Supply Chain Development within Volvo Penta Chain
Development through Supplier Relationship Improvement

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This report is the Masters’ Thesis of Industrial Engineering-Logistics studies at University of Borås. It gave us the opportunity to use what we have learnt during the programme. Due to the vast area of investigation the research presented, writing and working on this report has meant a lot of work. However, at the same time this was the challenge we were looking for and a really interesting journey where we got the opportunity to learn a lot. Hereby, we would like to express our deepest gratitude to the following people for their help in enriching the quality of this report and guiding us along the way.

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Abstract

In today's global business market, concepts are moving towards inter-national and inter-firm in contrary to older days. This has made companies explore ways to leverage their supply chains, and to evaluate the role of suppliers in their activities. One result has been the increased outsourcing of activities and performance. This has heightened the role of suppliers ever more.

Consequently, in order to maintain competitive in the market and to be able to satisfy the knowledgeable end customer, suppliers must be completely aligned with the core company and its objectives and performances. This goal is only gained through strategic benchmarking towards Supplier Development.

With a large number of suppliers to deal with, it won’t be feasible to have partnership relationship with each. The strategic approach is to classify them in a manner suitable for the company and only then start from top of the list setting goals for the most prioritized.

Before making any attempt in Supplier Relationship Development, the company must start from within setting the right mindset from top down, inside its own ground. Only then Supplier development will be aligned with the objectives of the company and the program will be integrated and successful.

This research sought after ways to develop a strategic and systematic method of dealing with suppliers. This guideline was classified as a step by step map of a Supplier Development program. The study was conducted for Volvo Penta Vara Company, and as part of its Supply Chain Development Program. The findings from the company and literature were compared and analyzed and finally guidelines were developed.

This report is the last part of the master’s studies in Industrial Engineering-Logistics at University of Borås. It gave us the opportunity to use what we had learnt during the programme. Considering the broadness of the subject we were after, this report meant a lot of work. However, this was the challenge we wanted and an intriguing journey where we learned a lot along the way.
Contents
Acknowledgement ..................................................................................................................................I
Abstract................................................................................................................................................III
1 Introduction....................................................................................................................................1
  1.1 Background.............................................................................................................................1
    1.1.1 Supplier Relationships and Strategies.............................................................................1
    1.1.2 Supplier Relationship Management (SRM) in literature ................................................1
    1.1.3 Company profile .............................................................................................................2
  1.2 Purpose and Objectives...........................................................................................................2
  1.3 Problem Definition .................................................................................................................3
  1.4 Delimitations ..........................................................................................................................4
  1.5 Outline ....................................................................................................................................4
2 Methodology ..................................................................................................................................6
  2.1 Research Approach .................................................................................................................6
    2.1.1 Data collection method ...................................................................................................7
    2.1.2 Sampling Methods ..........................................................................................................7
  2.2 Analysis method .....................................................................................................................8
3 Theoretical Foundation ................................................................................................................10
  3.1 Trends in Supplier arena ....................................................................................................... 10
    3.1.1 Outsourcing activities to suppliers ................................................................................10
    3.1.2 Reducing the number of suppliers ................................................................................10
    3.1.3 Developing partnerships with Suppliers .......................................................................10
  3.2 What is a Supplier Relationship?..........................................................................................11
    3.2.1 Supplier Relationship costs and benefits ......................................................................11
  3.3 Manage and Strategy ............................................................................................................12
  3.4 Benchmarking Supplier Relationships ..................................................................................13
  3.5 Supplier relationship management .......................................................................................15
    3.5.1 Areas of presence of SRM ............................................................................................15
    3.5.2 Areas of benefit from SRM...........................................................................................17
  3.6 Social factors in SRM.............................................................................................................18
# Table of Figures and Tables

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>research approach</td>
<td>1</td>
</tr>
<tr>
<td>Figure 2</td>
<td>result from sampling method</td>
<td>8</td>
</tr>
<tr>
<td>Figure 3</td>
<td>bow tie and diamond relationship models</td>
<td>1</td>
</tr>
<tr>
<td>Figure 4</td>
<td>different modes of relationships</td>
<td>1</td>
</tr>
<tr>
<td>Figure 5</td>
<td>supplier relationship lifecycle</td>
<td>1</td>
</tr>
<tr>
<td>Figure 6</td>
<td>different stages of SRM</td>
<td>17</td>
</tr>
<tr>
<td>Figure 7</td>
<td>the Japanese Supplier Segmentation</td>
<td>23</td>
</tr>
<tr>
<td>Figure 8</td>
<td>different strategies toward supplier shortcoming</td>
<td>1</td>
</tr>
<tr>
<td>Figure 9</td>
<td>steps in mapping Supplier Development</td>
<td>29</td>
</tr>
<tr>
<td>Figure 10</td>
<td>different levels of Logistics Information in SRM</td>
<td>1</td>
</tr>
<tr>
<td>Figure 11</td>
<td>inter-firm connections</td>
<td>1</td>
</tr>
<tr>
<td>Figure 12</td>
<td>Distribution of Volvo Penta worldwide</td>
<td>1</td>
</tr>
<tr>
<td>Figure 13</td>
<td>AB Volvo companies and business units, where Penta stands in the AB group</td>
<td>38</td>
</tr>
<tr>
<td>Figure 14</td>
<td>the communication outline between Vara, its customers, and its suppliers</td>
<td>1</td>
</tr>
<tr>
<td>Figure 15</td>
<td>Mapping the Supplier connections</td>
<td>1</td>
</tr>
<tr>
<td>Figure 16</td>
<td>Vara Supplier Segmentation pyramid according to the attention planned for</td>
<td>46</td>
</tr>
<tr>
<td>Figure 17</td>
<td>Volvo Trucks Communication outline and SRM advisor implication</td>
<td>1</td>
</tr>
<tr>
<td>Figure 18</td>
<td>a copy of the Supplier Performance Breakdown sheet from the Supplier Portal</td>
<td>49</td>
</tr>
<tr>
<td>Figure 19</td>
<td>Volvo Dispatch precision statistics sheets</td>
<td>50</td>
</tr>
<tr>
<td>Figure 20</td>
<td>the escalated strategy for critical suppliers</td>
<td>1</td>
</tr>
<tr>
<td>Figure 21</td>
<td>the communication network of Vara and Trucks with their suppliers</td>
<td>1</td>
</tr>
<tr>
<td>Figure 22</td>
<td>communication network between procurement and the Core Company</td>
<td>1</td>
</tr>
<tr>
<td>Figure 23</td>
<td>communication areas to focus on</td>
<td>1</td>
</tr>
<tr>
<td>Figure 24</td>
<td>Vara Supplier Structure, first step segmentation</td>
<td>1</td>
</tr>
<tr>
<td>Figure 25</td>
<td>Comparing the communication network of Vara and Trucks</td>
<td>1</td>
</tr>
<tr>
<td>Figure 26</td>
<td>Main Problem areas and Possible Solutions</td>
<td>1</td>
</tr>
</tbody>
</table>

| Table 1 | Cooperation in comparison with Coordination | 14 |
| Table 2 | Strategic Supplier Classification | 24 |
| Table 3 | commodity portfolio Matrix | 30 |
| Table 4 | potential problems in Supplier Development | 32 |
| Table 5 | evaluation of Vara top ten suppliers according to volume delivery | 45 |
| Table 6 | evaluating the Problem Supplier group | 46 |
| Table 7 | a Strategic Supplier Segmentation | 58 |
| Table 8 | the problems caused in implementation of SRM program and how to resolve them | 60 |
| Table 9 | Problems in Supplier Connection and suggestions | 63 |
| Table 10 | the Major Differences between Vara and Trucks SRM | 66 |
1 Introduction

1.1 Background

Firms are increasingly exploring ways to leverage their supply chains, and in particular, to systematically evaluating the role of suppliers in their activities. One result has been the increased outsourcing of activities not considered to represent core competencies. (Kannan, et al., 2006)

Outsourcing allows firms to exploit the capabilities, expertise, technologies, and efficiencies of their suppliers. Increased outsourcing, however, implies greater reliance on suppliers and a corresponding need to manage the supplier base. (Kannan, et al., 2006) This has for some companies meant reducing and streamlining the supplier base, and/or developing closer relationships with suppliers (Scannell, et al., 2000).

1.1.1 Supplier Relationships and Strategies

A Supplier Relationship is a relationship that differs with different suppliers. They affect the buyer company in different ways, and present different potentials. These effects and benefits depend on the internal operations as well as interdependent operations with other supplier and customers. Supplier Relationships affect the cost and revenue of both companies involved. When trying to change these costs and benefits, the company must consider the effects. (Ford, et al., 2003)

It is important to align the company policy and routines with the strategies taken towards suppliers. To be able to handle the whole network of suppliers, a company needs to start handling every individual supplier relation. However, the effects every decision will have on other actors as well as the effect on the whole network, needs to be taken into consideration. (Ellegaard, et al., 2003)

Suppliers can be critical and extremely important players in a company’s performance. Having supplier relationships that don’t work as planned can be extremely costly for the buyer company. As mentioned before every supplier relationship is unique and needs to be adjusted according to different factors affecting this particular relationship.

1.1.2 Supplier Relationship Management (SRM) in literature

Identification of when these relationships are appropriate, the dimensions of effective relationships and how relationships can be a source of competitive advantage have received considerable attention in the literature (Ellram, 1995; Carr & Pearson, 1999; O’Toole & Donaldson, 2000; Corsten & Felde, 2004).

Supplier Development is a series of formal activities undertaken by customers to improve the performance and capabilities of their existing suppliers. By initiating supplier development programs, customers become a catalyst for change. Through supplier development, the customer can help suppliers attain tough cost reduction goals and create better performance. Improved supplier
relationship in a company can gain numerous competitive advantages such as improved shared information between the two partners, improved product development due to better knowledge, lower cost and prices of purchased goods and maintenance, lower defects, and etc. Most of these advantages are gained due to a better mutual knowledge of databases achieved through built trust caused by better relationship, in other words better cooperation.

Traits such as coordination, collaboration, commitment, communication, trust, flexibility, and dependence, are widely considered to be central to meaningful relationships. (Kannan, et al., 2006) Willingness, to work together and to share risks allows benefits to be achieved not only in cost, quality, delivery, and productivity, but in product development, technology deployment, and problem solving. (Fram, 1995; Hahn, et al., 1990)

1.1.3 Company profile

Volvo Penta’s history goes back to 1868 when Sköfde Gjuteri och Mekaniska Verkstad was founded. It was in the early decades of the 20th century that the engine production started. Volvo Penta is one of the smaller Volvo Group companies with a unique specialist production of marine engines. The company has a wholly owned plant in Vara Sweden, where they have production of the famous D4 and D6 diesel engines. These engines have contributed to Volvo Penta’s world leading position within the marine industry.

Their motto in production is: "Volvo Penta Purchasing shall have such competence regarding the global supplier market that Volvo Penta will be provided with optimum Product- and Process development, Products and Services that fulfill and exceed the customer's expectations on quality, cost and times." (Volvo Suppliers website)

1.2 Purpose and Objectives

Supplier Relationship Management (SRM), and thus this study, is after finding ways to make the company be a better purchaser. In line with this, the primary question of this thesis is as following:

“How we can improve production by improving supplier relationships.”

Motives behind this Supplier Development are to reach competitive advantages, optimal processes, flow stability, long-term relationships, and continuous improvements. This goal is sought through relationships this purchasing brings about, and also in other processes. This can be achieved by improving the company understanding of its suppliers.

Moreover, the main question was further divided into more details in order to find the answer to it. Thus, the objective was to find the answer to the following questions:

1. How communications within the company, with its suppliers and also with the procurement department can improve;
2. How Volvo Penta can move from a reactive way of dealing with its suppliers into a proactive way;
3. What SRM trends can be utilized in the Volvo Penta Supplier relationship improvements study; and
4. The major differences between supplier relationships that are working at Penta today and the ones that are not working.

Thus, the purpose of this study can be summarized into the following:

1. Achieving cost reduction, quality improvement, and delivery performance improvements, by improving relationships between Vara and its suppliers.
2. Presenting the company with a systematic process they can use in order to continue making improvements.

However, improving the supplier relationship without integrating the processes with the other areas of the supply chain might lead to a one way road and even a dead end. Thus, in order to get the best feedback wanted and to be a pioneer in the business, companies should work from inside out, gaining a full understanding of what they want and how they’re heading there. Learning their own supply chain and objectives of their chain, then moving towards plotting a suitable CRM, SRM, and so on and having them all integrated in concept and process will make the company the leader in the market.

1.3 Problem Definition

Volvo Penta Vara has recently started to produce towards customer orders. This has led to a higher demand when it comes to flexibility and planning within the supply chain. No systematic work exists within the company when it comes to supply chain development, i.e. continuous work with the development of suppliers. On the other hand, there has been a big investment in the factory to increase the technical capacity within production. Therefore it is very important for them to have full control of their suppliers and to “grow” together. It is vital for them to live up to the new logistics demand. Due to the new policy of Make to Order they need to find a way to cope with supplier development instead the old way of relying on forecast.

In order to overcome this task, Penta Vara has undertaken a project under the name Supply Chain Development. The objective of this program is to cut production costs by three percent, focusing on developments in Supply Chain Management (SCM) areas as well as purchasing. The following report is part of this bigger project, with attention given to the Supplier Relationship Management.

Volvo Penta is dealing with a rather large number of suppliers, approximately 240, having a long history of relationship with most. On the other hand, due to the nature of the company’s production, suppliers for each part are unique. Hence, the company doesn’t have the space to change suppliers as easy and as often as wanted. Consequently, this has shifted some power to the suppliers, making it difficult for Vara to deal with the shortcomings that occur every now and then.

Furthermore, the contracts with suppliers are conducted by a separate department of purchasing. Neither Sufficient nor efficient communication exists with the main manufacturing department. This has raised some conflict in interactions between Volvo and the suppliers.
The main task of this study is to look into the way the company is dealing with this problem today, compare it to the academic literature and studies done by other departments, and make suggestions or improvements in places of need.

1.4 Delimitations

Supplier Relationship Management is a vast area of research, taking into account many various aspects of the matter, such as information technology, Supplier Selection, contractual issues, Demand Management, Segmentation, and many more.

Unfortunately, due to constraints in time and resources, it was impossible to go through all of these factors in detail. Thus, this report is limited only to a few of the aspects that were more closely related to improving the supplier relationships within the case study.

The main areas of focus were: how to make better supplier segmentation and so have better management of them; which group of suppliers to focus the development on; presenting a method of mapping the supplier development; and the role of procurement in this development.

1.5 Outline

The outlines of the following chapters are as followed:

Chapter 1 – Introduction; this chapter was an introduction and background to this thesis. A background and a definition on Supplier Relationship Management were given. The problem was identified and formulated and a background of the subject and the case study company was presented. The objective of the study along with the main question of the report was noted, and limitations in the way were recognized.

Chapter 2 – Methodology; in this chapter different methods of research methodologies, Data collection methods, and research sampling methods used in the Study were presented. Furthermore, the analysis methods utilized were also noted.

Chapter 3 – Theoretical Foundation; the scientific and executive theories used in the study were noted in this chapter. Moreover, references to books, articles and Internet websites were made. The chosen theories were, as much as possible, rationalized. Additionally, in areas of necessity modifications were made, and new founded theories were extracted.

