers in product alignments and in research and development processes, for instance in packaging designs.^{139 143} It is highly important to optimize order quantities for this supplier group because of the high volumes and values involved.¹⁴⁴

To secure supply from the *Bottleneck Suppliers* a supply risk analysis is performed and a ranking is estimated in the supplier's client list. Continues search for alternative products or suppliers and preventative measures like buffer stocks, consignment stock agreements, prepared alternative transportation modes are developed.¹⁴⁵ Safety stocks could be placed at both the supplier and the buyer and should be agreed on in the

¹³⁵ Gunasekaran et al., 2004, p.333–347

¹³⁶ Lambert et al. 1996, p.10-13

¹³⁷ van Weele, 2005, p. 149-152

¹³⁸ Tang, 1999, p.46

¹³⁹ Gadde, Snehota 2000, p.305–316

¹⁴⁰ Lambert et al. 1996, p. 10-13

¹⁴¹ van Weele, 2005 p. 149-152

¹⁴² Kraljic, 1986, p. 5-6

¹⁴³ Krause et al. 200, p. 21

¹⁴⁴ van Weel, 2005, p.152

¹⁴⁵ Ibid, p. 149-152

introduction face.¹⁴⁶ The inbound goods are delivered on a frequent schedule.¹⁴⁷

Bottleneck Suppliers are either partial involved or not at all in research and development activities for the reason of the low values involved and poor chances of large cost reductions.¹³⁹

The physical exchange for *Routine Suppliers* is characterized by an infrequent delivery schedule.¹⁴⁸ The process should preferably be as standardized and cost efficient as possible or even outsource the operational purchasing process to specialised purchasing offices.¹⁴⁹

Similar to Bottleneck Suppliers, the Routine Suppliers are rarely involved in research and development activities.¹³⁹

3.5.2 Information exchange

Effective communication is essential for a successful *Strategic Supplier* relationship, both on a day-to-day basis and a non-routine basis. E-mail and customized EDI systems are integrated and developed jointly. The communication structure is wide and deep and communication links should be across all levels of the organisation including strategic, tactical, operational, interpersonal and cultural.¹⁴⁰ The information exchange is continuous and both the buyer and supplier exchange information in a two-way communication flow. The information is communicated by rich media such as face-to-face group meetings for non-routine communication and by lean media such as telephone, EDI, e-mail, etc, for day-to-day communication. Physical meetings and phone calls are performed at all levels and both parties “speak the same language”.^{150 151}

Joint planning is performed systematically on both periodical and continual basis and adds flexibility and strength to the relationship.¹⁴⁰ Furthermore, it's vital that forecasts provided to the supplier are accurate.¹⁴⁴

Physical meetings and phone calls are performed at all levels and both parties “speak the same language”.

¹⁴⁶ Dowlatshahi, 1998, p. 143-167

¹⁴⁷ Tang, 1999 p. 46

¹⁴⁸ Tang 1999, p. 46

¹⁴⁹ van Weel, 2005, p. 149-152

¹⁵⁰ Tang, 1999, p. 46

¹⁵¹ Wynstra, ten Pierick 2000, p. 49-57

For *Leverage Suppliers* the information exchange is frequent and mainly one-way communicated by the supplier's initiative. Non-routine communication is performed by rich media such as face-to-face meetings and day-to-day communication by telephones, EDI, e-mail, etc.^{151, 140} Information regarding cost, processes and quality are provided to the buyer.¹⁵⁰

Frequent information exchange and one-way communication is appropriate for *Bottleneck Suppliers*. Contrary to the Leverage Supplier relationship, the buyer primarily provides information to the supplier regarding design, sales, cost and inventory. The information is provided by lean media such as telephones, EDI, e-mail and fax.¹⁵¹ Usually, the buyer has little to choose from given the dominant position of the supplier and therefore uses the supplier's E-solution for orders.¹⁵² In addition, the accuracy of the forecasts is very important for the Exclusive Suppliers because of the high supply risk.¹⁴⁴

For *Routine Suppliers* the information exchange is sporadic, two-way and contains principally just purchase orders and invoices and is communicated by lean mediums like EDI, e-mail, fax and mail.^{153 154} The internal order delivery and invoicing procedures should be as standardised and as time efficient as possible.¹⁵⁵

3.5.3 Financial exchange

A *Strategic Supplier* relationship is strengthening by the sharing of financial resources in the relationship such as shared assets, joint investment in technology and exchange of key personnel.¹⁵⁶

The *Leverage* and *Bottleneck Suppliers* may jointly own low value assets together with their contractor.¹⁵⁶

Routine Supplier generally doesn't share any investment with their contractor.¹⁵⁶

¹⁵² Van Weele, 2005, p. 177

¹⁵³ Tang 1999, p. 46

¹⁵⁴ Wynstra, ten Pierick 2000, p. 49-57

¹⁵⁵ Van Weele, 2005, p 152

¹⁵⁶ Lambert et al. 1996, p. 10-13

3.5.4 Juridical exchange

The contracts in *Strategic Supplier* relationships are more of an agreement than an actual contract. D M. Lambert et al. (1996) argue that the strongest partnerships have the least specific contracts or no contract or agreement at all. A partner contract is very general and covers a long time frame. Partners share both benefits and risks.^{153, 157}

Strategic Suppliers are in general given more trust and commitment than other suppliers. Partners show loyalty to each other and often have a long-term focus. Personnel show great willingness to share both bad and good news and to help the other gain. Tolerance for short-term loss is reasonable to strengthen the relationship.^{158, 159}

In some cases, the Strategic Supplier has the ability to operationally change the operation of the buyer for the good of the relationship without approval. For example, within the Whirlpool Quality Express partnership, a supplier can change the delivery schedule to a customer without first obtaining approval or even notifying Whirlpool.¹⁵⁷

For *Leverage Suppliers* relationships, contracts cover a medium time frame i.e. the length of a product life. The contracts are specific in nature.^{160 161} As the buyer has the most power in this type of relationship the operational buyer has a position and ability to push the supplier.¹⁶²

Bottleneck Suppliers relationships have, comparable to Leverage Supplier relationships, medium time frame contracts.^{163 164} The Bottleneck Suppliers has more power in the relationship that gives the operational buyer a role of keeping a low profile.¹⁶² The purchasers focus on avoidance breakdown of the continuous relationship.¹⁵⁹

Contracts for *Routine Suppliers* are in general the actual purchase order and have a short time frame, i.e. length of a model.¹⁶⁰ The juridical

¹⁵⁷ Lambert et al. 1996, p. 10-13

¹⁵⁸ Lambert et al. 1996, p. 10-13

¹⁵⁹ Moeller et al. 2006, p. 79-80

¹⁶⁰ Tang 1999, p. 46

¹⁶¹ Lambert et al. 1996, p. 10-13

¹⁶² Kraljic, 1986, p. 5-6

¹⁶³ Tang 1999, p. 46

¹⁶⁴ Lambert et al. 1996, p. 10-13

exchange is naturally very limited, as the buyer should minimize time and effort to this type of relationship.¹⁶⁵

¹⁶⁵ *van Weele, 2005, p. 149*

3.5.5 Sum up of the activities in the Supplier Relationship Portfolio

Table 3; Activities in the Supplier Relationship Portfolio

		Type of supplier relationship			
		Strategic Supplier	Leverage Supplier	Bottleneck Supplier	Routine Supplier
Operational exchanges in SRM	Physical exchange	<ul style="list-style-type: none"> * Develop performance measurements jointly and share measurement results. [A] * Supply risk analysis [B] * Very frequent delivery schedule [C] * Involve suppliers in packaging design in an early stage. [D] * High technical involvement [E] * Joint design effort and there may be some joint R&D planning [A] * Supplier development programs offered by buyer [C] 	<ul style="list-style-type: none"> * Central coordinated purchasing * Search for alternative products/suppliers * Reallocate purchasing volumes over suppliers [B] * Frequent delivery schedule [C] * Keep low stocks. [F] * High technical involvement [E], [H] * Optimize order quantities. [B] 	<ul style="list-style-type: none"> * Supply risk analysis * Determine ranking in supplier's client list * Search for alternative products/suppliers * Develop preventative measures * Preparing alternative modes of transportation [B] * Consigned stock agreements * Agree with supplier SS in introduction phase. [D] * Frequent delivery schedule [C] * Low technical involvement [E] 	<ul style="list-style-type: none"> * Delegate order handling to internal user. [B] * Infrequent delivery schedule. [C] * Low technical involvement [E]
	Information exchange	<ul style="list-style-type: none"> * Systematised method of communication and linked systems * Joint development of customized EDI. * Effective joint planning on both periodic and continual basis * Communication links should be across all levels of the organisation [A] * Continuous information exchange (Both buyer and supplier exchange information) [C] * Accurate forecast of future requirements [B] * Rich communication 	<ul style="list-style-type: none"> * Frequent information exchange (Supplier provides information regarding cost, processes, quality to the buyer) [C], [G] * Rich communication media * Medium amount of info. [G] 	<ul style="list-style-type: none"> * Accurate forecast of future requirements. [B] * Frequent information exchange (Buyer provides information regarding design, sales, cost inventory to the supplier). [C] * Lean communication media * Medium amount of info. [G] 	<ul style="list-style-type: none"> * Sporadic information exchange (purchase orders) [C] * Design effective internal order delivery and invoicing procedures. [B] * Lean communication media * Low amount of info. [G]
	Financial exchange	<ul style="list-style-type: none"> * Sharing of financial resources * Exchange of key personnel [A] 	<ul style="list-style-type: none"> * May jointly own low value assets [A] 	<ul style="list-style-type: none"> * May jointly own low value assets [A] 	<ul style="list-style-type: none"> * Generally no investment [A]
	Juridical exchange	<ul style="list-style-type: none"> * Type of contract: Agreements, Long term [C] * Encourage to suggest changes or even make changes without approval. * Share of both benefits and risks. * Partner is given more trust than other * Commitment to a long term relationship * Willingness to share both good and bad news [A] 	<ul style="list-style-type: none"> * Type of contract: Contract, Medium term [C] * Buyer dominate supplier [F] 	<ul style="list-style-type: none"> * Type of contract: Contract, Medium term [C] * Buyer keep low profile [F] * Avoid breakdown of relationship [I] 	<ul style="list-style-type: none"> * Type of contract: Purchase Orders, Short term [C] * Limited juridical exchange [B]