Chapter 4 – Empirical results; this chapter presented the results achieved from actual and real-time companies. In the first part results from the case study of focus, Volvo Penta Vara, were given. Afterwards, results from other AB Volvo group departments’ Supplier Development programs, and their achievements in the same area of study were given.

Chapter 6 - Discussion: Problem Analysis; in this chapter mainly a summary of the results with interpretation were given; a brief combination of the theories and the results. By comparing the founding from the theoretical chapter, the empirical results of the case study, and the founding from
studies done by other real-time companies, an analysis was made. The conclusion to this analysis is the answer to the main question of the thesis which was the objective of the report. Additionally, the difficulties raised in this research were also delineated.

Chapter 7 - Conclusions and Recommendations; The findings and results of this study were discussed in a very brief manner. In addition, some ideas and thoughts on future work in this area were presented here.
2 Methodology

In this chapter the methods chosen in order to get results and answers to the main question of the thesis were represented. After presenting the research approach details of methods used in collecting data as well as methods used for sampling were noted. Finally, in the last part of this chapter, methods of analysis were presented.

2.1 Research Approach

The results gained in this report were the outcome of both an inductive and a deductive reasoning procedure. An inductive reasoning was utilized in areas of observation showing us which methods of behavior in real-time is actually working. These observations were generalized into the conclusions needed. However, as known, inductive reasoning is a complement of deductive reasoning. Thus, deductive reasoning was the main instrument in finding the objectives and questions of the thesis.

In addition, this report is also the result of both empirical and theoretical work. The study started by understanding the current situation, learning the more competent ways of the situation, and learning to change the current situation towards them.

The current situation was understood, through researching the case study company and ways they were dealing with their suppliers. The shortages and power areas were noticed and listed. Competent ways of dealing with suppliers were learned through vast literature reviews and trends presented in researches. In addition, other Volvo companies with a similar research that seemed more successful in the area were also studied, and results compatible for the case study were gathered. Finally, changing towards the better was resulted from comparison and analysis of the results gained in the three areas.

There were various methods to gather and analyze information from existing systems. Literature study helped create the frame of reference used to analyze the information, and a case study with a survey helped gather the information required. (Johnsson, 1998)

The method used for this work will mainly consist of literature review (different books, articles, etc.) to get an overview and a better knowledge within the subject of supply chain development, supplier relationships, and how to manage them. This formed a background and a ground work on which the improvements in Volvo Vara was assessed and analysed upon.

Nonetheless, this ground work was compared to the way Volvo Vara is dealing with its suppliers today, and also with the findings of other real-time companies on the subject. Some of these companies within the Volvo Group had better knowledge and experiences when it came to this issue. In some cases they used the same suppliers. In addition, AB Volvo has demanded all corporations to work in the same way when it comes to areas like supplier communication. This rationalized the
comparison. The analysis was made to check whether the company is on the right track, moving towards improvement, or not.

2.1.1 Data collection method

The needed data in order to respond to the objectives of this thesis were divided into three general categories of: Data from Volvo Penta Vara, Data from other companies having done similar studies, and last but not least, literature review.

The data needed to be gathered from Penta Vara were listed as: the current connections with suppliers, information on problem suppliers in order to visualise examples of shortcomings, current communications with the procurement department, and the studies done by the company on SRM so far. The communication, problems, classifications, solutions and time fencings were recorded. This information was compared with the literature review made, to see whether the company is on the right track or not.

From other companies with similar researches, information on actions made towards improving their supplier relationships, their communication with the procurement department and the effect it had on their supplier relationships were gathered.

In order to gather all this information defined, several interviews with different departments including other Volvo group members, purchasing department, and some suppliers were conducted. A number of questioners were prepared and scattered among different authorities such as Vara management, supplier management, and other company top management.

Lastly, the data collected from literature were classified as the latest trends in SRM that seemed compatible within our Case Study Company, information on how to make improvements in existing supplier relationships, information on the role of procurement in SRM, and information on how to classify and develop suppliers. These data were gained by reviewing the books, reports, papers and also by browsing the internet in related subjects.

2.1.2 Sampling Methods

This research like any other has benefited from both quantitative and qualitative data. According to Ekwall (2007) definition, Primary data are those collected directly by the researcher through interviews, questionnaire, observation, and etc. Secondary data are those achieved by reviewing other works such as books, papers, reports, and etc. (Ekwall, 2007). Both definitions were practiced in this study. The primary data were those collected from the case study company as well as those from other companies for the purpose of comparison. The secondary data on the other hand, were those gathered through study of articles, journals, books, websites, and reports.
Within Volvo Penta, two different methods of sampling were chosen in order to make the necessary analysis. First a group from the problem suppliers were selected and mapped to detect the source of problems and see examples of shortcomings. Afterwards, the top suppliers delivering to Vara, by their volume delivery, were mapped and their connections were drawn to see the existing relationships with them.

Another area of choice was among other companies with SRM studies. Firstly, companies from the same group (Volvo AB) were chosen. These companies had more or less the same background, dealt with the same procurement department, and shared some of the same suppliers. Secondly other companies with a similarity in the nature of their products with a geographical availability for ease in access were of choice. The findings of the latter were extracted from the reports published on the matter and presented in the Theoretical Foundation Chapter.

2.2 Analysis method

Two ways were recognized in how to bring about changes in the supplier relationships within this study. A Reactive way, to recognize the existing shortcomings and to fix problems when they occur, the second, and more importantly, a Proactive way focusing on methods and notions to prevent any problems from head start. In this study we try to see through both methods of thinking and focus more on Proactive ways in order to avoid being in the pitfall in the first place. By realizing these methods of working, and making them part of the mindset throughout the company, the development will become a strategic one and not just a quick fix.

Furthermore, this study also noticed two types of change to lean towards. The Structural changes, which is change in distribution of work, specialization, co-ordination, and etc; and the Cultural
changes that are changes in attitudes and opinions. In order to make any long time and effective change, change in mindsets, from top down, is a necessity. With the right change in mindset, attitudes and performance, in the same direction of the core objective, effective and efficient change in performance and structure will be made as well.

The paper ahead tried to focus mainly on the relationships involved between buyers and suppliers and on ways to improve supplier relationships in order to achieve cost reduction, improved quality, and improved delivery performance.

Data from the case study company was gathered using some statistical methods and classified into tables and charts. These charts and figures were used to make comparison with the data gathered from the academic literature in order to see if the path chosen by the company is moving towards improvement in production or not. In addition, other studies done by other companies were also analysed and information thought useful for the case study were extracted and further compared to the data in hand. Furthermore, in places possible, some solutions were also made for improving the supplier relationships.

The report will be presented as a masters’ degree report as well as a report for Volvo Penta to ground improvement in methods to develop their Supplier Relationships.
3 Theoretical Foundation

3.1 Trends in Supplier arena

When talking about suppliers and methods of purchasing supplies, the past 15 years has meant great deal of change. Three major trends can be noticed in this area.

- Outsourcing activities to suppliers
- Reducing the number of suppliers
- Developing partnerships with the suppliers

3.1.1 Outsourcing activities to suppliers

The aim in outsourcing is to concentrate on core competence, meaning that the company will specialize in fewer activities in order to meet customer demands. There is one expression that clearly explains the advantages of outsourcing production and services:

“If you make it yourself it will be as good as you know how, but if you buy it then it can be as good as the best in the world know how”. (Ford, et al., 2003)

Outsourcing can lead to better efficiency and effectiveness but will also lead to increased dependency to the supplier.

3.1.2 Reducing the number of suppliers

Nowadays it is common for companies to move towards fewer suppliers upstream. The main reason for this trend is partly due to the outsourcing trend. The trend was mainly seen in the automotive industry where companies like Ford and Chrysler reduced their supplier basis tremendously during the 1990s.

3.1.3 Developing partnerships with Suppliers

Cooperation is a common word to use when talking about supplier relationships. The trend has moved from an earlier approach of “arms length” relationships towards long term relationships. Terms like joint product development and integrated logistical systems are now widely used and companies have started to realize the importance of close relationships with their suppliers to achieve effectiveness and efficiency.

Cooperative relationships, also referred to as partnerships, are based on different factors where sharing information can be seen as the key to success. When talking about sharing information with a “partner” both demand and supply information should be included. Using the word “partnership” can have different meanings depending on what type of partnership is being considered. There are three
different types of partnership that can be used namely cooperation, coordination and collaboration (Harrison & van Hoek, 2005). There should be a distinction between these different styles which will be elaborated more later on in this report.

3.2 What is a Supplier Relationship?

There are many different ways to define a Supplier Relationship. The two most common ways are to look at such a relationship either from an economic or a behavioral perspective. (Donaldson & O’Toole, 2000) Economic models concentrate on measureable economic variables and behavioral models take matters like history, social structures and dependency into consideration.

- Economic – cost, power, risk aversion
- Behavioral – commitment, confidence, cooperation, mutuality

The economic model is after reaching cost-effective relationships, were the companies involved can stay independent while free to use or create a state of dependence at the expense of their partners. However, in order to fully utilize the economic potential of this model, it should be complemented by the behavioral aspects. The economic perspective lacks the ability to take the whole network or supply chain into consideration. For example the strategy for a company can be to work on a long-term basis and to support its suppliers, although the policy and the routines of a company can be to use offers with the lowest price at every purchase. This will lead to a sub optimization. Therefore it is important to combine the two approaches with each other. The behavioral model goes beyond the dyadic relationship and thus takes the whole network into consideration. The main idea is to use the most suitable suppliers, working models and connections to be able to produce exactly what the customer is asking for. (Ellergard, et al, 2003)

To manage the suppliers the best way possible, there needs to be a good understanding of what the different relationships mean and whether they are helping the business succeed or not. A Supplier Relationship is a relationship that differs with different suppliers. They affect the buyer company in different ways, and present different potentials. The effects and potentials depend on how the relationship relates to the internal operations of the company. They also depend on its interdependencies with other supplier and customer relationships. (Ford, et al., 2003) The qualitative nature of some effects makes them more difficult to measure than others. These effects will probably show up in the longer duration.

Supplier Relationships affect the cost and revenue of both companies involved. (Ford, et al., 2003) When trying to change these costs and benefits, the company must consider the effects, but this can be hard to quantify. Hence, it can be wise to go through different Supplier Relationship costs and benefits in order to get a better understanding of the effects.

3.2.1 Supplier Relationship costs and benefits

Improving Supplier Relationships can be an important way for a company to create savings and gain cost efficiency. The cost consequences of Supplier Relationships can be listed as follows:
• **Direct costs of procurement:** such as the price paid, logistic costs, and etc.

• **Indirect costs of handling the relationship:** which can be categorized into:
  1. *Specific relationship:* supplier training, development, inward inspection, etc.
  2. *General:* communication, administrative systems, research, supplier monitoring, etc.

Understanding and thus having the right relationship can reduce cost in many of these areas.

On the other hand, when talking about the benefits of a Supplier Relationship, the most obvious are the physical ones such as products, components, and equipment. A more thorough look at the relationship can reveal less obvious benefits, for example suppliers’ technical skills that can be very useful. Resources of this kind can be used to help develop a company if properly used. “Supplier Relationships can dramatically enhance the resources and capabilities that a company can make and hence improve its overall standing and market effectiveness.” (Ford, 1998) The benefits can be categorized in two sets.

• **Cost Benefits:** for example reduced administration costs through more integrated information systems.

• **Revenue Benefits:** enhancement of the revenue generating capacity of the buying company, for example quality improvement leading to increased sales.

### 3.3 Manage and Strategy

Since every supplier relationship is unique and involves complexity it is hard to find an easy way to handle it. This will most likely cause problems due to such a complex area to handle. There is no doubt that a company’s purchasing strategy plays a vital role when it comes to supplier relationship management. It can be said that there are two problem scenarios that should be avoided and considered when dealing with this type of questions.

1. Reducing purchasing costs – which might lead to sub optimization where other costs like quality costs will increase
2. Establishing purchasing partnerships – the risk is that with too much focus on supply-partnerships the company might not see where it is really needed. Some relationships need close partnerships while others are better left with distance.

It is important to align the company policy and routines with the strategies taken towards suppliers. To be able to handle the whole network of suppliers, a company needs to start handling every individual supplier relation. However, the effects every decision will have on other actors as well as the effect on the whole network, needs to be taken into consideration. (Ellegaard, et al., 2003)

Traditionally, the supplier relationship has been limited to the primary contact between the customer’s purchaser person and the supplier’s salesperson (Harrison & van Hoek, 2005). This created a situation where other functions of a company like marketing, information systems, and else were kept at a distance. This method of supplier relationships creates a model resembling a “bow tie”. In this model communication is limited to one single channel. Instead, using a model where multilevel contact is created between different functions of both companies, will lead to active
relationship management and supplier development processes. In contrast to the “bow tie” this latter model will create a diamond where multiple-contact is encouraged (Harrison & van Hoek, 2005). This situation is depicted in the following figure.

![Figure 3 bow tie and diamond relationship models](image)

Since many parts of a company impact the Supplier Relationships, using the diamond model becomes important. Individuals from many different functions such as finance, production, and etc, have different requests and wishes that affect the relationships. These interactions from different parts of the company impact both companies involved. Thus, changes can never be planned or implemented by one company alone. The closer the relationship between two companies, the denser the interactions as well as the interdependence between these two will be. Thus, co-aligning supplier behavior becomes a critical issue in the supply strategy. In order to make critical change, companies should understand that change process is always likely to be slow and complex. Therefore, they should work together with their suppliers rather than using a single “master plan”.

Suppliers are both a critical and an extremely important player when talking about a company’s performance. Having supplier relationships that don’t work in the expected way can be extremely costly for the buyer company. As mentioned before every supplier relationship is unique and needs to be adjusted according to different factors affecting this particular relationship.

### 3.4 Benchmarking Supplier Relationships

Managing supplier relationships is about trying to use them effectively for purposes the company is pursuing and within the context of a wider relationship portfolio. (Ford, et al., 2003)

In today business world where competition takes place between supply chains instead of individual companies (van Weele, 2005), and where customer is the “king”, it becomes important to move away from traditional approaches and find new ways of creating customer satisfaction. The focus should be on value innovation and finding new, undiscovered markets. Here the customers can be used as spring boards, where one can develop a way to manage supply chains and supplier relationships.
This new way of thinking is referred to as Demand Chain Management where a company goes beyond the normal way of thinking and elaborates new approaches where strategic re-positioning, differentiation and uniqueness are key factors (Ericsson, et al., 2009). While Supply chain management focuses on increasing operational excellence, demand chain management needs thinking outside the box which will require companies to handle their business in a different way.

Here cooperation and collaboration become critical factors and leaning on coordination will not be sufficient. It is common for companies to use these words to explain the same situation, but as mentioned before in this report there is a difference between different types of partnerships. While coordination can be achieved through external orders, cooperation needs a new way of thinking inside a company where a willingness to cooperate exists.