Table source:

- A. Lambert et al. 1996, p. 10-13
- B. van Weele, 2005, p. 149-152, 177
- C. Tang 1999, p. 46
- D. Dowlatshahi, 1998, p. 143-167

- E. Gadde, Snehota 2000, p.305-316
- F. Kraljic, 1986, p. 5-6
- G. Wynstra, ten Pierick 2000, p. 49-57
- H. Krause et al. 200, p. 21
- I. Moeller et al. 2006, p. 79

4 Case study description and findings

This chapter will present the empirical material, which this study has collected and on which the analysis and recommendations will be based.

4.1.1 The supply chain organisation of EMAE

The aim of the supply chain organisation is to have an internal uninterrupted end-to-end supply chain starting from the market needs and ends at the reception of raw material and components. The department are organised as illustrated in Figure 20 below.

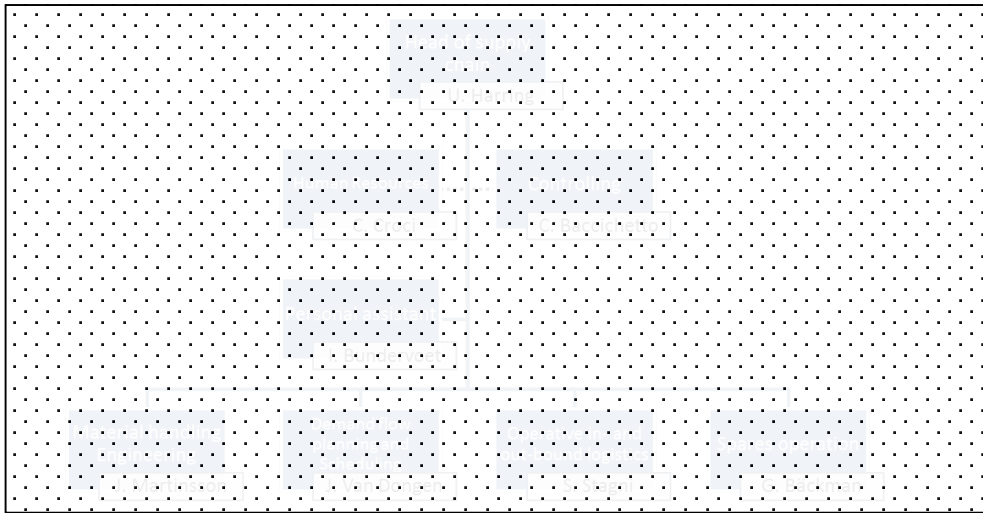


Figure 20: Organisation of supply chain department in EMAE

On operational, factory level the supply chain is organised with a supply chain manager in top. He is reporting both to plant manager and the supply chain director. At the factory a standardised organisation is in place with call off planers that closely work together with local purchasing.

4.1.2 The purchasing organisation of EMAE

The purchasing organisation is divided in three sections with a global, central European and local organisation. The local purchasing organisation is handling the local suppliers and the daily issues. The central European organisation is handling all purchases that is used by more than one factory and when spend exceed 50'000 Euro. The global

organisation is sourcing commodities used in all of The Company production.

The purchasing organisation is, compared to the supply chain, a more centralised organisation with a big part of centrally purchased components.

4.2 The supply chain of The Company¹⁶⁶

The Company is a global company and so is their supply chain. With only a minority of the final product produced in-house, The Company have a big supplier base.¹⁶⁶ Today EMEA have around XXX supplier.¹⁶⁷ For some of these The Company support in negotiation with second tier suppliers in order to utilise the economy of scale.¹⁶⁸

The focal point of the supply chain is The Company 17 factories, producing for their specialised sector; food preservation, food preparation, fabric care and dish care. These factories produce for the European and Middle East market. In addition to this, The Company have OME production, which are suppliers that produce complete products for The Company.¹⁶¹

On the outbound side a majority of the production is made to stock with warehouse located in connection to the production plant. This is the decoupling point in the chain and from this point orders are put in relation to demand. After the warehouse the products are distributed to regional warehouses. These need to have a high service level and handle the demand of a lead time of 24-48 hours for refill from retailers that finally fulfil the demand from end customer.

On the inbound side the suppliers can be divided in the geographical sectors; local (<2 hours away), regional (European) and Global (typically China). These deliver directly to the factories with different intervals. Normal delivery conditions are DDU and EXW. DDU is normally used for local and global while regional is picked up by third part logistics ordered by The Company. See Figure 21

¹⁶⁶ *The Company group processes – demand flow, version 1.1 2004-01-13*

¹⁶⁷ *PMS-database, internal supplier database*

¹⁶⁸ *Trippon (2010-12-15)*

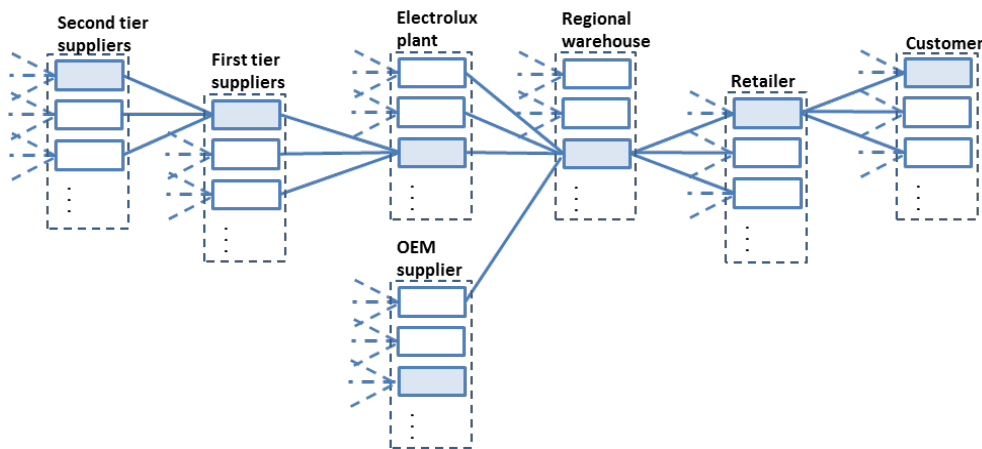


Figure 21: Illustration of EMEA supply chain

The supply chain has three major challenges to meet. It is:

1. *Phase in and out.* To meet the needs from the market a continuous development of the product range is needed. Therefore products, components and material need to be phased in and out. This interferes with the continuous flow in the supply chain.
2. *Seasonality:* There is seasonality in the major appliance market, which demands dynamism in the supply chain.
3. *Promotions:* The end market of major appliances is today heavily influenced by promotions, which are challenging to meet.

4.2.1 Supply chain strategies and practices of The Company

The Company is a customer driven company, which influences all parts of the company. The target for the supply chain is to meet the consumer and customer need while minimizing both the capital tied up in operations and the cost required to fulfil consumer need.¹⁶⁹

To have a high service level and at the same time have a low cost of operations and tied up capital is a challenge associated with trade offs. The Company aims for a high service level, 95% to end customer, which is continuously followed up through KPIs.

¹⁶⁹ *The Company group processes – demand flow, version 1.1 2004-01-13*

At the same time a lot of work is done to reduce the tied up capital in stock. Inventory is seen as non-desirable but necessary to achieve this target. This is done in mainly three ways.

1. *The supply chain process project, SCPP*: This project modified the production planning which increased the flexibility in the chain and reduced the need to stock final products. The frozen production period is now 7 days.
2. *Continuous follow up*. An increased focus on following up stock levels in order to get better control of the levels.
3. *Consignment and bounded warehouse*. An active work is done to have consignment warehouses. Consignment is not related to refilling buffers but rather it indicates the legal ownership and would eliminate the accumulation of money.

The supply chain department continuously aims to understand the market in a better way in order to forecast better. Today forecasting is based on information from retailers, customers and other market signals. Today the accuracy for next month needs is about 60-70%. With a higher accuracy of the forecast better information can be shared with suppliers.