<table>
<thead>
<tr>
<th>Arm’s length</th>
<th>Very loose</th>
<th>Coordination</th>
<th>Cooperation</th>
<th>Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Catalyst</td>
<td>Suitable</td>
<td>Management</td>
<td></td>
</tr>
<tr>
<td>Coordination</td>
<td>External orders</td>
<td>Closed systems, Functional, standard products</td>
<td>Hierarchical “Power over”</td>
<td></td>
</tr>
<tr>
<td>Cooperation</td>
<td>Internal willingness to join forces</td>
<td>Open systems</td>
<td>Governance “Power to do things”</td>
<td></td>
</tr>
</tbody>
</table>

Figure 4 different modes of relationships

Cooperation between two organizations with equal dependencies on one another can create mutual benefits (Rogers, 2005), which in this case will be referred to as Collaboration. Depending on what kind of system used to handle the company, closed or open, different management styles needs to be in hand. The old model shows a hierarchical management style where “power over” is the used approach. The new model, on the other hand, shows an approach where cooperation is vital and where system members are powered to do things. (Ericsson, et al., 2009)

Table 1 Cooperation in comparison with Coordination

In the end, it’s worth mentioning, that when talking about Arm’s Length relationship, throughout this chapter, we are not only referring to the traditional only by contracts means. One of the perks in Arm’s length relationship is minimizing dependence on suppliers and maximizing the bargaining power. This type of relationship is suitable for suppliers with which due to the non strategic nature of the items, less dependency is shared. (Dyer, et al., 1998)

The traditional Arm’s length relationship suggesting short term contracts and moving from supplier to supplier is not economically viable in today’s market. Thus, when administrating this type of relationship, the number of suppliers is usually kept smaller, while trying to maintain competitiveness among them. In addition, suppliers are expected to keep a certain level of dedication to inter firm coordination, such as incorporating compatible EDI systems.
3.5 Supplier relationship management

Supplier relationship management (SRM) is a comprehensive approach to manage an enterprise's interactions with the organizations that supply the goods and services it uses. The goal of supplier relationship management is to streamline and make the processes between an enterprise and its suppliers more effective. (bitpipe- White Papers, 2008)

Supplier Relationship Management (SRM) is a set of principles, processes, templates, and tools that help companies maximize relationship value and minimize risk and management overhead over the entire supplier relationship lifecycle. (eSourcingWiki, 2007)

It can be said that Supplier relationship management is after finding ways to make the company become a better purchaser. This goal can be achieved by improving the understanding the company has of its suppliers.

However, improving the supplier relationship without integrating the processes with other areas of the supply chain might lead to a one way road and even a dead end. Thus, in order to get the best feedback wanted and to be a pioneer in the business, companies should work from inside out, gaining a full understanding of what they want and how they are heading there. The company can become a leader in the market by learning its own supply chain and its objectives. Only then, moving towards plotting a suitable CRM, SRM, and so on and having them all integrated in concept and process will be a strategic move.

3.5.1 Areas of presence of SRM

SRM should be present at all stages of the supplier relationship cycle. Different stages of SRM should interact at all times in order to make long term consistent improvements. This means attracting new suppliers from the range of available, acquiring them according to the company needs, maintaining and developing those that are competent, and ending relationship with those that are not. (Lang, et al., 2002) This concept is illustrated in figure 5 where suppliers are attracted from their global market, selected as company suppliers while evaluated and maintained within the company community, and finally those incompetent, rejected back to the global market.
In a global economy with a deep knowledge and understanding, all products, resources, and material can be purchased and produced anywhere in the world. This means finding the best in such a vast range of suppliers can be complicated and tough. Since this is the place where company suppliers are selected this area of SRM needs detailed attention. Choosing the most competent suppliers from the beginning means less work in fixing problems later on. This is the Supplier Selection\(^1\) stage of SRM.

After selecting the right suppliers according to the manufacturing needs of the company, they should be attracted by the procurement department by means of marketing and negotiating through contracts. This will form the grounds for future negotiations and relationships with the suppliers. These suppliers will now be the Company Suppliers.

The next stage will be to maintain and develop the selected suppliers. In order to this in a competitive manner, suppliers should be evaluated and classified. Supplier Evaluation\(^2\) is another part of SRM, where each company according to its needs, product requirements, and the scope of manufacturing and its market, chooses a list of criteria with which suppliers will be evaluated upon. In addition, Supplier Classification\(^3\) is also an important stage in maintaining and further developing suppliers.

Using all the information in classification of suppliers and evaluation criteria, in the next stage of SRM suppliers will be informed of Supplier Development step they need to take in order to guaranty a competitive edge for the company.

Finally, suppliers that seem not compatible even after the other stages, and still bringing down the performance of the company, should be changed and their contracts terminated.

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\(^1\) Due to limitations in time and space, Supplier Selection concepts and practices were not discussed thoroughly further in this report.  
\(^2\) Due to constraints facing this report Supplier Evaluation details were only noted in brief  
\(^3\) Supplier Classification will further be fully discussed in this chapter
The four different parts of SRM recognized and noted in this report are depicted in figure 6. These SRM parts are more or less introducing the same concept and as the arrows in the figure indicate are interrelated and should interact at all times.

![Figure 6 different stages of SRM](image)

### 3.5.2 Areas of benefit from SRM

The question that arises here is how SRM can be of advantage to the supply chain and hence the company. Improved supplier relationship in a company can gain numerous competitive advantages such as improved shared information between the two partners, improved product development due to better knowledge, lower cost and prices of purchased goods and maintenance, lower defects, and etc. most these advantages are gained due to a better mutual knowledge of databases achieved through built trust caused by better relationship.

According to Lang, et al. (2002), having a first-class relationship with suppliers will help the company gain competitive advantages in the following areas:

1. Increased satisfaction with supplies purchased. Consequently this will speed up new product development by having better shared knowledge of suppliers and other technologies.
2. Increased suppliers’ satisfaction in terms will lead them to attract and retain the most competitive suppliers of their own.
3. In line with this, improved business process across the supply chain will lead to lower prices of purchase and maintenance for supplies and services. (Lang, et al., 2002)
3.6 Social factors in SRM

The buyer-supplier relationship can be complicated at times, however there are different ways for improving this relationship. One of the areas that have to be considered in this improvement is the social and cultural issues. Culture, society, politics, and traditions play an important role in any relationship. After choosing the suppliers throughout the world in order to maintain and develop a nourishing relationship these aspects should be recognized as well as any other. This partnership can be improved through various steps such as the ones recognized by Ireton, listed below:

1. Compliance with local and international regulations;
2. Conduct that breeds honesty, respect and open dialogue; and
3. Strategic financing that benefits both parties (Ireton, 2007)

Compliance means, it is important that different partners in the chain be fully aware of all regulations and status of their other partners. They should know who they’re working with. Like the old saying, “ignorance is no excuse”. Buyers should be fully aware of who they’re dealing with and vice versa. On the other hand buyer and suppliers should also have complete knowledge of the legislations of the environment they’re working in. This information can be gained either through previous studies or by hiring a 3PL to do the job.

Conduct in about achieving harmony. After being aware of the social responsibilities and the status of working partners, companies should tend to be more in harmony with these responsibilities and with their presence in the supply chain. This means, they try to ensure chosen suppliers fulfill their codes of conduct and stand up to their own level of financial, environmental and social responsibility. Having this code of conduct will make sure that suppliers work to keep at the highest point of standards set.

Finally, Strategic Finance, the last aspect in buyer-supplier relationship is about financial issues. Although having the lowest price in negotiations is a big goal, it shouldn’t be the ultimate. Insisting on having lower price might lose the trust and loyalty of the supplier and thus not a good thing. Matters to take into consideration here are what the payment terms should be, what the tradeoffs are at this point, who should benefit time wise, and what the currency fluctuation risks are.

After companies invest the necessary resources in finding the right suppliers it is important to maintain and nourish this relationship by factors listed above as well as others being noted later, in order to make it into a long term. However, it is worth noting that each supplier relationship has its own value that it is not necessarily the same as the other.
3.7 Supplier Selection

As mentioned in the first part of this chapter Supplier Selection is part of SRM. In fact, K.L. Choy et al. recognized it as one of the important functions of SRM. To make the right decisions from the start will help preventing complications along the way. It is safe to say price, quality, delivery reliability, and service are the most important criteria used to select and monitor potential suppliers. However, the type and circumstances of the purchase indicates the specific criteria used and their relative importance. Thus, to select suppliers can positively and directly influence relationship success. (Kannan, et al., 2006)

With the competitive advantages required to be a winner in today’s global market, higher responsiveness as well as reduced cost are a must. Thus, alignment of buyer needs with supplier capabilities becomes a prominent objective. While criteria such as price and delivery performance are always important, buyer companies must go even further and explicitly take a supplier’s strategic orientation and commitment of meeting mutual goals, into consideration.

Supplier relationship management contributes to supplier selection and consequently increases the competitive advantage of a manufacturer. (Choy, W et al., 2004) One of the ways to make an educated decision and select appropriate suppliers, is to utilize a common, even a Web-based, platform. In this way customer needs could be directly aligned with suppliers’ capabilities.

It can be seen that price is not the only factor to be considered in the supplier selection process. A wide range of other factors such as quality, organization and culture, as well as the alignment of supplier capabilities in a long-term strategic way should also be considered. (Choy, et al., 2004)

3.7.1 Role of procurement in SRM

Procurement, which is called purchasing in some texts, is embedded and part of Supplier Selection (SS) in SRM. According to an online encyclopedia, procurement is defined as the acquisition of goods and/or services at the best possible total cost of ownership, in the right quantity and quality, at the right time, in the right place and from the right source for the direct benefit or use of corporations, or individuals, generally via a contract. (NationMaster - Encyclopedia)

The main questions about the role of procurement in SRM are how procurement contributes to the business relationships, and the different approaches available in the matter?

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4 Supplier Selection is an Important and vast area of SRM and going through all its concepts and details is beyond this report’s limitations. Thus, only a brief introduction to the overall concept is given in this section.

5 In this report the focus was given to the procurement part best adaptable to the case study of the thesis, and details about SS and purchasing criterions were not discussed.
In general, procurement is after making strategic buying decisions in the market. With sufficient and accurate data available, this decision is strategically made using economic analysis methods such as cost-benefit\textsuperscript{6} analysis or cost-utility analysis.

The role of procurement can be divided into three major parts:

1. *The role of rationalization:* This indicates what we need to buy from our suppliers and which suppliers we should use.\textsuperscript{7}
2. *The role of development:* This role is about the existing potential to develop resources, and the scope of this potential (suppliers).
3. *The role of structure:* Is after finding the ways in which companies impact the structure of the supplier market.

These roles are the foundation of procurement practices. In the business world today the following steps are usually carried out by the procurement departments.

**3.7.1.1 Gathering of Information**

This information is dominant in order to make strategic decisions and to develop log-term relations in the future. Thus, information both from the buyer company and the suppliers are needed.

The buyer company should duly inform the procurement department of its objectives, product development, supply chain details, financial status, and needs. In addition the procurement department should gather sufficient information from the suppliers indicating their status that can satisfy these requirements.

**3.7.1.2 Contacting Suppliers**

At this point after identifying the suitable suppliers using the information gathered from both the buyer company and the supplier market, these potential suppliers will be contacted. Requests for Quotation (RFQ), Requests for Proposals (RFP), Requests for Information (RFI) or Requests for Tender (RFT) are among things asked for from the potential supplier. An alternative to this is making direct contact with the suppliers. (DefenseAcquisititionUniversity, January 2001)

**3.7.1.3 Background Review**

The next step, after contacting the selected suppliers, is checking the performance background of each supplier. Here, references for the product or service quality are requested. (DefenseAcquisititionUniversity, January 2001) Furthermore, all requirements for backup services including installation, maintenance, and warranty are checked. In this step a trial or probationary period might be considered.

\textsuperscript{6} Cost-benefit analysis is an important technique for project assessment. It is the process of weighing the total expected costs against the total expected benefits of one or more actions in order to choose the best or most profitable option.

\textsuperscript{7} This part of procurement is not applicable at Volvo Penta, because they do not have much to say when it comes to these questions.
3.7.1.4 Negotiation

After the suppliers are wisely selected and reviewed for performance, negotiation for developing contracts is undertaken. Here is the place where price, availability, and customization possibilities are talked about. However, it should be noted that estimations on most these factors must be in hand due to previous assessments in data gathering step. Moreover, schedules for delivery are set, and the contract is completed.

3.7.1.5 Fulfillment

When negotiations are done and contracts are established and signed by partners, base on the terms indicated in them suppliers are required to make the necessary preparation, shipments, delivery, and the buyer company to make the payments. Other functions that might be conducted at this step are installation and training. (DefenseAcquisititionUniversity, January 2001)

3.7.1.6 Consumption, Maintenance and Disposal

At this point the buyer company will evaluate the performance and services provided by the suppliers. Having close communication between the manufacturing company and the procurement department are of vital importance to this development. This communication will let the OEM\textsuperscript{8} be aware of the terms of contract and places of deviation, and the procurement department aware of the shortcomings the suppliers might bring about. Thus, the procurement department will be able to deal with the situation and request either party for balance of standards.

3.7.1.7 Renewal

Finally, when the duration of the contracts is over and the items are completely consumed, the company can choose to either renew the contract or to produce item internally. In case of contract renewal, the company determines whether to consider other suppliers or to continue with the same supplier and the procurement department makes the preparations.

\textsuperscript{8} Original Equipment Manufacturing
3.8 Supplier Classification

Due to the different economical importance of different suppliers, a company cannot provide the same attention to all suppliers. Studies indicate that normally only 20 percent of suppliers are responsible for 80 percent of the cost of material. Therefore, using the same strategy for all suppliers is not the best choice. Thus, a company should utilize a mix of different models which can be individualized for any specific supplier or specific type of suppliers. (Freytag & Mikkelsen, 2007)

Supplier Classification is the third part of Supplier Relationship Management. There can be two main ways of classification named in the industry. One is based on an older western way of thinking such as Ford, the other on a more modern paradigm, starting from Japan with Toyota being the pioneer.

In the first and traditional way which is widely used among the American industry, purchase of an item can be spread among alternate suppliers in such a way as to improve the firm’s bargaining power. (Porter, 1980) The latter on the other hand, takes a different approach, being keen on deeper supplier relationships.

J.H. Dyer et al. named numerous advantages in the Japanese way of thinking including:

- Sharing more information and thus being better at coordinating interdependent tasks;
- Invest in dedicated or relation-specific assets which lower costs, improve quality, and speed product development; and
- Rely on trust to govern the relationship, a highly efficient governance mechanism that minimizes transaction costs. (Dyer, et al., 1998)

However, there are still some disadvantages present in this method of classification. Building up and keeping such relationships are costly and it is also difficult to change such suppliers in cases of inefficiencies.

Nonetheless, it should still be in mind that not one size fits all. Like all other areas of Supply Chain Management, supplier relationship is also not an exception. The nature and amount of the product supplied from each individual supplier, along with the strategic importance of the product for the buyer company are among factors that determine the strategy chosen in supplier segmentation.

3.8.1 The Japanese paradigm

In the Japanese way of dealing with suppliers the level of closeness is mostly defined by how customized the product delivered is. They form a very close relationship, sending part-time to full-time employees, working together, co-designing products, and sharing all information, with suppliers delivering high value, highly customized parts. These suppliers are mostly wholly owned or partly owned suppliers. The next set, are some independent suppliers as well as some partly owned. The last set, are independent suppliers which provide standardized or commodity like parts. This group is less
involved in the activities of the other two groups. Thus, it is less important to develop a close relationship in design and improvement with this group.