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The Company aims to have an exchange of information to its suppliers. It is defined that The Company shall share a long forecast of 52 weeks on weekly accuracy and a short time forecast of 10 weeks on daily accuracy. It is also stated that this should be done in an effective manner why EDI and web-EDI is implemented.

The supply chain strategy is connecting too many other departments' strategies. The tightest connection is to the purchasing strategy.

4.2.2 Purchasing strategies and practices at The Company

The purchasing department strive to have good mix of suppliers to support the manufacturing and continuous strive for cost reduction. Three major strategies can be identified to achieve this.¹⁷⁰

1. *Sourcing from low cost countries*. Purchasing is actively working to source from low cost countries as Eastern Europe and Asia.

¹⁷⁰ *Internal purchasing portal (2011-02-02)*

2. *Consolidate volumes.* The Company strive to single source when strategically possible. In order to make use of the economy of scale purchasing is centralising It's operations All supplies over 50' Euros is sourced centrally. Only minor supplies, unique for the individual factory is negotiated from the factory level.
3. *Reduce number of suppliers.* Today EMEA has a supplier base of 1050 suppliers. To consolidate volumes and reduce overhead costs this will be reduced to 700 suppliers in the middle of year 2011.

The newly introduced Global Purchasing Process is an end-to-end process directing how to perform purchasing tasks in The Company. The process is in the roll out phase and not fully implemented.¹⁷¹

4.3 Operational supplier relationship at The Company

The empirical study of the operational supplier relationship has been done at four units of analysis, the factories in Susegana, SatuMare, Nyíregyháza and Olawa. In addition, data has been collected from six of The Company suppliers and the findings will be included in this chapter. The empirical findings of the operational processes will be presented under each of the three different exchanges presented in 3.3 Operational exchanges in SRM:

- Physical exchange
- Information exchange
- Juridical exchange

The *financial exchange* has been excluded from the empirical part of this study because the operational financial exchange is not a part of the operational supplier relationship handled by the supply chain department at The Company.¹⁷²

4.3.1 Physical exchange

The physical exchange involves all factors connected to the flow of material. In this case study at The Company this includes; stock and safety stock, package and label, batch size, logistic performance and the phase in and phase out process of products.

¹⁷¹ *Internal purchasing portal (2011-02-02)*

¹⁷² *Martinsson, 2010-10-18*

In general, the definition and calculation of the safety stock differ between the factories. The operational personnel have limited training of how to calculate the safety stock and there is no support tool to help them. This results in that the safety stock commonly is estimated by the call off personnel's individual judgment. The estimations are based on different factors depending on different experiences and working procedures at the factory. In all units of analysis, Call Off Planners differentiate their suppliers on distance and plan a higher safety stock for the suppliers located far from the factories. This is often complemented by the historic delivery performance of the suppliers. In some cases the Call Off Planners priority their estimate by the performance but more commonly the Planners primary base their estimate on distance, without evaluating historic performance.¹⁷³

The theory framework argues for a segmentation of the supplier base and to handle the supplier differently depending on which segment the supplier belong to. As most of the Call Off Planners differentiate their suppliers on distance and in some cases other factors, the authors argues that a type of segmentation is used but without any communicated structured framework. The segmentation is instead developed by the Call Off Planner himself or in some cases as a locally expressed guideline.

In general, there is no defined process to decide on packaging or labels for the purchased goods in the studied cases. The discussion involves different functions and people in all studied units of analysis. In two of the factories the responsibilities are unclear resulting in that the suppliers often decides on packaging and labels themselves. The theoretical framework argues that the power of balance should define whether it's the supplier or the buyer who drives the process for setting the packaging and label standards.

If problems occur with a supplier a similar escalation process is applied in all four unit of analysis. The Call Off personnel try to solve the issue with the supplier first and then the Local Purchaser assists if the problem is not solved. If there are still problems the Supply Chain Manager gets involved and at last the Commodity Manager who has the overall responsibility and more negotiation power.¹⁷⁴

¹⁷³ De Mori, 2010-11-18, Kiss, 2010-12-14, Tibor, 2010-12-16, Paluch, 2011-01-11

¹⁷⁴ De Mori, 2010-11-18, Kiss, 2010-12-14, Tibor, 2010-12-16, Paluch, 2011-01-11

4.3.1.1 Unit of analysis 1; Susegana

In the *Susegana* factory the call off personnel and local purchasers has a meeting every second week when they discuss the stock and how to reduce it. The safety stocks in this factory are estimated by the personnel's judgment and are depending on the distance to the supplier and if the component is a high or low runner.¹⁷⁵

The inbound goods are checked at the factory and deviations of quantities and lead-time are stored in a system. If the call off planner finds out that repeated deviations have occurred, a report from the system with the history of deviations is sent to the supplier.¹⁷⁶ This is normally not performed by routine.¹⁷⁷

Besides logistic performance, quality is controlled on the inbound goods and reported directly to the supplier if any deviations from the contracts and specifications occur. If serious problems are discovered it's reported to the local purchasing and then escalated according to the escalation process if needed.¹⁷⁶

When a new supplier is introduced in Susegana a meeting is organized involving the Quality department, Research & Development department, the Production Manager and the Local Buyer to discuss and determine the packaging design for the inbound goods.¹⁷⁸

The Local Purchaser is deciding the batch size to be ordered. If possible, Local Purchasers utilize multiples of 20 as aligned with the production batch size. Further, it's the Call Off Planners responsibility to push the supplier to deliver the determined quantities.¹⁷⁹

4.3.1.2 Unit of analysis 2; SatuMare

In the factory in *SatuMare* the safety stock is based on consumption and distance and is estimated by the Local Purchasers and Call Off. For better control in the future, the Supply Chain Manager and the Local Purchasing Manager discuss an implementation of fixed minimum and maximum stock for each component. For local suppliers, it's agreed that the supplier

¹⁷⁵ *De Mori, 2010-11-18*

¹⁷⁶ *Gasparini, 2010-11-17*

¹⁷⁷ *Testa, 2010-11-17*

¹⁷⁸ *Gasparini, 2010-11-17*

¹⁷⁹ *De Mori, 2010-11-18*

will keep one day safety stock and for that reason the factory don't have to have any safety stock.¹⁸⁰ But the suppliers do not always respect this.¹⁸¹

The Purchasing department negotiates the logistical issues in SatuMare when a new supplier is introduced.¹⁸⁰ The packaging alignment responsibility is unclear which has led to that the suppliers to big extent determine the design and labelling of the packaging. However, the minimum order quantity is aligned with 50 -60% of the components minimum batch size in production and notified in the COPIX system.¹⁸²

4.3.1.3 Unit of analysis 3; *Nyíregyháza*

The safety stocks in *Nyíregyháza* are estimated by the Call Off Planners experience with the material resource planning system, COPIX, used as a support. In addition, the COPIX system use automated orders for small cheap materials and some chemicals.¹⁸³ According to the theoretical framework, the use of an automatic system to minimise working time is a good example of handling a routine supplier.

The *Nyíregyháza* factory has individual Call Off Planner goals clearly expressed by key performance indicators. One key performance indicator is the value of the stock and the inbound stock and is measured for all components in the end of the month. To minimize this KPI, Call Off Planners order by Ex-works but wait to order the transport to another day if the total stock is enough. With this planning, the supplier can't send the invoice if the order isn't transported and if it's in the end of the month this will give The Company another 30 days to pay. ¹⁸⁴

Nyíregyháza has an internal process for handling phase in and out with meetings every second week including Supply Chain, Purchasing, Engineering, R&D and Production. New phase in and out's are discussed, decisions are made and responsibilities handed out. ¹⁸⁵ As the purchasing department in Jaszbereny negotiate prices and quantities for *Nyíregyháza* the logistical issues and product alignments are often handed over to the Call Off Planner to discuss with the supplier.¹⁸⁶

¹⁸⁰ *Tripon, 2010-12-15*

¹⁸¹ *Kiss, 2010-12-14*

¹⁸² *Marton, 2010-12-15*

¹⁸³ *Hornýák, 2010-12-16*

¹⁸⁴ *Tibor, 2010-12-16*

¹⁸⁵ *Tibor, 2010-12-16*

¹⁸⁶ *Hornýák, 2010-12-16*

4.3.1.4 Unit of analysis 4; *Olawa*

The safety stock in *Olawa* is estimated by experience and expectation. Stock level is the KPI used for individual Call Off Planner performance. The stock level is followed up every week but has problems with accuracy based on problems with the delivery accuracy. The quantities ordered compared to the quantities delivered varies because of an agreement with suppliers that allows suppliers to fill up trucks with ordered components for the next day if there is space left.¹⁸⁷

In *Olawa*, the Call Off Planners based their safety stock on the value of the ordered components to minimize the stock value. The theoretical framework defines the components value as an important factor to segment the suppliers and handle them accordingly. However, this was the single unit of analysis in this study where the suppliers were evaluated by the value of their delivered components.