Wholly / Partly owned suppliers
- Very close relationship
- Sharing intimate information
- Co-design and co-planning

Partly owned / independent suppliers
- Close relationship
- Sharing information
- Development planning

Independent suppliers
- Upon contract relationship
- Arms length relationship

Figure 7 the Japanese Supplier Segmentation

The differences in addressing these levels are due to differences in characteristics such as relation-specific investments, level of information sharing, level of assistance provided by the buyer company (such as sending in house employees or providing education), and level of trust. These differences will be more elaborated in next sections.

3.8.2 A Strategic Supplier Segmentation

It is important to know both arm’s length and partnership approaches to supplier segmentation have their own benefits. Arm’s length relationships make supplier grow, learn from their competitors, and bring about economies of scale. On the other hand, partnership allows suppliers to experience closer relationships, bigger relation-specific investments, higher level of info sharing, and higher level of trust.

Consequently, in order to achieve effective strategic supplier segmentation, OEM’s should take advantage of both paradigms. Realizing the benefits of this strategic segmentation, it will extend to higher tier suppliers by the first tier suppliers and so on.

In order to achieve this strategic segmentation, having the Japanese way of separating their suppliers in mind, the company should first segment its suppliers into two primary groups of: strategic suppliers, and non-strategic suppliers. First group of suppliers are those supplying strategic goods, which will make the finished product different from the other competitors, while the latter are those supplying commodity like parts.

For independent suppliers, supplying standard non-strategic parts such as bolts and the like, arm’s length relationship seems sufficient, helping them benefit from economies of scale. Deeper relationships here might lead to competitors gaining information, and it is not worth spending on relation-specific investments for each OEM.

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9 The arm’s length relationship mentioned here might defer from the old concept usually named in textbooks. This is further explained in this section.

10 Original Equipment Manufacturer
On the contrary, affiliated suppliers can benefit from partnership relationships bringing them closer to their customers. Assisting these suppliers to reach lower production costs, improve quality, and minimize inventories, will help the OEMs themselves to succeed.

However, when talking about arm’s length relationship we don’t mean the traditional concept of having numerous suppliers and switching between them. We simply mean keeping the few with less fuss. This can even implicate having long term relationships with a few suppliers of one part. Accordingly, even if having only two suppliers for a specific part, companies should maintain the vigorous competition between them by managing them skillfully, such as giving volume according to performance.

Furthermore, this classification can be done in more details, by taking the volume purchased from each group of suppliers into consideration. This is completely illustrated in Table 2 which is an extension of the Kraljics model.

<table>
<thead>
<tr>
<th>Low volume purchase</th>
<th>High volume purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High opportunity goods</strong></td>
<td><strong>Critical Strategic Suppliers</strong></td>
</tr>
<tr>
<td>bottleneck suppliers</td>
<td>strategically important substitution or alternate difficult major importance to purchasing of importance to Supplier Selection</td>
</tr>
<tr>
<td>substitution difficult internal production might be an option monopolistic market high entry barriers critical geographic or political situation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Low opportunity goods</th>
<th>Low volume purchase</th>
<th>High volume purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noncrical Suppliers</td>
<td>Leverage suppliers</td>
<td>sufficient availability alternatives available substitution possible benefiting from economy of scale learn from competition standard specification of goods</td>
</tr>
<tr>
<td>sufficient availability substitution possible lower information sharing standard specification of goods</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 Strategic Supplier Classification

The first group will be the Noncritical suppliers, which provide the standard parts in low volumes delivered. These suppliers can easily be substituted due to the high availability. The next group are called leverage suppliers, these are those supplying standard part but in high volumes, such as bolts. The same method can be used for this group with a difference in keeping closer relationship due to the high volumes purchased. Economies of scale can be utilized here.

Suppliers delivering strategic goods in low volumes are named bottlenecks. Changing them will be difficult due to their oligopolistic market. Closer relationship must be formed with this group and in cases of pressure companies might decide to produce the item internally. The last group will be the Critical Strategic Suppliers, supplying strategic goods in high volumes. These are strategically important suppliers, changing them will be very difficult and thus are of great importance in Supplier Selection stage by the procurement department.
As in most models of classification problems might occur in real-time situations. The Strategic supplier classification depicted in the matrix in table 2 is no exception that might be worth mentioning.

- A supplier can be placed in several quadrants of the matrix
- The classification doesn’t take the whole network into consideration. The fact that supplier relationships affect one another is not considered in this model. (Pederson & Torvatn, 2003)

### 3.8.3 Supplier Classification at SAAB

Since problems occur in classification of the suppliers, SAAB has chosen to use a self developed model that is based on the Kraljics matrix. The model is adjusted according to the special needs of SAAB. (Falkenberg & Nilsson, 2005)

The different supplier relationships are divided into three groups named Operational Alliance, Increased Alliance, and Partnership. In this model the suppliers are evaluated according to their degree of complexity and the importance of procurement.

The suppliers that fall into the operational alliance group are supplying standardized products that have low impact on the production at SAAB. These suppliers can be replaced when needed and the items purchased represent a small part of SAAB’s total purchase. Suppliers from increased alliance group are providing SAAB with products that must be adjusted or that are available in several variants. The possibility to replace a supplier in this group is decreased. Falling into the partnership group will demand a higher degree of co-operation and adjustment. These suppliers have a great impact on SAAB’s production and are hard to replace. (Falkenberg & Nilsson, 2005)
3.9 Supplier Development

As mentioned earlier in this chapter supplier development is one of SRM four parts coming after Supplier Selection, Supplier Evaluation, and Supplier Classification. After suppliers are selected by the company according to the objectives of the company and evaluated in a consistent manner and classified into strategic categories, there are three ways in which they can be dealt with in case of problems.

If the core company is not satisfied with the performance of its suppliers they can either produce the item internally, change the supplier, or improve the existing supplier. The nature of the product, its value, and the volume delivered by the particular supplier indicate which path to choose. For example, if the item supplied has low value and is delivered in low volume, changing the supplier might be the right strategy. On the other hand, if an item with a high strategic nature is delivered in low volumes the company might decide to produce it internally. In cases of more moderation, supplier development seems the best choice.

![Figure 8 different strategies toward supplier shortcoming](image)

Formal activities undertaken by customers to improve the performance and capabilities of existing suppliers are referred to as supplier development. "Supplier Development are any effort of a buying firm with a supplier to increase its performance and/or capabilities and meet the buying firms short and/or long-term supply needs."(Krause & Ellram, 1997)

3.9.1 Why develop suppliers?

Traditionally, most suppliers focused on meeting customer specifications and so they usually managed their processes on their own with as little customer input as possible. All this changed in the 1980s, when the trend towards reducing the number of suppliers became a fact. The buying companies started to cooperate more with the few remaining suppliers. These suppliers were given long-term contracts. This changed everything and supplier development became an attractive proposition for both suppliers and buying companies.

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1 Supplier Development
Outsourcing is another trend that has made supplier development more important. Buying firms now depend on their suppliers to deliver products with high quality, performance and low cost.

Surviving today’s competitive marketplace can be hard and therefore it will be easier to work together with the suppliers to achieve the best possible solutions. Future determining objectives like lower inventory levels, faster order fulfillment cycles, shortened life cycles, removal of non-value-adding costs and tasks are all drivers for finding ways to develop the suppliers.

According to Christopher (1992), using a more extensive cooperation between a buying company and its suppliers will certainly increase the possibilities to achieve better productivity and efficiency, which will lead to competitive advantages against other companies. A company that provides optimal processes will have an advantage towards its competitors. This will help the company minimize internal waste. According to Rich & Hines (1997), minimizing internal waste is what supplier development is all about.

In order to create stable relationships it is a good idea to develop the existing relationships instead of changing the suppliers often. This will reduce the insecurity and make the collaboration easier. Relationships with duration are also a prerequisite to achieve flow stability that will be a competitive advantage for the company. Ultimately, working together with the suppliers and helping them to develop is a good way to make sure the supply chain improves as a whole while continuously find new solutions to different problems.

Thus the motives for supplier development can be listed as follows:

- Competitive advantages
- Optimal processes
- Flow stability
- Long-term relationships
- Continuous improvements

Supplier development can be made in two different ways:

1. Reactive – The buying company react to disturbances throughout the flow, and supplier development is initiated only to reduce these disturbances.
2. Proactive – cooperation between the buying company and the supplier to prevent disturbances from occurring in the first place.

Through supplier development, it is possible for the buying company to act in a more proactive way and thus improve the relationship with its supplier. According to Handfield et al. the different ways in order to improve suppliers are to **assess their operations, providing them with incentives in order to improve their performance, instigating competition among suppliers, and working directly with suppliers through training or other activities.** (Handfield, et al., Winter 2000)

Using a proactive way will reduce the need to execute costly activities to handle those disturbances. (Rich & Hines, 1997) One of the prerequisites of supplier development is a mutual agreement and
risk taking between both the supplier and the buyer company. Consequently, both parties must share a high level of trust in sharing internal information with one another. Even in such a situation, success is still not a sure thing.

Working with supplier development, always has the risk of the buying company leaning towards short-term advantages at the expense of a long term partnership. Forcing a supplier to meet the exact needs of the buying firm might hurt the competitiveness of the overall supply chain. The needs of the end customer must always be the main focus, and care must be taken to not lose sight of this along the way. (Harrison & van Hoek, 2005)

Although making improvements is feasible by just hitting the easy-to-fix problem suppliers, this might act only as a short term fix. This will need more reactive methods in the future. The best way to address Supplier Development is to view it as a long term strategy and make it part of an integrated supply chain development program.

### 3.9.2 Which Suppliers to Develop

Supplier development requires a substantial commitment of human resources by both firms. So the question of “which suppliers to develop?” needs to be a strategic decision rather than simply a reactive one. (Hartley & Choi, 1996)

When trying to identify the best candidates to develop the first thing that comes in mind is of course the economical amount of purchases a company makes from a supplier. However there are some other situations that need to be taken into consideration. There are materials that are purchased in high volume or in low volume. However, the volume purchased isn’t always the winning criteria. There are suppliers where the purchased material is in low volumes but strategically important for the company.

Another issue that can be worth considering is the length of the supplier relationship. The suppliers considered to be retained and awarded future business should be prioritized. The type of administrative or manufacturing processes used by the supplier should also be considered. The industrial engineering techniques used during supplier development are more effective for labor-intensive assembly processes than for capital-intensive ones. (Hartley & Choi, 1996)

### 3.9.3 Supplier Development Programs

Implementation of supplier development requires vast organizational changes with a fast pace that suppliers must endure. Development programs can create better collaboration, where the buyer company uses the program to help suppliers reach better performance. In most cases this is done through better information flow and sharing of knowledge. (Beaumont, et al., 1996) Supplier Development programs create benefits for both parts, although these profits are usually less obvious to the suppliers. Therefore, the buyer company is responsible for informing its suppliers of the advantages of such a program and to get them on board. In case of insufficiency in this process, lack of proper commitment from the supplier should be expected. (Krause & Ellram, 1997)
Many companies use what they call a supplier development programs to award the supplier for a certain level of quality or etc. A supplier development program must be more than that. It should be a systematic teaching process, enabling suppliers make continuing improvements. (Hartley & Choi, 1996) Such a program should aim at the following improvements:

- Lowering the total costs of the supply chain
- Increase the profitability for the supply chain participants
- Increase the quality of the product
- Help achieve on-time-delivery at each point in the supply chain

In other words the program is after helping suppliers achieve better performance. Having them charge less, or simply auditing their supplies, is not what the program is about. Two of the most important functions of a supplier development program are:

- **Provide information** – regarding products, expected sales growth etc. lack of information will lead to higher inventory to balance the uncertainty which in terms leads to additional costs.
- **Provide training** – for example, teach the suppliers how to cut costs, provide them with know-how and tools to achieve improvements.

Of course, developing such a program will incorporate costs, time, and resources to commit. Although, many big scale companies use such an approach. Purchasing Magazine conducted a poll that claimed 53 percent of companies engage in supplier development programs. (Half Work with Suppliers, Half Don't, 2000)

### 3.9.4 Mapping the Supplier Development

Steps in Supplier development recognized in most literature are more or less the same. After going through many articles on the subject the following steps were introduced in most, and can be applicable in most situations with minor modifications.

![Figure 9 steps in mapping Supplier Development](image_url)
3.9.4.1 Identify the most important commodities

This step needs the participation of all strategically affected departments such as finance, IT, production, design, etc. This classification can be done by methods introduced in Supplier Classification section of this chapter.

<table>
<thead>
<tr>
<th>Low opportunity goods</th>
<th>High volume purchase</th>
<th>low volume purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td>High opportunity goods</td>
<td><strong>Critical Strategic Suppliers</strong></td>
<td>substitution difficult&lt;br&gt;strategically important&lt;br&gt;monopolistic market</td>
</tr>
<tr>
<td></td>
<td><strong>Noncritical Suppliers</strong></td>
<td>sufficient availability&lt;br&gt;substitution possible</td>
</tr>
<tr>
<td></td>
<td><strong>Leverage suppliers</strong></td>
<td>alternatives available&lt;br&gt;standard specification of goods</td>
</tr>
</tbody>
</table>

Table 3 commodity portfolio Matrix (Handfield, et al., Winter 2000)

3.9.4.2 Identify the important suppliers

After identifying the critical commodities, suppliers providing these goods should be identified and categorized into “problem suppliers”. These are the suppliers that should be developed and focused attention on.

In identifying these suppliers a Pareto Analysis might seem worthwhile. (Handfield, et al., 2000)

3.9.4.3 Start from within

Before addressing the critical suppliers to make the required improvements, buyer companies must work from within and make the proper adjustments inside their company. By having a harmonious strategy inside the manufacturing throughout to the supplier, improvements will be in line and integrated with supply chain development.

3.9.4.4 Inform the supplier

The next step here is to meet the supplier top management and to inform them of measures and strategic alignments of the company in order to have the suppliers integrated with the whole supply chain. Furthermore Handfield, et al. (2000) expresses the need to be professional in meeting the supplier to build trust and reliability.

It is common to use the suppliers’ competence and knowledge about the business, and then provide them with new angles of approach and potential solutions. The buying company contributes by

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12 Step one and two are more completely analyzed in the Supplier Classification section of this chapter.
13 Pareto Analysis is a statistical decision making technique to select a limited number of tasks that produce significant overall effect. The idea is that the majority of problems (80%) are due to a few key causes (20%).
introducing new angles of approach and potential solutions and the supplier having knowledge of
their organization, contributes with solutions that demand knowledge of the business.

Different ways have been recognized in order to get the supplier “change”. These methods were
categorized in three major trends:

1. Point out: In this method the supplier gets informed of the fact that present performance is
not accepted.
2. Suggestions: Here customer tells the supplier how to improve “do as I say”. The problem
here is that risk undermines the existence of the supplier and stability gets worse.
3. Same way of working: This is done with the customer providing arguments on why the
supplier should use the same way of working as the customer. In other words education is
provided by the customer, “do as I do”.

3.9.4.5 Choose the key projects

The next step is to analyze the different opportunities detected in terms of feasibility, finance,
duration, and return on investment to choose the most important goals.

3.9.4.6 Set details of implementation

At this step a mutual agreement should be set on the whereabouts of the project; How much resource
is needed, when to distribute it and by whom, time frames of achievement, specific outcomes desired,
etc.