The suppliers suggest design and labelling of the packaging and The Company approve. The quality department, Call Off Planners and Purchasing are involved in product alignment with suppliers, but the responsibility is unclear.^{188, 189}

Local purchasing has initiated an excel file which is aligned with the quality follow-up and based on feeling. Included criteria's are flexibility, delivery accuracy measured in time and delivery accuracy measured in quantity. It's not yet implemented.¹⁹⁰

To coordinate phase in and out processes in *Olawa* a full time position has been placed at the local Supply Chain department. The coordinator has contact with Call Off Planners, Local Purchasers, R&D department and sometimes the suppliers. The phase in and out lead times vary between one week and four months depending on the component.¹⁹¹

¹⁸⁷ *Paluch, 2011-01-11*

¹⁸⁸ *Paluch, 2011-01-11*

¹⁸⁹ *Bakszysz, 2011-01-14*

¹⁹⁰ *Staszewski, 2011-01-14*

¹⁹¹ *Urbaniak, 2011-01-14*

4.3.1.5 Sum up; Physical Exchanges

Table 4; Physical exchanges at the units of analysis

	Susegana	SatuMare	Nyiregyhasa	Olawa
Stock & Safety stock	* Estimated by Call Off Planners experience. [C, D] * Estimation is based on distance [B] and high and low runners. [C]	* Estimated by Call Off Planners experience. [H] * Estimation based primary on experience from pervious performance and secondary on demand and distance. [H]	* Estimated by Call Off Planners experience. [N,O] * COPIX is used as support to elaborate as low safety stock in the end of the month as possible. * COPIX automated orders are used only for small cheap materials and some chemicals. [N,O]	* Estimated by Call Off Planners experience. * Estimation is based on component value, distance and supplier flexibility.[S, T]
Supplier performance (KPI)	* Supplier performance: - Delivery accuracy: Quantity - Delivery accuracy: Time [C, D] But no routines for follow up. [A] Only used in case of problems. [B]	* Supplier performance not measured. [G] * Ellis measured number of express transports and truck utilisation. [I, L]	* Supplier performance not measured. [N,O]	* Supplier performance not measured. [Q,S,T] * Local purchasing has initiated a follow-up and based on feeling. Not jet implemented[R]
Individual performance (KPI)	* Individual Call Off performance: - Stock level [C, D]	* Total stock level measured, but not individual Call Off performance. [H]	* Individual Call Off performance: - Stock level Follow up every week. [N,O]	* Individual Call Off performance: - Stock level Follow up every week. [Q,S,T]
Package & label	* Discussion involves Quality, R&D, Production Manager, Local Buyer and Supplier. [C]	* Material Handling Engineer responsible. [H,I] But responsibility unclear. [M,*] * Suppliers often decide packaging. [M]	* Discussion involves Quality, R&D, Supply Chain, Purchasing and supplier. [N,O]	* Discussion involves Quality, Supply Chain, Purchasing and supplier. [S] Responsibility unclear. [*] * Suppliers often decide packaging. [X,Y]
Multiple order quantity	* Aligned with production batch size if possible. [A,B] * Defined by Local Purchaser. [C] * Not aligned with production batch size [C, D]	* Approx. 60-50 % of components are aligned with production batch size. [J,K]	* Not aligned with the production batch size. [O]	* Not aligned with the production batch size. [S,X,Y,Z]
Phase in/out	* Meetings with R&D [C] * Own developed Excel files to coordinate. [C]	* Internal meetings and with supplier. [H] * Locally developed excel sheets as a support to coordinate phase in/out.[I,J,K]	* Internal meetings and with supplier. [N,O] * Locally developed excel sheets as a support to coordinate phase in/out. [N,O]	* Local full time phase in/out (MID) coordinator. [V] * COPIX show list of new components. [S,V]

* Observation

A. Alessandro Testa, Supply Chain Manager
B. Marco Gasparini, Local Purchaser
C. Damiano De Mori, Call Off Planner
D. Alberto Carminati, Call Off Planner

G. Adriana Salagean, Supply Chain Manager
H. Rita Tripon, Purchasing Manager
I. Melinda Kiss, Local Purchaser/Call off
J. Szilagyí Marta, Call Off Planner
K. Csorvasi Istvan, Call Off Planner
L. Andrei Razvan, Ellis coordinator
M. Aniko Marton, Warehouse Manager

N. Tibor Barabás, Call Off Planner
O. Attila Hornyák, Call off Planner
P. Steve Plamer, Material Handling Consultant

Q. Miroslaw Rokicki Supply Chain Manager
R. Piotr Staszewski Purchasing Manager
S. Call Off 1 Lukazs Paluch
T. Call Off 2 Monika Inerowicz
V. MID coordinator Kamila
X. Supplier: Polmer
Y. Supplier: EPP
Z. Supplier: Hirsch

4.3.2 Information exchange

In this case study, information exchange has been analysed in the following areas; communication media, order, forecast and meetings.

In general, the informational exchange processes varies between the units of analysis, while the tools are similar. The communication medias are available and the same at all sites but are used differently. For example, the EDI system is used at all sites but is often complemented by locally developed processes, like sending complemented e-mails to be sure suppliers received the message.

The same order and forecast system is available at all units of analysis but there are often not guidelines of how frequently or in which format they should be sent to suppliers.

In all unit of analysis, purchasers have locally developed supplier segmentations where they segment their supplier depending on the distance. Closely located supplier get orders and forecasts with short time horizons, while long distance suppliers get orders and forecasts with long horizons.

In general, purchases contact the suppliers when issues occur. Suppliers are normally contacted with a phone call or if the issues are bigger and the supplier located close by they might have a phase-to-phase meeting. Other than that meetings and phone calls are rare.

4.3.2.1 Unit of analysis 1; Susegana

In *Susegana* EDI or webEDI is implemented with 90 % of the suppliers.¹⁹² This is because the factory where acquisitioned from Zanussi which had already implemented EDI with their suppliers. Chinese suppliers are an exception and are only communicated by e-mail. No fax machines are used.¹⁹³

The 52 week forecast is sent out to all suppliers. The forecast is converted daily to a 7 day order to all local suppliers in Italy. For other regional suppliers in Europe the forecast is transferred daily to a 10 day order. The Chinese suppliers only get the order and with the horizon of the lead time. This is because the Chinese suppliers can't handle the difference between the short term forecast and the order.¹⁹⁴

A forecast is made locally when a component is being phased in or phased out. The process is initiated by the Research and Development department or the Purchasing department and is then communicated to

¹⁹² *The Company internal EDI statistics, updated 2011-01*

¹⁹³ *Gasparini, 2010-11-17*

¹⁹⁴ *Gasparini, 2010-11-17*

the call off personnel who coordinate and create a forecast for the component that is being either phased in or phased out. The call off personnel spends many hours to communicate with the supplier and create a proper forecast. A phase in/out forecast is normally sent to the supplier 3 to 4 weeks in advance but is normally adjusted continually after that.¹⁹⁵

The call off personnel and local purchasers in Susegana has no documented guidelines on how to communicate or operate with the suppliers.¹⁹⁶ ¹⁹⁷ In general there are no physical meetings between local purchasers or call off personnel and their suppliers as long as no problems occur or if a new supplier is being introduced¹⁹⁸.

The Local Purchasing department are operating by the Supply Chain Manager, Alessandro Testa's expression; "No news is good news" in meaning if the supplier or any other personnel don't communicate, there are no problems and the supplier will deliver¹⁹⁹.

The call off personnel and local purchasers knows some of their suppliers personally. Naturally, it is often the suppliers with the most problems that get most of the attention. The level of interaction with the suppliers, except when problems occur, depends mainly on the supplier's motivation.²⁰⁰

4.3.2.2 Unit of analysis 2; SatuMare

In *SatuMare* the orders are generated by COPIX, complemented by own developed excel files for better optimized transport utilization, and sent via EDI, e-mail, fax or given to the truck driver when he deliver. When sending an order via EDI, an e-mail message is always sent as a compliment because the personnel and the suppliers had problems with the EDI-system before and do not rely on that the orders are accurate and delivered if using only the EDI system.²⁰¹ EDI is implemented with 60% of the suppliers of the StauMare factory.²⁰²

¹⁹⁵ *De Mori, 2010-11-18*

¹⁹⁶ *De Mori, 2010-11-18*

¹⁹⁷ *Gasparini, 2010-11-17*

¹⁹⁸ *Gasparini, 2010-11-17*

¹⁹⁹ *Testa, 2010-11-17*

²⁰⁰ *De Mori, 2010-11-18*

²⁰¹ *Kiss, 2010-12-14*

²⁰² *The Company internal EDI statistics, updated 2011-01*

The 52 week forecast are delivered to all suppliers every month or before a high season. The short term forecast is delivered according to the Call Off personnel's experience and often based on the suppliers' needs and distance. The horizon of the forecast is generally longer for long distance suppliers and shorter for local suppliers. There are no documented guidelines on how the forecast should be submitted.²⁰¹

Expectations and evaluations of individual Call Off personnel and Local Purchaser performance are communicated in an informal way, without KPI's or other documentations. Similarly, the suppliers' logistics performance is evaluated by informal expectations and evaluations.