In order to make strategic decisions here, five functions should be considered and executed:

- Education; process improvements, quality systems, productions philosophies, etc.
- Certification; standardization of products.
- Joint product development; shared responsibility and co-operation.
- Sponsorship programs; permanent personnel at the supplier, works as a organ of contact.
- Jointly solving problems; joint financing, joint competence.

3.9.4.7 Monitor Implementation

The final step is to monitor the implementations in order to make sure everything is going as planned
and make changes in places of need.

3.9.5 Problems in implementation of Supplier Development

It is worth mentioning that in carrying out the steps in Supplier Development, like any other project
implementation, problems might occur. In this particular implementation problems might be due to
shortcomings from either the supplier company, the buyer company, or from the interface of the two
companies.
3.9.5.1 Supplier side

Shortcomings of the supplier might be because of shortage in its resources or simply from lack of trust. Lack of trust is caused by putting insufficient effort in step four of the supplier development map, *Inform Suppliers*. Shortcoming in resources on the other hand might be because of lack in human resources, inadequate technology, monetary matters or machinery.

If suppliers are not assured of the outcome of the project for themselves, they might not put the required attempt in implementing it. In order to solve this problem they should be assured of the outcome and of how they will benefit, from the starting point. Ways to do this include: setting the business relationships based on the improvement; showing where they stand among other suppliers; pointing out the benefits from the beginning; and making sure of the execution through follow ups.

In implementing the improvement program supplier might come shorthanded due to lack of resources. To cover up this deficiency, buyer companies can lend a helping hand by different means such as providing financial support, providing personnel support, focusing on easy to solve improvements, or provide necessary training.

3.9.5.2 Buyer side

The deficiencies here are mostly due to the fact that managers can’t see the real benefit. This might be in line with raising the bar too high to achieve, dealing with too large a number of supplier to make it feasible financially, or not having the proper support from higher authorities.

Minimizing the number of suppliers, setting smaller goals, focusing on the long term objectives, and determining the costs and benefits will result in the desired commitment.

3.9.5.3 Buyer-supplier interface

The interfaces between the two partners make it smooth or harsh to conduct improvements. Problems occur when trust is not present in sharing of information, benefits are not fully understood, and/or alignment is not made properly.

Trust can be made through time with better communication, decreasing the presence of legal involvement, having confidential information exclusive and etc. On the other hand, benefits to be gained must be correctly communicated and incentives and motivations made for partners to commit in the way they should. Finally to make alignment right road map of future objectives and expectations should be duly shared and development programs should be adjusted to conditions.

<table>
<thead>
<tr>
<th>Supplier</th>
<th>Potential problems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lack of commitment</td>
</tr>
<tr>
<td></td>
<td>Lack of resources</td>
</tr>
<tr>
<td>Buyer</td>
<td>Lack of buyer and management commitment</td>
</tr>
<tr>
<td></td>
<td>Hard to see immediate benefits</td>
</tr>
<tr>
<td></td>
<td>Lack of enthusiasm due to unrealistic expectations</td>
</tr>
<tr>
<td>Buyer-Supplier</td>
<td>Lack of trust</td>
</tr>
</tbody>
</table>

Table 4 potential problems in Supplier Development
3.9.6 Supplier Development Program at Scania

In order to understand a real time execution of a supplier development program, this study seemed fit to briefly introduce findings of Scania supplier development report. (Andersson & Wahlquist, 2002)

During the 1990s Scania felt the pressure of a tough competition within the automotive industry. Thus, in order to maintain competitive in the market, along other companies they started benchmarkings. After the research done at Cummins in 1998, due to the positive results of the study they established their own SCD-department. They have started a development program to help their suppliers evolve their business with Scania support since.

The program is in most cases initiated when a problem occurs (reactive) and is intended for suppliers with great importance. Suppliers with strategic importance are not included in the program. These suppliers already know what is expected from them and live up to the demands. The purchasing department is immediately notified in case of insufficiencies, and two different options are presented. One is to call in an SDX-group that is responsible for the development of the supplier. The other is to use a long-term approach where the supplier is educated at Scania’s production system (SPS). The two different approaches to solve problems are:

1. Work Shop – Short term, reduce disturbances that needs to be solved immediately
2. Education in SPS (Scania Production System) – Long term, supplier gets certified

3.9.6.1 Work Shop

A work shop is initiated when a supplier performance is not sufficient and the purchasing department recognized a short term fix. The SDX-group will create an adapted program focusing on the failed variable from the supplier. These variables include Quality, Delivery precision, and Economy. In other words the people that work with Work-shops solve problems that need to be taken care of immediately.

The following steps are undertaken in a workshop:

1. Before the work-shop is started someone from the SDX-group visits the supplier to tell them about the dissatisfaction of Scania.
2. The Work-shop is started with a discussion and an analysis with the supplier about its performance.
3. Then the supplier gets to perform an exercise where the importance of delivery precision and product quality is illustrated.
4. Then the supplier gets a chance to discuss the situation and ways to solve the problem.
5. The supplier now gets to present a possible solution for the problem.
6. Once this is done Scania and the supplier agree on an action plan that contains suggestions on how the supplier will improve its performance.
3.9.6.2 Scania Production System

Scania production system (SPS) is similar to Toyota’s famous production system TPS. The SPS is built on the fact that customer is in focus, staff are respected, company constantly attempts to reduce internal waste, and that the operators have a central role. There are four overall principals that the SPS is built upon:

- Standardized way of working
- Right from me
- Produce only when there is an order
- Continuous improvements

The education consist of Scania’s attempt to perform training with the supplier, during a couple of weeks. During this training they use tools like films, lessons, and visits at Scania production site. This is done to inform the supplier how SPS works and what the principals are. After going through the education the supplier is expected to become certified according to step one in SPS within a time frame of 6 to 12 months.
3.10 Information Technology and SRM

It can be said that gradual increments of information sharing produce a positive increase in the local and global performance of the supply chain (Willcocks & Sauer, 2000). Information Technology has been both a driver and an enabler of the SCM world. In today’s ever growing IT world, newer systems are more than just an efficiency enabler, they also enable new opportunities. (Skjott-Larsen, et al., 2007) On the other hand according to almost every textbook written, information flow is a big portion of SCM and Logistics. Thus, this research has seen fit to give an insight to how IT can contribute to SRM.

One of the main issues in SRM, like many other parts of SCM, is the uncertainty existed in placement of orders for suppliers. This uncertainty, itself is an effect of a bullwhip effect coming from the end customer. Instead of the older method of buffering this uncertainty with material inventory, IT has provided modern methods of buffering using clearer knowledge.

Logistics Information can be categorized into four groups of transactional information, management control information, decision analysis information, and strategic planning information. (Skjott-Larsen, et al., 2007) The application of each in SRM is shown in the pyramid understood from T. Skjott-Larsen et al. book. The foundation of the pyramid being the transaction information bases the ground for further decision and management purposes. Furthermore, computer software models in assisting each of these named stages have been proposed in recent years.

In SRM, the information flows in between different firms. This is known as the inter-firm information flow. The most common information system in dealing with the inter-firm information flow is the Electronic Data Interchange (EDI) which is widely used by most companies. This commonality in utilization is vital due to standardization required for integration. However, as mentioned before IT is an enabler of new opportunities. Hence, Internet and XML has opened numerous doors for faster, easier, more accurate, more accessible, and finally with higher
transparency information communication. Transparency and visibility are the pre-requisites in preventing errors from amplifying as information flows upstream to the suppliers.

To go even further, and have a higher level of optimization, the inter-firm information system should be integrated all through the supply chain. (Skjott-Larsen, et al., 2007) This can easily be achieved using the modern technologies such as RF and RFID tags which can transmit data from the point of order all the way to the top suppliers by a click on the readers. Using the Internet as order placement and inter-firm information portal is another way of achieving this integration.

P.B. Schary et al. illustrate the connections between the company and its suppliers in figure 11. While top management negotiate the requirements for starting business, other levels of performance need to be coordinated through transaction of information. Operations in one company should be informed to the planning level of the other and vice versa. The duration of relationships between the two companies depends on the duration of these connections which in terms depend on level of trust and relationship between them. IT systems such as email, extranet\textsuperscript{14} portals, EDI, and many more can be enablers of this coordination to the highest point.

Finally, Information Technology is developing by the day and bringing upon new opportunities for faster, easier, and more efficient connections and thus making the supply chains ever more virtual. Virtual networks are chains where the partners within a supply chain are linked together by a common information system (Harrison & van Hoek, 2005). Virtual chains in term help in flexibility and efficiency in connections and performance due to the transparency of information from upstream to downstream.

Virtual integration is a prerequisite in order to compete in today’s global market where the consumer is in focus and consumer insight becomes extremely important. Information technology means opportunities to find the key to competitiveness. Therefore, corporations should have in mind that moving with technology, although risky, would be the winning card.

\textsuperscript{14} Extranet is the extended version of internet, used between the company and its suppliers or customers.
4 Empirical Foundation

4.1 Volvo Penta Supplier Relationship Management

4.1.1 History

Volvo Penta’s history goes back to 1868 when Sköfde Gjuteri och Mekaniska Verkstad was founded. Manufacture included cast-iron goods and hardware such as boilers, pots and pans, ploughs and threshing machines. It was in the early decades of the 20th century that the engine production started. The engine produced was called Penta, gotten from the Greek word meaning five, referring to the five men who sketched the first drawings of the product. In the second decade of that century the production was extended to two, three and four cylinder engines. Later in 1946 the 6cylinder diesel was introduced.

Export began and continued during the 60s and 70s and rose as high as 84 percent in 1973. Large volumes of industrial engines were sold to makers of irrigation units. Volvo Penta acquired outboard production from Monark-Crescent, adding new products to the program. In 1991, Volvo Penta launched the KAD-concept, a new generation of engines with lower weight and reduced emissions and fuel consumption. The next year, in Lexington, Tennessee, Volvo Penta began manufacturing gasoline engines and Aquamatic stern drives for the increasingly important American market. (Volvo Penta global website) Later that decade Penta, taking advantage of the growing economy in China and Far East established an assembly factory for industrial engines in Wuxi, outside Shanghai.

Figure 12 Distribution of Volvo Penta worldwide
4.1.2 Penta within AB Volvo

AB Volvo is one of the biggest industrial companies in Sweden today. It has production in around 25 different countries. The company has approximately 80,000 employees within five different business areas. Mack, Renault and Volvo Trucks represent over two thirds of the company’s turnover. Volvo Penta is one of the smaller manufacturers within the group.

![Diagram of AB Volvo companies and business units, where Penta stands in the AB group](image)

**Figure 13 AB Volvo companies and business units, where Penta stands in the AB group**

4.1.2.1 Volvo Penta Distribution Center (VPDC)

VPDC is situated in Vara, Sweden. Orders are shipped to customers worldwide with an approximately 95 percent export rate. A complete order is a combination of engine, drive and other accessories. All these material are supplied from the Vara factory, which makes the logistics flow rather unique.

It is worth noting that since the engines Vara is producing are worth around 70,000 SEK each, a one day stop in the production caused by any shortcoming from any of the suppliers would be extremely costly for the plant.
4.1.3 Production

It is well said that Penta is constantly developing new ideas for its products. The launch of the D4 and D6 by the company has been the big news in the marine business. These top notch engines are manufactured in the factory in Vara. Volvo Penta also manufactures the new electronics platform, EVC (Electronic Vessel Control). (Volvo Penta global website)

By taking advantage of electronics, Volvo Penta was first to develop the next sensation in the marine world: the joystick – a skipper's dream. The innovative joystick makes it easier to dock a boat than park a car. (Volvo Penta global website) Moreover, in the autumn of 2006, the first four-engine installation of IPS on a single 75-foot boat was performed.

4.1.3.1 Production motive

As noted, Volvo Penta is one of the smaller Volvo Group companies with a unique specialist production. This could be taken as one of Penta’s advantages. On one hand being part of a strong organization provides technical and financial support to innovative and pioneering features, and on the other being a small company means having flexibility.

At Volvo Penta the goal is to provide the right product, with the right quality, at the right time and place, with the right price, to the end customer. This has made Penta’s products labeled with a clear innovative and competitive image. In achieving this goal Penta maintains committed to the Volvo Group standards of quality, safety and environment.

Their motto in production is: "Volvo Penta Purchasing shall have such competence regarding the global supplier market that Volvo Penta will be provided with optimum Product- and Process development, Products, and Services that fulfill and exceed the customer's expectations on quality, cost and times." (Volvo Suppliers website)

Since Vara changed policy to manufacturing towards the customer, the production rate has decreased. Consequently, the delivery of raw material needs to be decreased as well. Even though, it seems easier to change the production rate, having the long term objectives in mind, changing the delivery rates from suppliers seems the better choice.

4.1.4 Volvo Penta Supplier Market

Penta Vara is dealing with 244 suppliers worldwide. Hence, it can be said that Volvo Penta is dealing with a semi large number of suppliers.

Basically, Vara is oriented towards European suppliers, but also have suppliers in Japan, Brazil and in the US. They are planning European hubs for far away suppliers in order to maintain the three day delivery lead-time. Vara has around 20 US suppliers from before, but is trying to replace them with new European ones.
Due to the nature of the product Vara is producing, suppliers for each part are unique. So, the company does not have the space to change suppliers as easy and as often as wanted. This further means, they cannot implement new Supplier Selection methods in most cases. Consequently, this has shifted some power to the suppliers, making it difficult for Vara to deal with the shortcomings that occur every now and then. Thus, they have to deal with the existing suppliers and try to improve the relationships with suppliers, making them have a long history of relationship with most. In addition, changing suppliers here would be extremely costly and not feasible.

Furthermore, the Supplier Selection process and the contracts with them are conducted by a separate department of procurement. This is a separate office located in Gutenberg which acts for all AB Volvo companies. They have a mutual Supplier Evaluation Model (SEM) in order to select and evaluate suppliers for all companies. According to the document prepared by Volvo Logistics on SRM, these general SEM measurements within Volvo groups are as follows:

1. The right product; 2. The right quantity; 3. The right time; 4. The right place.

Furthermore, measures should be in accordance with the delivery instructions indicated in each individual contract. Unfortunately, neither sufficient nor efficient communication exists between the procurement department and the main manufacturing department in Vara. Consequently, this has caused some conflict in interactions and requisitions between Volvo Penta and the suppliers.

In addition, AB Volvo has conducted an internet based supplier portal for some limited activities with their suppliers such as posting SEM information, attracting new suppliers, and available forms for new potential suppliers. Vara demands that suppliers receive EDI call offs from the company and invoice them over the net. Today around 220 of their suppliers are on the EDI connection, the remaining ones will not convert to EDI basically because they are small suppliers or US based ones.

Vara does not accept deviations from spec in material, and is asking the supplier to replace or rectify the fault on their own expense, but other costs will be covered by Penta. According to Penta management if they are dealing with a critical deviation from the standards agreed upon extreme measures (i.e. zero tolerance\(^{15}\)) are taken. However, informal communication and meetings on the subject are preferred.

Since Penta Vara does not have the freedom in changing their suppliers, and considering the number of existing problems with a number of the suppliers, it can be interpreted that they are using a reactive way of working. This reactive way should be changed into a proactive way trying to prevent problems from occurring in the first place.

\(^{15}\) This is not the same concept of “Zero Tolerance Approach” taken by Volvo Trucks.
4.1.5 The Supply Chain Development Program

The following points are the different objectives recognized by Penta for the Supply Chain Development (SCD) program:

- Introduction of members and information on Vara-plant.
- Volvo Penta view of current situation, potential issues, and future actions. The issues here are as follows: Communication, Delivery performance\(^{16}\), Actual capacity vs. delivery schedules, Lead-times and flexibility, Quality issues measured using QPM\(^{17}\) and PPM\(^{18}\) \(^{19}\), Status of ongoing initiatives in cases of availability, Other issues such as EDI, packaging, labeling, and etc.
- The suppliers’ view on current situation, potential issues and proposed actions.
- Agreement on short-term and long-term action plans, to secure and develop material supply to the Vara-plant.
- Wrap-up and conduct decision on next steps, i.e. follow-up on meeting.

4.1.6 SRM within SCD program

Volvo Penta vision for the SCD program for 2008 is developed to the thought of having suppliers who can support the volumes, variations and demands that the market is asking for by a hundred percent.

In order to achieve this vision, Penta overtook an SRM program as one of the major parts of the SCD. The steps taken in this program were as follows:

- All suppliers have received some attention, at least a letter containing information of where Volvo Penta is going.
- Suppliers are classified by means of quality and delivery precision into four groups of Problem suppliers, Important or sensitive suppliers, Suppliers with development potentials, and lastly others.
- Top group of suppliers have been to Vara during 2008 on a logistics day, along with the procurement and quality departments.
- Top group of suppliers are to participate in cost cutting projects.
- Middle group have been visited by logistics or quality departments.
- There is an agreed way of measuring performance, and it is on a regular basis communicated to the suppliers.

\(^{16}\) planned level is a hundred percent  
\(^{17}\) Quality Performance Measures  
\(^{18}\) Production Performance Measures  
\(^{19}\) planned level is more than 200PPM and 50QPM
Furthermore, a “Working procedures and methods” outline has been sought after by the group in order to handle the suppliers. In this outline procedures and methods for how to work with suppliers were to be documented. According to the SCD program in Vara suppliers are classified into three groups of important or sensitive suppliers, suppliers with development potential, and finally others. A fourth group of Problem Suppliers is also identified. Lastly, the outline is to point out the different working procedures on how to handle the fourth group of Problem Suppliers. These new ways of working are noted to note: communication about Penta’s demands on quality, frequently organized meetings, common cost reduction activities, follow-ups, or measures from supplier.

Another issue recognized in this program is organizing and bringing upon closer cooperation and responsibilities between SQA and the Vara plant. Responsibilities were to be duly defined. In addition, new methods of working together through meetings, follow-ups and so on, between Vara, SQA and the suppliers were to be explained.

Moreover, in order to assure the Proactive flow in the defined methods, the new working procedures were to be tested. Firstly, the new ways of working with suppliers in group one, were to be tested on nine of the suppliers in this group. The results were further to be evaluated and modification made in places of need.

4.1.6.1 KPI-goal: PPM

The ultimate goal in this program was that by the end of 2008 the PPM-level for the nine chosen suppliers be at a constant level of 200 PPM. As of today this goal is not yet achieved.

4.1.7 Communication

Volvo Penta engines are sold through Market Units (MU) located along the coastal areas worldwide. The MUs forward the order via a computer system (PMI), directly to the factory as soon as placed. Then the engine is booked, and either removed from VPDC or Manufactured to order in Vara Production.\(^{21}\)

Figure 14 the communication outline between Vara, its customers, and its suppliers

4.1.7.1 Placement of orders by end customers

Volvo Penta engines are sold through Market Units (MU) located along the coastal areas worldwide. The MUs forward the order via a computer system (PMI), directly to the factory as soon as placed. Then the engine is booked, and either removed from VPDC or Manufactured to order in Vara Production.\(^{21}\)

---

\(^{20}\) Supplier Quality Association

\(^{21}\) The lead time for production is eight days.
4.1.7.2 Communication with suppliers

Using a forecast method incorporated by Penta group, after estimating the needed supplies, Vara communicates them using an EDI system on weekly basis. The systems suppliers use, are required to be completely compatible with the one at Vara, and upon this date they all are.

The major problem in the EDI system is at times when a supplier wants to switch to EDI and they have to deal with startup problem, but this is normal and not a big issue.

At Penta the suppliers are expected to be contacting the company in case of problems. In case of any deviation from what Penta has ordered whether from material ordered or the required delivery time, Penta should be informed. However, the company checks the lists daily and follow up on “missing” items are conducted. But as stated the normal thing is that suppliers contact the company.

Using this EDI system and the evaluation method incorporated by the company, suppliers are informed of their performance and of which performance group they are in (problem suppliers or not). In line with this, suppliers are also visited twice a year by the company representatives for further update and evaluations.

Furthermore, after a Supply Chain Development program, a research program incorporated by Penta, they distributed a letter indicating the company objectives and their expectations from the suppliers. These letters were communicated to all suppliers in order to inform them of the expectations, and for them be prepared for further communications. Suppliers are also scheduled for follow up meetings for closer communications.

It is worth mentioning that suppliers should be informed of how they are being measured by the company they are working with and where they stand in this evaluation method. This will help the suppliers make improvement in order to be on the top of the evaluation list. Consequently, this will make deeper closer relationships and loyalty between the two companies.

Vara has also planned to meet the suppliers in group one at least once a year, but unfortunately real-time situation has made this impossible in some cases. However, Vara has made sure to have oral communication with 80 percent of them every year. The meetings are to mainly discuss deviations from Vara expectations, or to consult new material or services required for the plant. According to one of the managers, having face to face meetings is always the most effective method available.
4.1.8 Connections with Suppliers

In order to find the existing connections between Vara plant and the suppliers, this research approached a number of the top suppliers. Vara lists their suppliers according to the volume delivery to the plant, the highest delivery supplier being at the top of the list. In this study, the top ten suppliers in this list were chosen and a questionnaire was prepared in order to map the connections.

The outline of this questionnaire is depicted in figure 15. As illustrated in the chart the list of questions was after finding the following criterions:

- Level of dependency between the plant and the supplier
- Level of flexibility of the supplier towards the plant
- Dept of communications, (the frequency, accuracy, and trust)
- History of problems and issues
- History of quality and delivery
- Delivery lead time

The findings from this evaluation are summarized in table 5. As it is listed in the table, it can be clearly seen that wherever the level of dependency, flexibility, and communications are low and limited, the given supplier falls in the Problem Supplier category. Further, as seen in table 3, the delivery precisions are relatively low for these suppliers.
On the other hand, according to Vara plant they have been having problems with the oversea deliveries due to long time taken to fix defects. Moreover, as detected here there was a connection between the lead-times and level of performance in factors noted.

<table>
<thead>
<tr>
<th></th>
<th>Problem/ Non-problem</th>
<th>Quality (PPM)</th>
<th>Delivery (del. pre)</th>
<th>Lead time (days)</th>
<th>Dependency</th>
<th>Communication</th>
<th>Flexibility</th>
<th>Problems &amp; issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier</td>
<td>NP</td>
<td>0</td>
<td>97.4%</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>-</td>
</tr>
<tr>
<td>Supplier</td>
<td>NP</td>
<td>0</td>
<td>100%</td>
<td>3-4</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Long lead-time in case of new parts</td>
</tr>
<tr>
<td>Supplier</td>
<td>NP</td>
<td>0</td>
<td>95.8%</td>
<td>3-4</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>-</td>
</tr>
<tr>
<td>Supplier</td>
<td>NP</td>
<td>0</td>
<td>75%</td>
<td>3-4</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>-</td>
</tr>
<tr>
<td>Supplier</td>
<td>P</td>
<td>0</td>
<td>62.4%</td>
<td>6-7</td>
<td>Low</td>
<td>Limited</td>
<td>Low</td>
<td>Limited because of the contract by the procurement</td>
</tr>
<tr>
<td>Supplier</td>
<td>NP</td>
<td>4405</td>
<td>100%</td>
<td>5-7</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>-</td>
</tr>
<tr>
<td>Supplier</td>
<td>NP</td>
<td>0</td>
<td>-</td>
<td>20-25</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>-</td>
</tr>
<tr>
<td>Supplier</td>
<td>P</td>
<td>0</td>
<td>78.2%</td>
<td>2-25</td>
<td>High</td>
<td>High</td>
<td>Limited</td>
<td>Change of supplier</td>
</tr>
<tr>
<td>Supplier</td>
<td>NP</td>
<td>244</td>
<td>100%</td>
<td>3-4</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Change of supplier</td>
</tr>
<tr>
<td>Supplier</td>
<td>NP</td>
<td>0</td>
<td>100%</td>
<td>3-4</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 5 evaluation of Vara top ten suppliers according to volume delivery

4.1.9 Supplier Segmentation within Penta Vara

As mentioned and as part of the SCD program within Penta, suppliers were evaluated according to quality and delivery precisions. Vara has a formal classification method in measuring the suppliers which is consistent and coherent between different suppliers and divisions of the company. It is important to be consistent between different divisions and to use the same measures among suppliers. This will bring integrity to the performance and give a coherent view to the company in case of evaluation and thus weighting of the suppliers.

Based on the same quality, and deliver precision measures suppliers are evaluated regularly to see if they cope with the company needs and changes through time. In each case this evaluation might change their group from either color to the other.

So, suppliers were classified into four groups: Problem suppliers, Important or Sensitive suppliers, Suppliers with development potentials, and lastly others.

The problem suppliers are the ones which will be focused on first. Each supplier within this group will be asked to pay a visit to Vara plant and measures, standards and expectations will be duly explained to them. Mutual objectives will be defined and follow-ups will be made. Thereafter, the suppliers within the Important or sensitive group will be processed and invitations will be sent to them for cost reduction purposes.
Figure 16 Vara Supplier Segmentation pyramid according to the attention planned for 

Vara had a research conducted on each of the suppliers in the segmented groups and studied the areas of problem for each supplier. These problems were measured by means of delivery precision and quality. Finally, suggestions were made for improvement in case of each supplier and filed in separate documents.

This report attempted in reviewing these documents in order to find a common trend or a connection in the source of problems. The review was done on 21 of the top problem suppliers according to the list already prepared by Penta and summarized in an excel table. A brief format of the table is shown in Table 6 evaluating the Problem Supplier group.

<table>
<thead>
<tr>
<th>Supplier</th>
<th>Main Problem</th>
<th>Port of Delivery</th>
<th>Del. Precision</th>
<th>Quality</th>
<th>Logistics</th>
<th>Suggestions by Penta</th>
<th>Dept. Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>flexibility</td>
<td>Sweden</td>
<td>40 - 97</td>
<td>Flexibility with Vara</td>
<td>Lead times</td>
<td>Change</td>
<td>supplier purchasing</td>
</tr>
<tr>
<td>Supplier</td>
<td>lead time</td>
<td>Europe</td>
<td></td>
<td>Defects from Suppl.</td>
<td>Small deviations</td>
<td>Local DC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>del perc.</td>
<td>East Asia</td>
<td></td>
<td></td>
<td></td>
<td>Closer Relationship</td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6 evaluating the Problem Supplier group

4.1.10 Sources of problem

The main problems detected in evaluation of Problem Suppliers were the supplier flexibilities, long lead times from oversea suppliers, bad delivery precisions, some software system problems, and some quality issues. The suggestions made here were to change the supplier in extreme cases, to
change the lead time frozen times, work on flexibility issues, working on contracts, planning Local Distribution Centers, and developing closer relationship by having frequently meetings.

From this evaluations as well as the one conducted on the top suppliers according to volume delivery two main problems were extracted.

1. The limitations brought upon by poor communication between the procurement department and Vara Plant. Consequently, this has lead to contracts that are not completely compatible with the requirements of Vara. Hence, it can be said that deeper communication between the two offices will solve many problems with the suppliers.

2. The lead-times required to fix defects and problems every now and then. This lead time might be due to the location of port of delivery and limited communication between the two. Having more frequent quality checks before shipment, having in house employees from Vara, or higher level of risk sharing might be the answer to this problem.
4.2 SRM within Volvo Trucks

4.2.1 Supplier Market

Volvo Trucks is dealing with around 1200 suppliers. This number is almost thrice the number of suppliers Vara is working with.

They have a developed SEM (supplier evaluation model) on which they measure the supplier performances. These are standard measures consistent and common among all divisions of AB group.

Volvo Trucks has locally situated plants for oversea and faraway suppliers and subsequently has a three day delivery lead-time from all its plants.

4.2.2 Procurement within Trucks

Like Vara, the third party department of purchasing is in charge of the Supplier Selection and contracts made with the suppliers. But, unlike Vara, Trucks has a close interaction and communication with the purchasing department and thus they work together in choosing and closing deals.

However, still the main problem Trucks is facing in dealing with suppliers recognized by the management, is the fact that purchasing is in charge of controlling the suppliers on cost and price matters. Considering the fact that Trucks has a close relationship with purchasing, not having full control is still an issue.

4.2.3 Communication

Following a SRM research done by the company all suppliers were connected to the company through a separate SRM advisor in the SRM Logistics group. This has made the interactions and performances become much more integrated in dealing with each individual supplier. It has also reduced the administrative costs involved. In line with this, all suppliers communicate their problems and concerns directly with this group, and the group in charge of resolving the issues. Furthermore, all problems regarding delivery and quality are required to be communicated with the SRM Logistics group in advance, so they can be sought through and planned for.

Figure 17 Volvo Trucks Communication outline and SRM advisor implication
In order to have the efficient communication needed, Volvo requires all suppliers to have an English speaking contact for interacting with the company. They are also asked to have a 100 percent EDI installed system compatible with the one of Volvo and their second tier supplier.

Volvo Trucks communicates the delivery precision acquired by each supplier through Dispatch Precision Statistics form, at the beginning of each month with its suppliers. This helps the suppliers be alert and informed of their performance measures constantly and thus, make the necessary improvements where and when needed.

Finally, they have frequent meeting held within the company and with the suppliers on areas of development as well as measures and evaluations taken.

4.2.4 The Supplier Internet Portal

The Volvo Supplier Internet Portal\textsuperscript{22} is an online website created by the group for interaction with current as well as potential suppliers. Unfortunately, not all Volvo group companies and suppliers use this website actively, and due to mainly security reasons, EDI system is more commonly used for communications. However, according to one of Trucks managers, they have a high level of utilization of the suppliers Internet Portal.

The website has numerous features for suppliers. Among them are the SEM measurements required by AB Volvo and questionnaire forms for new potential suppliers seeking partnership. This portal has separate parts for each individual AB group companies with their own information.