On the other hand, the quality department performs documented quality audits and each supplier are evaluated and classified as an A, B or C supplier depending on the quality.

In SatuMare, the Purchasing Manager invites local suppliers to the factory every year. Other suppliers are invited primarily when there is an issue to discuss. The Purchasing Manager, Rita Tripon, describes that they have a great exchange of trust and close commitment with local suppliers because of frequent communication. In addition, they speak the same language and have the same culture.²⁰³

4.3.2.3 Unit of analysis 3; Nyíregyháza

In *Nyíregyháza* EDI or webEDI communication is implemented with 68% of the suppliers.²⁰⁴ Because of lack in trust of the EDI system that sent orders will be delivered and that they would be accurate, Call Off Planners are sending an e-mail as a complement to every EDI order. To other suppliers orders and forecasts are sent by e-mail or fax.²⁰⁵

The short-term forecast of a 10 week horizon is sent to the suppliers every week. However, the forecast for compressors suppliers is restricted by the Call Off Planner to a horizon of 2 weeks in addition to the order to prevent the supplier to purchase too many subcomponents for compressors.²⁰⁵ For metal suppliers the responsible Call Off Planner facilitate negotiation for the purchasing department by restricting the forecast to 4 weeks horizon in addition to the order.²⁰⁶

²⁰³ Tripon, 2010-12-15

²⁰⁴ *The Company internal EDI statistics, updated 2011-01*

²⁰⁵ Hornyák, 2010-12-16

²⁰⁶ Tibor, 2010-12-16

In *Nyíregyháza* the social exchange is much dependent on personal relationship. Often telephone meetings when problems occur or when discussing new phase in or outs. Physical meetings are rare but occur if there are problems with the supplier.^{207 208}

4.3.2.4 Unit of analysis 4; Olawa

In *Olawa* 71 % of the suppliers are connected with the EDI or webEDI system.²⁰⁹ The forecasts are generated daily by the COPIX system and sent directly by EDI to the connected suppliers or as an excel-file to the other suppliers. An extra copy is also sent by e-mail as a complement to EDI. The forecast accuracy is good on a 2-3 week basis, but gets worse, which creates problems for longer lead times.²¹⁰

In *Olawa* organize physical meetings with their suppliers when problems occur, phase in or out and new suppliers are introduced.²¹¹

²⁰⁷ *Hornyák, 2010-12-16*

²⁰⁸ *Tibor, 2010-12-16*

²⁰⁹ *The Company internal EDI statistics, updated 2011-01*

²¹⁰ *Paluch, 2011-01-11*

²¹¹ *Staszewski, 2011-01-14*

4.3.2.5 Sum up; Information exchange

Table 5; Information exchanges at the units of analysis

	Susegana	SatuMare	Nyiregyhasa	Olawa
Communication media	EDI Implementation: 90% * EDI & webEDI * E-mail * Telephone (when problems occur) [C, D]	EDI Implementation: 60% * EDI (always complemented by e-mail.) * E-mail * Telephone (infrequently when problems occur) * Fax * Give order to truck driver [I, J, K]	EDI Implementation: 68% * EDI (always complemented by e-mail because suppliers don't want just EDI) * E-mail * Telephone (every week) * Fax [N, O]	EDI Implementation: 71% * EDI (sometimes complemented by e-mail to be sure that supplier will read EDI) * E-mail * Telephone (when problems occur) [R, S, T]
Order	* Local suppliers: receive orders weekly with horizon of 2 weeks. * Changes are made for some local suppliers until 1 day before production. [C] * Regional: 2 weeks horizon, sent weekly [C] * Global suppliers only receive firm orders with horizon of transport time + production time. [C]	* Local suppliers receive orders daily for the next day. [H] * Regional suppliers receive orders two times a week with horizon of the lead-time. [H] * Global supplier receive orders monthly with a horizon of approximately 12 weeks. [H]	* Local suppliers: receive orders weekly with horizon of 2 weeks. * Regional suppliers: 4 weeks horizon, sent weekly * Global suppliers: 10-12 weeks horizon, sent weekly [N, O]	* Local suppliers: receive orders weekly with horizon of 2 weeks. * Changes are made for some local suppliers until 1 day before production (esthetical products). [S, Y] * Regional suppliers: 2 weeks horizon, sent weekly * Global suppliers: 52 week horizon, sent to some suppliers [R, S, T]
Forecast	* No guidelines for forecast format and frequency. Sent infrequently and if demanded by supplier. [A, C] * No forecast to China. [B, C]	* No guidelines for forecast format and frequency. Sent infrequently and if demanded by supplier. [H] * Generally longer distance, longer forecast. [H] * 52 week forecast sent monthly or before high season. [H] * For the suppliers that have not implemented EDI the forecast is sent as an Excel file. [H]	* Restricted 52 week forecast [N, O] * 52 week forecast available but don't send it to all suppliers because Call Off Planners don't want supplier to buy too much stock (Compressors just 2w forecast) [O] and are afraid to share too much information so that it will be harder to negotiate for commodity (metal order + 1m normally). [N] * Discussion with Purchasing on how long horizon of the forecast that would be delivered. [N]	* No guidelines for forecast format and frequency. Sent infrequently and if demanded by supplier. [R, S, T]
Meetings	* Physical meetings when issues occur with supplier. [A, C, D]	* Physical meetings when issues occur with supplier. [H] * More interaction and trust with local suppliers. [H] * Call Off Planners are rarely involved in physical meetings with suppliers. [I, J, K, *]	* Physical meetings when issues occur with supplier. [N]	* Physical meetings when issues occur with supplier. [S]

* Observation
 A. Alessandro Testa, Supply Chain Manager
 B. Marco Gasparini, Local Purchaser
 C. Damiano De Mori, Call Off Planner
 D. Alberto Carminati, Call Off Planner

* Observation
 H. Rita Tripon, Purchasing Manager
 I. Melinda Kiss, Local Purchaser/Call off
 J. Szilagyi Marta, Call Off Planner
 K. Csorvasi Istvan, Call Off Planner

* Observation
 N. Tibor Barabás, Call Off Planner
 O. Attila Hornyák, Call off Planner

* Observation
 Q. Miroslaw Rokicki Supply Chain Manager
 R. Piotr Staszewski Purchasing Manager
 S. Call Off 1 Lukazs Paluch
 T. Call Off 2 Monika Inerowicz
 Y. Supplier: EPP

4.3.3 Juridical exchange

The only juridical exchange handle by The Company Supply Chain department is the Specific Logistic Requirements, SLR, and Global Logistic Requirements, GLR, and is therefore the only juridical exchange studied in this thesis.

The SLR and GLR are logistical contracts developed by The Company, including safety stocks, lead times, forecasts, shipping, packaging, payment of good delivered, control of logistics performance and communication.²¹² The contracts are not implemented in any of the four factories for different reasons described below.

4.3.3.1 Unit of analysis 1; Susegana

In *Susegana* the SLR and GLR is not implemented for the reason that the contracts are too complex and will interfere in the daily operational work. Other contracts are just commercial and not accessible on a local level.²¹³

4.3.3.2 Unit of analysis 2; SatuMare

In *SatuMare* the SLR and GLR contracts aren't recognized.²¹⁴²¹⁵ A Call Off Planner describe that similar information is stored in the system but don't really know where. Similar logistic information is included in the contracts with the local suppliers, which are handled and negotiated by the Purchasing Manager.²¹⁶

4.3.3.3 Unit of analysis 3; Nyíregyháza

In *Nyíregyháza* the SLR and GLR contracts are not implemented because all contracts are handled by commodity and purchasing in the other factory in Hungary, Jaszbereny. The purchasing department in Jaszbereny also negotiate price and quantities with the suppliers and leave the logistics to the Call Off Planners in Nyíregyháza. The Call Off Planners in Nyíregyháza are aware of the information in the contract like lead times, batch sizes, transport time but would like the pallet size and weight to be included.²¹⁷

4.3.3.4 Unit of analysis 4; Olawa

Some efforts have been done in *Olawa* to implement the SLR and GLR. The contracts are very time consuming to fill in and there is no time and resources to implement them. However, Call Off personnel declare that

²¹² *SLR and GLR, Internal The Company documents, 2010-10-28*

²¹³ *Testa, 2010-11-17*

²¹⁴ *Kiss, 2010-12-14*

²¹⁵ *Tripon, 2010-12-15*

²¹⁶ *Kiss, 2010-12-14*

²¹⁷ *Hornyák, 2010-12-16*

the SLR and GLR contracts and access to other contracts may be useful for some suppliers.²¹⁸

4.3.3.5 Sum up; Juridical exchanges

Table 6; Juridical exchanges at the unit of analysis

	Susegana	SatuMare	Nyiregyhasa	Olawa
SLR	<p>* Not implemented, low awareness. [A,B,C,D]</p> <p>* Hard to establish logistical contracts with existing suppliers. [A]</p>	<p>* Not implemented, low awareness. [H, I]</p> <p>* Demands are communicated when problems occur. [H]</p>	<p>* Not implemented, low awareness. [N,O]</p> <p>* Hard to establish logistic requirements after purchasing has negotiate with supplier. [N,O]</p>	<p>* Not implemented, some awareness. [Q, R, S]</p> <p>* Tried to implement but failed due to time consumption.</p> <p>* Initiated but internal resistance from local purchasing because of limited flexibility. [R]</p>
	<p>* Observation A. Alessandro Testa, Supply Chain Manager B. Marco Gasparini, Local Purchaser C. Damiano De Mori, Call Off Planner D. Alberto Carminati, Call Off Planner</p>	<p>* Observation H. Rita Tripon, Purchasing Manager I. Melinda Kiss, Local Purchaser/Call off</p>	<p>* Observation N. Tibor Barabás, Call Off Planner O. Attila Hornyák, Call off Planner</p>	<p>* Observation Q. Miroslaw Rokicki Supply Chain Manager R. Piotr Staszewski, Purchasing Manager S. Call Off 1 Lukazs Paluch</p>

²¹⁸ Paluch, 2011-01-11

5 Results and discussion

In this chapter the authors will present the results and give their recommendations to The Company for improving their operational supplier relationship process. The recommendations are based on gaps between the present process and the presented operational supplier relationship process presented.

5.1 Background to the process

The proposed process model for operational SRM is built upon accepted pictures of execution cycles.²¹⁹ The process has taken input from theories of supplier relationship presented in chapter three, the empirical observations done through interviews within and outside The Company.

The process is thought as an operational part of a bigger SRM process with hands on activities at operational level.

For The Company the process will be subordinated the Global Purchasing Process (GPP). This process acts on a strategic level and set the overall direction for the purchasing and supplier base.

The GPP will give a segmentation of the supplier base as an input to the operational SRM process.

5.2 Proposed process model for operational SRM

The process is based on segmentation and contains three phases, illustrated in figure below.

²¹⁹ R. Moen et al. 2006

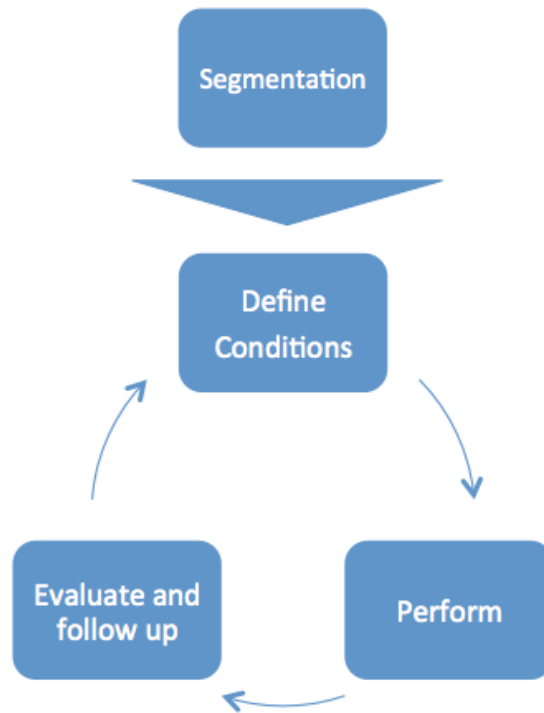


Figure 22: Proposed process model for operational SRM

The process takes input from segmentation to make use of an adapted approach to SRM. The three phases of the process are:

1. Definition phase where conditions for the relationship are defined.
2. Perform phase where the exchanges are executed.
3. Evaluation and follow-up phase is performed to ensure high level of performance and continuous improvement.

5.2.1 Segmentation of supplier base

The segmentation model combines the theoretical framework elaborated in chapter four with observations at The Company presented in the case study.

The segmentation process is divided into four parts.

1. Definition of boundary values.
2. Data collection from a suppliers list operational purchasers.
3. Plotting all suppliers in matrix.
4. Validation of segmented portfolio.

5.2.1.1 Define segments

Based on the theory and the empirical study of The Company, two dimensions are defined to segment The Company's suppliers: *Annual total spent* and *complexity of supply market* of the suppliers' products. *Complexity of supply market* are defined by three dimensions:

1. Product characteristics
2. The supply market
3. The supply risk.

The sum of the rated factors determines the supplier's complexity of supply market.

Table 7: Criteria's to defining supply risk

Group	Criteria	1	2	3
Product Characteristics	Product complexity	Non-complex product	Normal product	Complex product
Supply Market	Number of potential Suppliers	>3 potential suppliers	2 potential suppliers	1 potential suppliers
	Balance of power	Buyer Power	Balance	Supplier power
Supply Risk	Distance	Local	Regional	Global

Limits for the two dimensions are then defined to separate the suppliers into four segments. The *complexity of supply market* is divided into low and high risk dependent on the sum of the value of the complexity of supply market factors. If the total sum is more than 50% of the maximum risk the complexity of supply market is high and if the sum is 50% or below it's a low complexity of supply market of the supplier.

For the dimension *Annual total spent* suppliers with the highest total spend that accumulate to 80% of The Company annual total spent are placed in the higher part.

5.2.1.2 Collect data

The data for the Supplier Relationship Portfolio are collected from a supplier database and surveys from the factories.

The supplier database consists of information of all the suppliers including annual total spent on product level. The annual total spent and the product characteristics can therefore easily be collected from the supplier database.

The factors of the complexity of supply market dimension have to be manually evaluated by Local Purchasers and Call Off Planners at the factories. The personnel rate their suppliers from 1 to 3 for each factor illustrated in Table 7. The data is then aggregated in a database.

5.2.1.3 Create the Supplier Relationship Portfolio

The suppliers are plotted in the Supplier Relationship Portfolio depending on the values of the two dimensions to give an overview of all the suppliers and what relationship segments they are a part of.

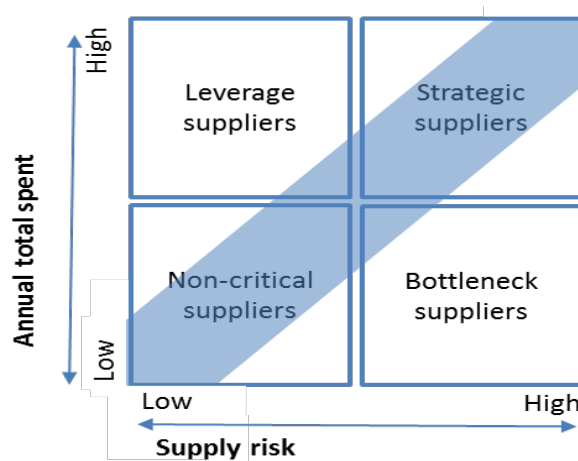


Figure 23; The Supplier Relationship Portfolio

5.2.1.4 Validate the Supplier Relationship Portfolio

Validation is performed to ensure a sound distribution of the suppliers between the segments. Validation is done by questioning the distribution from three perspectives:

1. The percentage of the number of suppliers in each segment
2. The percentage of the number of products in each segment
3. The percentage of the total annual spent in each segment

If all these three overviews is representative for The Company supplier base and matches the industry, the segmentation process is completed.

5.2.2 Three phases of the proposed process model

The three phases of the process can be divided into sub processes to approach the operational activities. In following section these phases will be presented.

5.2.2.1 Define conditions

This process contains three sub processes, Figure 24.



Figure 24: The sub process of defining conditions

The first sub process is to *define logistic set up*. This initial process is important and will effect all following steps. The key activities are to define the physical and information exchanges in the relationship. This will, among others be the physical aspects as lead-time, packaging, labelling, delivery conditions and tools handling.

For *routine suppliers* the conditions are standardised and focused on achieving a flow that need limited interaction. It is about communicating the needs of the purchasing company in a standardised from and ensure that these are understood by the supplier. Parts involved are; basic characteristics for packaging and labelling, lead time, order routines, delivery conditions, minimum order quantities, batch size, delivery conditions, mode of communication and contact persons. *Leverage suppliers* will have the same components but focus on achieving an effective flow with low stock levels, clearly defined packaging and labelling. Therefore the logistic definition will focus on packaging and labelling together with an optimised order quantity that is followed up regularly. For the *bottleneck* suppliers focus is about secure supply and understand the flow. To build in buffers and early warnings is prioritised. The documentation will have the same components but be more detailed and extensive. The documentation will include a map of the supply chain to ensure a common picture of buffers and agreements. This documentation will involve back-up plans with trigger points. The safety stock in the system is also allowed to be higher and are continuously (monthly) followed up and evaluated. For these suppliers consignment stock is preferable. For the *strategic supplier* the same structure as

bottleneck suppliers is used with an additional plan for meetings and follow up.

This phase also include the juridical perspective that clarifies responsibility for each part. This can be ownership of products and tools and actions to take in order of a failure.

The second step is to set a development plan for the supplier. This is only performed for the upper half of the quadrant. This plan set targets in multiple dimensions to be addressed during the coming period.

The last step is to *sign and communicate* to internal and external stakeholder. This also involves making the content implemented in order to capitalise on the performed work by using it as a living document in the operational work.

For all suppliers the information will be available on a web portal connected to the web-EDI. This portal will also be available for internal personnel and used as an information hub. In addition to this a meeting with *strategic* and *bottle neck suppliers* will be held to validate the picture of the flow and conditions agreed.