In Volvo Trucks they have unique tables in order to evaluate and inform suppliers of their performance updates. The Supplier Performance Breakdown sheets use different SEM qualifications such as PPM, QPM, Delivery Precision, and costs incorporated to evaluate supplier performance. Suppliers can be informed of their performance and the company on the other hand will have an active database for evaluation purposes.

\begin{table}
\centering
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline
Brand/Consignee & PPM & GPM & Delivery Precision \\
& to\% & & Expense to\% & \\
\hline
Supplier Total & 1536.209 & 1.731 & 1.694 & 1.731 & 3.144 & 75 & 22.896 & 10.738 & 86.2 & 12914.816 \\
\hline
Powertrain & 75.049 & 100 & 1.332 & 1.332 & 6 & 108 & 273 & 55 & 477 & 308 & 64.8 & 140.047 \\
\hline
16/24, Skoode & 29.246 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 85 & 31 & 36.5 & 41.788 \\
\hline
2007-02 & 7.350 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\hline
2007-01 & 263 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\hline
2006-12 & 1.164 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\hline
2006-11 & 12.821 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 29 & 14 & 52.8 & 12715 \\
\hline
2006-10 & 7.760 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 19 & 8 & 31.6 & 7224 \\
\hline
2006-09 & 5.815 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 21 & 7 & 32.3 & 10714 \\
\hline
31972, Västervik & 41.903 & 100 & 2.136 & 2.136 & 6 & 109 & 273 & 55 & 392 & 277 & 70.7 & 90253 \\
\hline
2007-02 & 7.350 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 23 & 2 & 9.7 & 10456 \\
\hline
2007-01 & 263 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\hline
2006-12 & 4.060 & 61 & 15.215 & 15.215 & 1 & 81 & 137 & 55 & 23 & 22 & 86.7 & 6012 \\
\hline
2006-11 & 1417 & 29 & 417 & 417 & 12 & 55 & 49 & 93 & 60 & 36.0 & 13445 \\
\hline
\hline
\hline
Renault Trucks & 141575 & 1396 & 875 & 875 & 114 & 1306 & 2815 & 75 & 18948 & 16885 & 85.1 & 10015207 \\
\hline
31967, Buresten & 58.482 & 688 & 1933 & 1933 & 71 & 608 & 19309 & 89 & 9500 & 8286 & 86.0 & 6199568 \\
\hline
\end{tabular}
\caption{A copy of the Supplier Performance Breakdown sheet from the Supplier Portal}
\end{table}

\textsuperscript{22}www.volvo.com/suppliers
Another feature on the Supplier Portal is the Dispatch precision statistics form. This form is communicated by the SRM Logistics group at some AB Volvo companies including Trucks to the supplier at the beginning of each working month. These sheets inform the supplier of their performance according to the delivery precisions in agreed upon intervals, a copy of this sheet is shown in figure 19.

| Supplier | .... ............... |
| Host Buyer | 0000 RV3P 0550 |
| SQA Host | VTC 2009 ............ |
| Logistic coach | VTC 9468 ............ |
| I Period | I Period |
| I Weeks 0710 - 0713 | I Weeks 0706 - 0709 |
| I | I |
| Goods receiver | Main suffix | Qty of deliv. Correct Qty % | Qty of deliv. Correct Qty % |
| -------- | ------ | ------ | ------- | | |
| 1001/VTC /TUVE | 20 | I | 10 | 9 | 90 | I | 16 | 14 | 88 |
| 1002/PARTS/GENT | 95 | I | 6 | 6 | 100 | I | 11 | 10 | 91 |
| 1024/VBC /BORÅS | 28 | I | 2 | 0 | 0 | I | 1 | 0 | 0 |
| 4388/N.ASSY/NRV | 556 | I | 2 | 1 | 50 | I | 1 | 0 | 0 |
| 4645/VET /GENT | 70 | I | 8 | 8 | 100 | I | 7 | 7 | 100 |

**Volvo Dispatch precision statistics sheets**

**4.2.5 The Supplier Relationship Development Program**

Furthermore they have had a research study done on Supplier Relationship Management and are implementing the results on their relationships.

One of the implications is the imputing of one SRM advisor for each supplier. This has helped them reduce the number of employees and thus cost in this area.

Volvo Trucks has changed their measuring factor from delivery precision to batch precision. In addition, they have also added the frequency of communications between the supplier and Volvo Trucks, as another factor in evaluating their suppliers.

In order to keep in track with the research done and to improve the supplier relationship status, Trucks holds meetings every forth night. They also discuss the new possible developments in these meetings.

They have developed two different concepts in order to ensure suppliers comply with standards a 100 percent. The two concepts are called *Global charge back policy* and *Zero tolerance approach*. These

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23 These forms are updated in GPS
approaches are to enable Volvo group companies pursue recovery of costs due to external supplier’s non-conformance.

4.2.5.1 Global Charge back Policy

This policy is taken upon a supplier’s inability to meet company’s requested dispatch or delivery date, or the requested quantity within an agreed upon lead-time.

The charge back policy determines the number of hours per non-conformance area, to be charged back to the company immediately (e.g. in case of a missing line), or after a given grace period (e.g. in case of an incorrect label). This policy can be employed partly on an ad-hoc basis as well.

4.2.5.2 Zero Tolerance Approach

As part of the Charge Back Policy, the Volvo Group plants can apply the Zero tolerance approach. This approach is taken in case of major suppliers that are disturbing the production, or have a high impact on the number of incorrect deliveries to each plant.

The approach states that if suppliers have not reached the 100 percent target of dispatch precision within the agreed time period, and despite thoroughly discussed and agreed time and action plans, the full extent of Charge Back Policy will be applied. Then the company conducts invoicing on e.g. 1 hour per fault delivery. The objective is to improve the supplier’s service level considerably, in order to reduce the total cost in the supply chain from supplier to the point of use.

The approach can be calculated according to the following equation.

\[
\text{Charge} = \text{No. of wrong deliveries}^{24} \times \text{1hr per working cost per plant}^{25}
\]

4.2.6 SRM Logistics group program

Some of the major AB Volvo group companies\(^{26}\) have developed a SRM Logistics group transferring the responsibility of SRM and SRM development issues to them. This has had a number of advantages including reduction in personnel cost, reduction in administrative costs, creating unity and integrity, reliability, and finally higher level of education incorporated.

The main responsibilities of this group are recognized to be: Assist, Evaluate, Supervise, and Provide. Assist, is to help suppliers reach the objectives and standards set by Volvo. Evaluate, is taking SEM factors of dispatch precision and logistics audits to measure their performance throughout time. Supervise, is to supervise their commitment against updated action plans given by Volvo. Finally, Provide feedback of their performance to the suppliers through meetings.

In Volvo Trucks All suppliers must be assigned to an SRM in the purchasing system\(^{27}\). Thus, the SRM will be the primary contact and information channel for all SRM Logistics activities.

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\(^{24}\) too early, too late, or the wrong quantity

\(^{25}\) differs from year to year and from plant to plant

\(^{26}\) Including Volvo, Renault, Mack, Trucks, Bus and Parts

\(^{27}\) Today named as Coach in GPS
Consequently, major risks of supply shortage or disturbance, will be coordinated by the SRM. In the same manner, all questions regarding matters such as daily supply issues are to be communicated and solved between the different contacts at the supplier and goods receivers here.

4.2.7 Sharing Responsibilities (Risk)

In the research conducted by this group, one of the fundamentals has been the responsibility sharing between both the suppliers and Volvo Company.

Volvo Trucks has implemented this article by dividing responsibilities in the following manner. The company takes responsibility for the transport batch. They share the risk involved by having suppliers take charge of delivering batches with a 100 percent precision on the point of delivery. Trucks, on the other hand, takes full responsibility for giving the best possible forecast required. Moreover, suppliers are the ones taking full responsibility for quality issues.

4.2.8 The escalate strategy for Critical Suppliers

This strategy is a five step strategy taken by Volvo Group in order to deal with suppliers bringing upon problems for the company manufacturing. Each step explains what the depth of problem is and how the company should deal with it and what measures should be taken.

The first step is in case of delivery disturbances from the set agreements. In this case the Material controller in the SRM Logistics investigates the reason for the disruption, and discusses the problem with the contact person at the supplier. Furthermore, daily control of disrupted material flow should be taken to avoid consequences in production, assembly and after market.

In the second step if the delivery disturbances continued existing despite an agreed upon activity plan, or if the activity plan was not presented to the Material controller within the requested time period, further measures should be taken. At this point, the material controller informs the material control-manager about the delivery problem. Moreover, the SRM person and purchaser are informed, and the Supplier team manager will comment on the agreed activity plan or present the previously requested activity plan. If required the supplier and the Material controller meet to discuss ways to fix the problem.

However, if delivery problems still continued, the Material controller still has the responsibility for day to day operations and all information about deviations, and to tell the Material Control Manager of the problem and all its relevant information. At this point, the Material-control manager might decide to involve the SRM person, purchaser, delivery account manager and Material controller for discussion of corrective actions. Responsible managers at the supplier are called to a meeting. All the members mentioned along with the supplier agree upon a revised action plan.

If the decisions made were not kept by the supplier and the supplier still remains critical, the purchasing comes into action. Purchasing works together with the SRM person to try fix the problem.

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28 They are making frequent forecasts twice a week inside the company and communicating it with the suppliers just as often. Although, they have a freezing time fence of three days incorporated with the suppliers.
If necessary, they will have departments of Supplier Quality, Volvo Supplier improvement team etc to support. Corrective action plan as well as time fencing will be presented to Purchasing, Material-control and Manufacturing Management.

Finally, in case the supplier still remains critical despite all previous actions plans the purchasing management comes to action. The buyer-supplier relationship responsible person along with the purchasing set up a crisis organisation. A possible change of supplier is discussed at this stage. Material controller is still responsible for details and information on demands and deliveries.

![Figure 20 the escalated strategy for critical suppliers (V7 ConfEscalStratCritSuppl 20070321)](image-url)
4.3  Penta vs. Trucks

In order to find out ways to improve the SRM within the case study company, this section tried to make a comparison between how Truck is proceeding and how Penta is working. Different methods that seem to be effective in Trucks were extracted and compared with those that were not working in Penta.

4.3.1  Points from Trucks SRM

The important and dominant points found in the SRM methods researched and practiced in Volvo Truck were the following:

1. Situating one SRM advisor per each supplier
2. Choosing “frequency of communication” as one of SEM factors
3. Setting frequent follow up meetings
4. Sharing the risks involved (Supplier taking care of quality or delivery vs. Trucks providing right forecasts)
5. Having Local Distribution Centers for far away suppliers (in order to maintain the three day delivery lead-time)

Furthermore, the key factors and facets in Volvo Trucks communication with its suppliers were summarized in these numbers:

1. Communicating all issues through the SRM advisor regarded for each individual supplier
2. Dispersing “Dispatch Precision Statistics” sheets to each supplier on monthly basis
3. Having frequent follow up meetings
4. Active use of the Internet Supplier Portal for some extend of communications

The final issue worth noting in Trucks SRM is the step by step dealing method with critical suppliers. This step by step method is recognized as soon as a supplier starts disrupting the production and the smoothness in delivery of goods is distracted. At this point first the Material controller gets involved, seeking out a solving solution. Step by step if the problem is not resolved involvement moves up towards the top management. The last step involves consideration of change of supplier.

4.3.2  Comparing the communication strategies

Comparing the two network of communication between Volvo Trucks and Volvo Penta in figure 21, it is clear that the difference is the existence of the SRM Logistics group and attribution of one SRM advisor for each individual supplier. This has had numerous advantages including integration of the performances and interactions, administrative cost reduction, personnel reduction, and finally closer relationship due to more personal communications. The important thing to take into consideration is the SRM advisor’s personality and marketing skills.
4.3.3 Main SRM differences

In the final section of this chapter, the main differences between the SRM strategies within Volvo Trucks and Volvo Penta have been listed.

1. The first important difference is in the relationship between the manufacturer and the procurement department. One of the major problems Vara is dealing with is due the limited communication they have with the procurement. Procurement is in charge of contractual matters as well as evaluations and SEM. Thus, not having close communication with them has made strategies unaligned and thus limitations in flexibility between the manufacturer and its suppliers. On the other hand, it is clearly visible that with having close relationship with the purchasing department, Trucks does not face such issues. In fact, this department works like a hub organizing and integrating relationships.

2. The second issue is the SRM implication of one SRM advisor per supplier in Volvo Trucks. As stated before, this has had several advantages for Volvo Trucks. On the contrary, Vara communicates with Suppliers through EDI in a general method. In a meeting with one of Trucks management, it was stated that the new method has lead to less administrative costs, including personnel, dedicated to different aspects of SRM. Further, this has made the performances and the interactions far more integrated between Trucks and its suppliers. This might be effective in Vara as well.

3. The next point is Trucks taking frequency of communication into consideration as one of SEM factors. This sends a signal to the suppliers, informing them to communicate more frequently and closer to be among the top suppliers. This improves competition among suppliers to improve their communication skills and consequently strengthens the relationships.

4. Another measure in Trucks being effective in SRM is having Local Distribution Centers for suppliers located farther in distance. This helps them maintain steady delivery lead-times. In addition, it also helps noticing shortage in deliveries and quality issues in advance and conducting action plans preventing disruption in material flow.
5. The final measure to note is the use of the supplier internet portal. More frequent use of this portal will help the company gain closer and smoother communication skills. Communicating through the internet will help supplier relationships be more accessible, faster, with more visibility. This visibility in terms will improve communication itself as well as preventing the amplification of errors by detecting them ahead of time. Moreover, due to the transparency brought to the chain it will also increase flexibility between the two companies.
5 Discussion: Problem Analysis

5.1 SRM trends in literature suitable within Volvo Penta

After conducting the literature review, this thesis tried to find specific SRM trends suitable for Volvo Penta Manufacturing. The report started with social factors to consider in relationships with suppliers, how procurement can become more effective in SRM, the supplier development steps to be taken while having an effective classification of suppliers, and finally the problems that might occur. In the end the information flows that need to be heightened were recognized and a brief note on how IT can contribute was made.

5.1.1 Social Factors

As mentioned, culture, society, politics, and traditions play an important role in any relationship. After choosing suppliers in a global scale the company must realize these social factors and make adjustments needed in order to maintain and develop a nourishing relationship.

The main aspects realized in this report, and applicable to Vara Supply Chain, are listed below. These aspects should be communicated and understood between both the company and its suppliers.

1. Compliance: Knowing who you are working with.
2. Conduct: Knowing and standing up to the recognized responsibilities.
3. Strategic Finance: Issues to consider here are:
   - payment terms,
   - existing trade offs (e.g. lower price vs. trust),
   - time fencings,
   - currency fluctuation risks

5.1.2 Making procurement more effective

There were two things to take into consideration in this section. One was the Supplier Market of Vara, and the other was the fact that they do not have the ability to change suppliers as easily and as often as wanted. Thus, all the steps on the role of procurement named in the theoretical foundations chapter could not be utilized in Vara. The ones applicable in order to improve the effectiveness of procurement were as follows:

1. Gathering information: information should be Current and Accurate from both the supplier and the buyer company;
2. Fulfillment: to make sure suppliers make the necessary shipment, deliver, installation, and training on one hand, and Buyers make the necessary payment on the other;
3. Consumption, Maintenance, and Disposal: here they should evaluate supplier performances and services. The important issue here is to:
Maintain close communication with the manufacturing.

4. **Renewal**: decide whether to renew the contract, change supplier, or produce item internally.

Figure 22 communication network between procurement and the Core Company

5.1.3 Mapping Supplier Development Step by Step

Finally, and after considering the social factors as well as the possible contributions of Procurement, a Supplier Development Map was sought after. After numerous literature reviews the following Steps and outlines were found to be most effective in Vara.

1. **Identifying the most important Suppliers**: This is one of Supplier Classification techniques. Taking table 7 into account, one of the most effective methods of classification is by comparing and contrasting the volume of purchase from the supplier, against the nature and value of the product purchased. The value and nature are measured upon the degree they make the final product unique in the market.