5.2.2.2 Perform

The execution of operational supplier relationship is based on the conditions defined in the previous phase. The *perform* phase is subdivided into five parallel sub processes, Figure 25.



Figure 25: The sub process of execute the exchanges

The *forecast* and *call off* are sent in accordance to defined conditions in the definition phase. For *leverage and non-critical suppliers* long-term

forecasts are sent monthly from factories. Short time forecasts to *leverage suppliers* are sent daily and for non-critical suppliers weekly.

For *Bottleneck and strategic suppliers* the quality of forecast are critical. To increase quality of long and mid forecasts are aggregated centrally before sent to supplier which is performed weekly. Short time forecasts (first four weeks) are sent to the suppliers in these segments from the individual factory. A revers flow of information is desirable. This includes stock level and forecasted delivery capacity. The information is valuable in both relationships.

All forecast are primarily communicated through EDI or web EDI and secondly through e-mail.

The *call off* is a central activity in the operational exchange. For the *routine suppliers*, the biggest parts of the suppliers, atomised orders preferred that only requires the call off personnel to confirm the demand from MRP-system. A slightly higher safety stock is accepted to reduce the time spent on call off. For local suppliers orders are made when the production plan is fixed, for The Company 7 days before the start of production. The delivery shall be the day before the scheduled need. For regional suppliers the orders shall also be put when the production is fixed if the lead-time of the supplier accepts it. Other case the lead-time will be the governing variable. Global supplier will rarely be in this segment. For *leverage suppliers*, that represent the big value of products, it is vital to keep low stock levels and delivery just in time. Orders are made automatically by the system and than checked by call off personnel to ensure low stocks and efficient flows. Trigger values in system are regularly evaluated and updated to ensure high performance. These call offs and deliveries are frequent/daily. For regional suppliers orders are made once a week and deliver in accordance. For global suppliers orders are made to match the lead-time. Preferably bounded warehouse is used to reduce lead times.

Orders to *bottleneck suppliers* are sent in the format and time agreed in negotiation. The deliveries are a time before use in correspondence with the higher safety stock. This can be the format of the supplier. Orders with long lead-time shall be followed up and shipment papers sent from supplier when material has been loaded.

For *strategic suppliers* orders are sent according to the suppliers lead-time. The shipment is followed and shipment notes transferred from

supplier. For regional and global suppliers consignment stock is desirable to create a tighter supply chain.

Call off is communicated through EDI or web-EDI for all suppliers. For *non-critical suppliers* mail is accepted when the exchange is limited and an implementation of EDI or web-EDI is not cost efficient. For *leverage suppliers* is EDI and web-EDI a priority to create a efficient exchange. This is also the case for *strategic suppliers*. *Bottleneck suppliers* have a strong negotiation position why an adopted mode for communicating the orders has to be used.

Problem solving is an undesirable but existing activity. The power balance in respective segment will affect the way problems are handled. For *routine suppliers* the power balance is even. The products are not vital why escalation shall be restrictive and the defined condition shall be used to limit time consumed. For *leverage suppliers* the agreed conditions shall be used as support. For these suppliers a central purchaser is normally responsible and can be contacted. For *bottleneck suppliers* problems need to be handled effectively in order to obtain supply. Early warnings system is built in to avoid escalation of problem and backup plans in place to support in upcoming situations. For *strategic suppliers* the power balance is even and the problems shall be solved with an intention of win-win. Problems might need involvement of more and persons on higher level. Regular meetings are to be held and problems are one point on the agenda.

The *phase in and out* process is a complex process involving many stakeholders. Operational supply chains activities is typically coordinating the physical flow of products, eliminating obsolete material and secure availability of introduced material. A coordinated information flow is vital as the level of involvement of supplier is determined. A structured process is needed to achieve good result. The level of involvement of suppliers will differ between the segments. For *routine suppliers* a limited involvement will be needed due to the characteristics of products in this segment.

For *leverage suppliers* bigger money is involved and more frequent deliveries. This is a important segment to avoid exceeded stock. Close communication and monitoring of total stock in the supply chain is needed.

For *bottleneck* and *strategic suppliers* the phase in and out is more adjusted to the suppliers ability to deliver. Therefore the involvement is

earlier and the follow up tighter. For these segments of suppliers liability contracts are useful to allow the supplier to source raw material and components with long lead-time. For bottleneck suppliers a higher level of obsolete stock can be accepted because the cost of this is limited compared to the consequences it can result in.

The *operational development* process will be the continuous work to achieve the goals put up in the definition phase.

5.2.2.3 Evaluate and follow up

The final phase of the process is to *evaluate and follow up* both in order to ensure performance and identify areas in need for improvement. This is done both for internal performance of operations and externally for the suppliers.

The *internal performance* typically measures stock level and target achievement of the operational supplier relationship development. The targets are differentiated according to the segment.

The *external performance* follows up aims to assure high continuous performance. The factor measured is on time delivery and delivery of right quantity. This is objective measurement performed. In addition subjective objectives as flexibility and communication quality is evaluated.

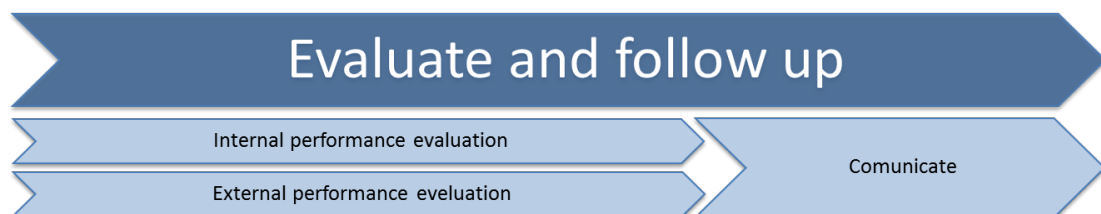


Figure 26: The sub process of following up and evaluate

All suppliers will be followed up on regular basis, *routine suppliers* quarterly and the other monthly.

The result of the logistical performance evaluation is communicated with performance reports in the same format as reports from quality department. The result will be graded in A to C with A as best. For C suppliers an action plan is elaborated to improve the performance. Also internal stakeholders will take part of the evaluation.

5.3 Recommendations for The Company

The importance for The Company of having a common supplier relationship process at operational level has been argued earlier in this thesis. The situation of today demands a common and controlled process in order to operate with high efficiency. The suppliers of The Company are a mix of companies. Many of them are supplying many factories and a common approach is vital to have control and use the economy of scale. The Pareto balance (80% of the supplied value come from 20% of the suppliers) in the supplier base of The Company demands a segmentation to prioritise the resources. A segmented approach also aligns the work of the purchasing department. Purchasing department is in the roll out of a global purchasing process that standardise the sourcing work. For supply chain department to be aligned will simplify the interaction between the departments.

5.3.1 Gaps between present situation and the operational supplier relationship process

Comparing the present process and the proposed operational supplier relationship process side by side reveals gaps in all sub processes.

In the whole process centre of gravity is differently distributed. In the present process the centre of gravity is on the performing process that range over a big part of the whole process compared to the operational supplier relationship process where centre of gravity is located earlier in the process with a bigger focus on defining conditions and act in a proactive way. See Figure 27.

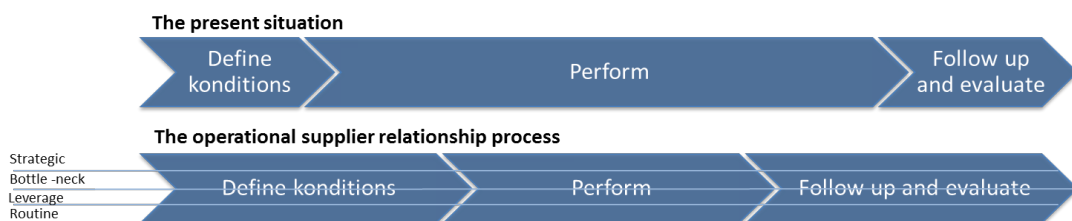


Figure 27: Illustration of proportions of sub processes

In both processes adoptions in the operational exchanges is done for the unique conditions. The gap is between the present situations adoption on basis of the individual call off personnel's mind and the operational supplier relationship management process adoption according to a regional segmentation. A segmented approach will generate less variation in approaches and enable a common process development and elaboration of best practices.

As discussed a bigger focus is on the definition phase in the proposed operational supplier relationship process compare to the present process. Big focus is put on the definition phase in the new process and conditions will be clearer compared to the present situation through a more proactive process. The awareness of the conditions that are defined in the initiating phase of today is not complete.

As a consequence of the limited existents and awareness of guidelines forecasts and orders are sent in different formants and timings between and within the factories and with different or sometimes double media. In the operational supplier relationship process it is defined a communication structure for orders and forecast together with a recommended media for respective category of suppliers.

The improved structure in the definition phase will generate a gap between the processes in the level of problem solving that is present. Clearer and defined conditions will result in less discussions and disputes.

A major gap is in the final follow up and evaluation phase where lack of defined conditions and system support has created a situation with only limited follow up that are performed in an individual manner. In the operational supplier relationship process this is a vital part and a structured follow up is performed to ensure that the defined conditions are observed by the supplier. Also a common level of internal follow up is implemented compared to the fluctuating level present in the process today.

To sum up the major gap is the centre of gravity, the level of regional guidelines and the ability to follow up in order to ensure high performance and continuous improvement.

5.3.2 Recommendations to close the gaps

To close the gaps between the present process and the operational supplier relationship process presented in this thesis the authors has identified five key areas.

6. Set process owner for maintain, educate and develop the process.

To improve the process and achieve a standardised and centralised process a supporting organisation has to be in place. For The Company would this mean to strengthen the central tactical layer. To have a central position owning, governing and develop the process. He also function as a communication hub for purchasing and is the voice of supply chain department in

negotiation of new contracts in order to put in logistical conditions in an early phase. Thirdly he supports suppliers in their logistical work with The Company. This involves understanding the way The Company work and its demands. In some areas such as responsibility for defining packaging and labelling for suppliers a clearer separation of responsibilities is needed.

7. *Use of an segment model for supplier base*

The authors recommend The Company to implement a structured company wide segmentation model in order to support operational personnel in prioritising their work and effort and go from a situation where priority is set according to individual preferences to a common approach towards the supplier.

8. *Common supporting tools for operations*

To implement the process a number of standardised and common tools are required. From a situation where factories work with different MRP systems and own-developed excel files a standardised set of tools is created. The SAP implementation is one part in this but additional tools are required. This is tools to elaborate segmentation, logistical agreements, support in calculation of safety stock, an escalation process, phase in and out and a scorecard for evaluation of suppliers.

These tools are based on the needs identified in the empirical study and shall be adapted to a segmented mode of operation. The tools enable a common way of working and create a common communication profile towards suppliers.

9. *Standardised ways of communication with suppliers in both media and message*

As of today information, forecast and orders are sent differently between factories. In accordance to the segmented approach the ways of communicating with suppliers are recommended to be adopted and performed in a standardised way as described in the proposed operational relationship process.

10. *Introduce continuous performance measurement*

To ensure a common way of working and to be able to validate the effect and performance a common way of measure internal and external performance is recommended to be implemented company wide.

6 Concluding remarks

In this last chapter the authors reflect over the thesis and its result from different perspectives. In the end the authors recommend areas for future research found during the work with this thesis.

The purpose of this thesis is to review and improve the operational supplier relationship management process at The Company.

The aim is to define and analyse the process and identify activities in need of improvement in order to achieve a structured and standardised supplier relationship management process for major appliances in Europe.

This purpose was broken down into three objectives to be fulfilled

1. Identify, define and map the current state of the operational supplier relationship process at The Company.
2. Define a structured model, based on the product characteristics, to achieve standardised operational activities in the supplier relationship.
3. Present recommendations aiming to improve the supplier relationship management process by changes in operational activities.

The authors have through interviews, based on theoretical framework, collected information of the operational supplier relationship process of The Company. In addition documentation has been studied and suppliers interviewed. It is the authors belief that this has given a good picture of the operational supplier relationship process and therefore fulfilled the first objective.

Based on the mapping of the current process, its conditions and recognised theory a structured process was presented in previous section. Based on a gap analysis between the present process and the operational supplier relationship process recommendations was elaborated. This has, in the authors' opinion, fulfilled the second and third objective.

6.1 Theory reflection

The approach in the theory has been to identify the challenges of Supply Chain Management and find appropriate actions, within operational

Supplier Relationship Management to handle these. Limited theory of operational guidelines for Supplier Relationship Management was found contrary to the extensive theory material available on strategies of Supplier Relationship Management. The challenge has therefore been to transform the strategic activities into operational activities and put it into a complete theory framework on how to handle the suppliers operationally depending on the relationship, without any gaps.

The theory framework for operational activities has been based on the theories of Kraljic's Purchasing Portfolio and Lee's basic flow in the Supply Chain. Several other supplier segmentation models has been considered including the ones used to complete the framework. The Kraljic's theories are the most commonly spoken and seen as a good first step of supplier segmentation suitable for The Company.

Lee's basic flow in the Supply Chain has been used for the framework because of its basic obvious separation of flows and it's suppleness and easiness of understanding.

6.2 A critical look at the operational SRM process

The operational supplier relationship process is developed from a theoretical framework of recognised theories together with findings from a well-structured empirical study. This combination ensures good reliability of the process.

The structured method of data collection and investigation of conditions lay a good foundation for high internal validity of the process. Nerveless is a process not better than how it is used why the aim is to create an easy and intuitive process. This generates a trade off between the simplified and implementable versus the circumstantial and unused. Simplifications was therefore unavoidable have been done in order to generate a more user-friendly process. The dimension supply risk in the segmentation is defined by three main parameters. This is not a complete analysis but is a good guideline.

6.3 Generalisability

In the thesis The Company supply chain has been focal point and the fit will therefore be best. The conditions and demands that The Company experience is likely to be present in other organisations with similar industry characteristics and it would therefore be likely that this theory is applicable in other organisations as well.

Also organisations with other requirements and challenges can make use of the logical structure of the process that can act as a foundation for the further creation.

6.4 Suggestions for further research

The area of operational SRM is not a well-explored area and a deeper study in a number of areas is suggested.

The study has been evaluating the exchanges between the organisation and its first tier supplier. A second step would be to extend this to also include second tier supplier and how these can be involved in the process. This was unfortunately beyond the scope of this thesis.

Also a deeper study for further develop the recommendation regarding integration of strategic supplier is valuable. The width of this thesis has limited the depth in this area.

During the writing of this thesis the authors found an interest for how to use liability contracts in the supply chain in order to secure supply and divide risk. A deeper study in this subject to be applied for bottleneck and strategic suppliers would be of great interest.

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Appendix

Appendix 1: Names of segments

	Kraljic	Van Weele	Tang	Combined model
Model name	Product portfolio Balance of power	Purchasing Supplier Portfolio	Supplier Relationship Map	Supplier Relationship Portfolio
Axis name	Importance of purchasing	Supplier impact on financial results	Strategic Importance of the Part to the buyer	Impact on end-product value / process economics
	Complexity of supply market	Supply Risk	the Buyer's Bargaining Power	Difficulty of obtaining supply
Segment name	Strategic Products	Strategic Suppliers	Partner	Partner
	Leverage Products	Leverage Suppliers	Preferred Supplier	Preferred Supplier
	Bottleneck Products	Bottleneck Suppliers	Exclusive Supplier	Exclusive Supplier
	Non-critical products	Routine Suppliers	Vendor	Vendor

Appendix 2: Example of interview guide

The purpose of this interview is to understand the operational call-off process, which guidelines are set and used and how it's linked with the strategic purchasing.

Organisation

1. How is the operational responsibility divided between SC and P?
 - a. Call of responsibility?
 - b. Link between SC – Purchasing.
 - c. How do you think this collaboration work?
2. How do you work with phase in and out?

Segmentation/Differentiation

3. Do you work differently with different suppliers depending on their characteristics?
 - a. Any guidelines?
 - b. Documentation?
 - c. How does it effect the relationship?
 - d. Create different levels of trust
4. How many suppliers do you have for each IDCO?

Physical exchanges

5. How are SS and EOQ handled?
6. How is the internal visibility of stock levels?
7. How is performance ensured?
 - a. What KPI is in place?
 - i. Quality?
 - ii. Logistic performance?
 - b. Who is responsible?
 - c. How is it communicated?
 - i. Internally?
 - ii. Externally?

Technical exchanges

8. How are you working with resource alignment? (Batch sizes, packaging, labelling)
 - a. Communicated to supplier?
9. How do you communicate your needs?

Information exchanges

10. What information is shared between suppliers and E-lux?
 - a. Where is it defined what information that shall be shared?
 - i. Balanced?
 - b. Is the amount and quality of information efficient?
11. Forecasts-
 - a. Differentiated between suppliers?
 - b. How are the suppliers interpreting the forecasts?
 - c. How is the quality of the forecast?
12. Orders-
 - a. How is the orders put?
 - b. What frequency is the orders put?
 - c. How do you determine when to put orders?
13. Early warning-
 - a. Willingness to share both good and bad information?
 - b. Capacity communicated?
 - c. Production problems?
 - d. Audits?
14. Other information-
 - a. What and how?
15. In what ways are you interacting with the suppliers?
 - a. What modes of communication are used?
 - ii. Technical solutions? (*webEDI, EDI*)
16. Evaluation-
 - a. What dimensions evaluated?
 - b. Interval?
17. Internal meeting and cooperation with P, Q och SC?
18. Do you have any physical meetings with suppliers?
 - a. On what bases?
 - b. Needed?
 - c. Work different with suppliers?
19. Do you have trustworthy and committed suppliers?

Financial exchanges

20. How are you involved in the economic exchanges?

Juridical exchanges

21. How is contracts used?

22. What kinds of contracts are in place?

a. How is the logistics contracts (GLR and SLR) used?

23. How uses and have access to the contracts?

24. What other supporting documentation about the suppliers are available?

Overall

25. What tools do you have as support?

26. How do you think the Supplier relationship is working today?

27. If you had the task to improve the operational supplier relationship management. What would you do?