<table>
<thead>
<tr>
<th>Strategic Supplier Type</th>
<th>Low volume purchase</th>
<th>high volume purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottleneck Suppliers</td>
<td>substitution difficult</td>
<td>Critical Strategic Suppliers</td>
</tr>
<tr>
<td></td>
<td>internal production might be an option</td>
<td>strategically important</td>
</tr>
<tr>
<td></td>
<td>monopolistic market</td>
<td>substitution or alternate difficult</td>
</tr>
<tr>
<td></td>
<td>high entry barriers</td>
<td>major importance to purchasing</td>
</tr>
<tr>
<td></td>
<td>critical geographic or political situation</td>
<td>of importance to Supplier Selection</td>
</tr>
<tr>
<td>Noncritical Suppliers</td>
<td>sufficient availability</td>
<td>Leverage suppliers</td>
</tr>
<tr>
<td></td>
<td>substitution possible</td>
<td>sufficient availability</td>
</tr>
<tr>
<td></td>
<td>lower information sharing</td>
<td>alternatives available</td>
</tr>
<tr>
<td></td>
<td>standard specification of goods</td>
<td>substitution possible</td>
</tr>
<tr>
<td>Non-Strategic Suppliers</td>
<td>Leverage suppliers</td>
<td>benefiting from economy of scale</td>
</tr>
<tr>
<td></td>
<td>sufficient availability</td>
<td>learn from competition</td>
</tr>
<tr>
<td></td>
<td>substitution possible</td>
<td>standard specification of goods</td>
</tr>
<tr>
<td></td>
<td>standard specification of goods</td>
<td></td>
</tr>
</tbody>
</table>

Table 7 a Strategic Supplier Segmentation

From the strategic segmentation given in the figure above, after segmenting suppliers accordingly, the following strategy of relationship can be chosen for each:

- Non-Critical Suppliers → Arm’s Length relationship\(^{29}\)
- Leverage Suppliers → Mid-term relationship; taking advantage of economies of scale
- Bottleneck Suppliers → Long-term relationship or switching to internal production
- Critical Strategic Suppliers → Long-term Partnership

\(^{29}\) The types of relationships here are more completely explained in chapter three of this report.
2. Identify Important Suppliers: After the strategic segmentation and realizing which suppliers the company wants to build longer term relations with, the most important suppliers must be identified. These will be the “Problem Supplier” category to pay the prior attention to.

3. Start from within: The Company should start and make adjustments inside the company first in order to achieve harmony inside out. This is the Step where the company attempts to change the Mindset of the inside players.

4. Inform the Suppliers: This is a delicate stage in which the company attempts to change the Mindset of Suppliers. The following points should be considered in this stage:
   - Have the objectives and performances integrated with the Company
   - Communicate the SEM measures of the company
   - Communicate Company expectations from the Development program
   - Providing new angles to the existing knowledge of the Suppliers
   - Provide necessary education and resources for execution of expectations

5. Choose key projects: After all the above mentioned stages, the Company should study the projects and decide which are the most important and have priority in execution. The aspects to take into consideration are:
   - Feasibility
   - Finance
   - Duration
   - Return on Investments

6. Set details of Implementation: After deciding which projects to execute first, the details of implementation should be listed. These details are such as:
   - Required Resources
   - Time Frames
   - Desired Outcomes
   - Setting the Contributing Parties
   - Joint programs (Risk / Development)
   - Sponsorships
   - Education
   - Standardization

7. Monitor Implementation: After execution is conducted according to the set details, the implementation should be monitored along the way. Standards maintained, and changes and modifications made in places of need.

5.1.4 In case of problems

Like any other program in any other business area, the implementation of the selected programs might be faced with obstacles and problems. These problems are due to the Suppliers side
shortcomings, the Buyer Company side, or the interface of the two. The outline of the possible problems and how to deal and prevent them are depicted in table 8.

<table>
<thead>
<tr>
<th>Problem Caused by</th>
<th>Source of Problem</th>
<th>How to Resolve</th>
</tr>
</thead>
</table>
| Supplier         | Resource Shortage         | • Providing a lending hand  
                                 |                               | • Financial support          |
|                  |                           | • Personnel support             |                               | • Educational support        |
|                  | Trust                     | • Efficient and effective effort in “informing Suppliers” step                |
|                  |                           | • Pointing out the benefits from the beginning                               |
|                  |                           | • Setting the business relationships based on the improvement                |
|                  |                           | • Showing where they stand among other suppliers                             |
|                  |                           | • Making sure of the execution through follow ups                             |
| Buyer            | Managers can’t see the real benefit | • Duly determining the costs and benefits                                      |
|                  | Raising the bar too high to achieve | • Focusing on the long term objectives                                        |
|                  | Too large a number of supplier to make it financially feasible | • Setting smaller goals                                                      |
|                  |                          | • Minimizing the number of suppliers in Step five (5)                         |
| Sup-Buyer Interface | No trust in Info. Sharing | • Better communication                                                      |
|                  | Benefits not understood   | • Decreasing the presence of legal involvement (making it informal)            |
|                  | Proper alignment not made | • Having confidential information exclusive                                    |
|                  |                           | • Incentives and motivations made for partners to commit                      |
|                  |                           | • Duly pointing out the benefits                                              |
|                  |                           | • Duly shared road map of future objectives and expectations                  |
|                  |                           | • Development programs should be adjusted according to conditions             |

Table 8 the problems caused in implementation of SRM program and how to resolve them

5.1.5 Utilizing IT in Communications

As mentioned in the final section of chapter three, Information technology can contribute in numerous ways to heighten and empower communications. The visual effects, telecommunications,
internet, extranet, EDI, email, and an endless list of features make communications resemble face to face, which is the most effective means of communication.

Figure below shows the communication areas that need more focus and attention. These communications are shown by Red arrows. Vara can utilize IT measures such as Volvo Supplier Internet portal, new feature of EDI, and email, to evaluate these communications. Furthermore, more frequent meetings and telephone conversations can evaluate Negotiation and Coordination status.

Figure 23 communication areas to focus on
5.2 SRM approaches that work in Volvo Penta

5.2.1 Vara Supplier Market issues

The figure below depicts the unique Supplier Market structure of Volvo Penta. The important issue for Vara is to separate the commodity like suppliers from the Strategic item suppliers which provide the items which make the final product unique. The points here are:

- The number of Suppliers: Limited for Strategic item suppliers due to the nature
- Placement of Power: These Suppliers have power over Penta due to their rather Oligopoly Market
- Change is unlikely: due to the two points above changing suppliers is not easily possible

![Venta Supplier Structure, first step segmentation](image)

5.2.2 Vara Supplier Segmentation

After a study done on Supply Chain Development, Vara has made a segmentation of its suppliers dividing them into four groups. This segmentation is done according to delivery precision and quality. The four groups are:

1. Problem suppliers,
2. Important or Sensitive suppliers,
3. Suppliers with development potentials,
4. And others.

According to the literature and real-time studies done for this thesis, this segmentation is rather proactive and in line with the second step recognized in the first part of this chapter.

"Identify Important Suppliers: After realizing which suppliers the company wants to build longer term relations with, the most important suppliers must be identified. These will be the “Problem Supplier” category to pay prior attention to.”
However, in order to make implementation of programs feasible in real-time situations, two suggestions were made:

1. To undertake step one of “Mapping Supplier Development” first. This means Identifying the most important suppliers, and those whom a long term relationship is required with. Then, select the “Problem Suppliers” from this list. This way the circle of programs for execution will be smaller and thus more feasible.

2. Secondly, adding “Frequency of Communication” as another measuring factor. This will act as an incentive motivating the suppliers in communicating more often with the company.

5.2.3 Source of problems in buyer-supplier connections

Two analyses were done on supplier connections in Vara Penta. The first analysis was done on connections between Vara and their top ten suppliers delivering the highest volume. The second was conducted on 21 of the top Problem suppliers. The findings were categorized in two tables, searching the source of problems in connections.

The main problems detected were listed in table 9.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Suggestions by Vara</th>
<th>Suggestion by Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Flexibilities</td>
<td>• Working on contracts</td>
<td>• Since contract seem to be the source of this problem improving relationship with procurement.</td>
</tr>
<tr>
<td></td>
<td>• Work on flexibility issues</td>
<td>• Developing the right mindset by plotting the benefits for procurement.</td>
</tr>
<tr>
<td>long Lead-times from Oversea Suppliers</td>
<td>• Change the lead time frozen times</td>
<td>• LDC and European hubs seem a suitable plan for maintaining steady lead-time.</td>
</tr>
<tr>
<td></td>
<td>• Planning Local Distribution Centers</td>
<td></td>
</tr>
<tr>
<td>Bad Delivery Precisions</td>
<td>• Having frequently meetings for closer relationship</td>
<td>• Sharing risk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Communicating to motivate suppliers for better performance</td>
</tr>
<tr>
<td>some Software System Problems</td>
<td>• Solving through Meetings</td>
<td>• Providing education and training</td>
</tr>
<tr>
<td>some Quality Issues</td>
<td>• Solving through Meetings</td>
<td>• Providing education and training</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Providing missionary personnel</td>
</tr>
</tbody>
</table>

Table 9 Problems in Supplier Connection and suggestions

In extreme cases, changing the supplier was suggested by the group. However, this has not been conducted until today.

Finally, two main problems were extracted and listed below.

---

30 This action has been conducted in Volvo Trucks and according to the management, it has been effective.
1. The limitations brought upon by poor communication between the procurement department and Vara Plant. Consequently, this has lead to contracts that are not completely compatible with the requirements of Vara. Hence, it can be said that deeper communication between the two offices will solve many problems with the suppliers.

Further, having an action plan and informing procurement managers of the benefits and incentives for the whole company will motivate them for better communication to gain mutual benefits.

2. The lead-times required to fix defects and problems every now and then. This lead time might be due to the location of port of delivery and limited communication between the two. Having more frequent quality checks before shipment, having in house employees from Vara, or higher level of risk sharing might be the answer to this problem.
5.3 SRM approaches in Trucks suitable for Volvo Penta

5.3.1 Volvo Trucks Key Points

The most important points effective in Volvo Trucks that seemed applicable in Vara were listed below:

1. Situating one SRM advisor per each supplier and communicating all issues through them.
2. Choosing “frequency of communication” as one of SEM factors in evaluating suppliers.
3. Setting frequent follow up meetings gaining closer relationship through face to face talks.
4. Sharing the risks involved making supplier one of the key players.
5. Having Local Distribution Centers for far away suppliers helping them maintain a steady delivery lead-time.
6. Active use of the Internet Supplier Portal achieving faster, easier, and more accessible means of communication.

5.3.2 Utilizing a SRM Logistics group in Communications

As shown in the figure above and noted in the previous chapter, Trucks has gained numerous advantages by organizing a SRM Logistics group. All suppliers communicate through one SRM advisor set in this group. All problems and issues are directly noted to the SRM advisor and they classify, evaluate, and resolve. The advantages of this are as follows:

- Integration of the performances and interactions
- Administrative cost reduction
- Personnel reduction
- Closer Relationship due to a more personal communications

The important thing to take into consideration here is the SRM advisor’s personality and marketing skills.
### 5.3.3 Key Comparison Points

By comparing the major points in SRM strategies within Volvo Trucks and Volvo Penta, the most important differences being effective in Trucks were found. Among them the ones that seemed fit for Penta were chosen and listed below:

<table>
<thead>
<tr>
<th>Role of procurement</th>
<th>Difference</th>
<th>Problem in Vara</th>
<th>Pros in Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strong Relationship between the Manufacturer and the Procurement department</td>
<td>Limited communication with the procurement. Unaligned strategies with supplier. Limited flexibility between the manufacturer and suppliers.</td>
<td>Procurement can act as a hub organizing and integrating relationships</td>
</tr>
<tr>
<td></td>
<td>A SRM advisor per supplier</td>
<td>Communication through the advisor.</td>
<td>Direct communication with Suppliers.</td>
</tr>
<tr>
<td></td>
<td>Frequency of communication as a SEM factor</td>
<td>Evaluating suppliers on frequency of communication among other.</td>
<td>Evaluating only on Quality and Delivery precision.</td>
</tr>
<tr>
<td></td>
<td>Local Distribution Centers</td>
<td>For suppliers located farther in distance.</td>
<td>Considering this as a new strategy.</td>
</tr>
<tr>
<td></td>
<td>Supplier Internet Portal</td>
<td>Active Utilization.</td>
<td>Limited Utilization</td>
</tr>
</tbody>
</table>

Table 10 the Major Differences between Vara and Trucks SRM
5.4 Suggestions for SRM improvement

5.4.1 Illustrating Improvement

The figure below was illustrated in order to show the main problem areas within Vara today. These are the relationship between the Core Company and its procurement department, as well as with its suppliers. Suggestions in order to improve were made, noting this will result in the company and its procurement becoming a united front, building a stronger relationship with suppliers developing them to motivated partners, growing together.

![Diagram of supplier, buyer, procurement, and problems with solutions]

- Long lead time for oversea suppliers resulting in big costs in case of defects
- Software & Quality issues
- Limited communication with the procurement
- Contracts not completely compatible with Vara needs
- Unaligned strategies with supplier
- Flexibility limitations

Possible Solutions

- Providing education and training
- Providing missionary personnel
- Sharing risk
- Communicating to motivate suppliers for better performance
- LDC and European hubs seem a suitable plan for maintaining steady lead-time
- more frequent quality checks before shipment
- Improving relationship with procurement
- Developing the right mindset by plotting the benefits for procurement

Final Result

- Motivated Partners
- United Front

Figure 26 Main Problem areas and Possible Solutions
5.4.2 Improvement Suggestions

Finally, and in the last section of this chapter, it has been attempted to gather all the suggestions made for Improvement throughout the thesis.\textsuperscript{31}

1. Realizing the Social Factors: Who are the Suppliers? What are the cultural issues regarding them? What codes of conduct are there present? What are the financial issues here?

2. Changing Mindset from within: Know the achievement wanted, see the big picture, and accept out of the norm for improvement.

3. Improving Relationship with Procurement: conducting an action plan, illustrating the possible benefits of better communication and getting procurement management on board. Communicating current and accurate data on what’s missing, what’s expected, and what’s required.

4. Mapping the Development Program: Segmenting Suppliers Strategically, prioritizing objectives and projects, setting smaller but achievable goals, finally monitoring the implementation.

5. Providing a helping hand: providing resources, education and training, and lending employees might have a bigger Return on Investment in the long run.

6. Utilizing IT: Moving with Technology is risky but necessary.

\textsuperscript{31} The suggestions here are only a brief note. They have all been elaborated thoroughly in this chapter.
6 Conclusions and Recommendations

This chapter is an overall conclusion to the whole thesis with an answer to the main question. Consequently, all the findings and results in the previous chapters were summarized and the outcome presented. Furthermore, recommendation for future work was also given.

6.1 Conclusion

The globalization trend in today business world along with phenomenon such as outsourcing has made suppliers a key factor for success and maintaining a competitive advantage in the market. This increased importance of suppliers in optimization of performances within any company brings focus to managing and constantly developing relationships with them.

In a company, that is changing strategies towards end customer with a limited and rather fixed circle of suppliers such as Volvo Penta, developing relations has an even greater importance. In order to make this change and have it integrated with other company objectives and performances the company must start from within. Having the right mindset from top management down to every personnel inside the company is a fundamental step.

As procurement is a separate department and in charge of contractual matters with suppliers in the case study of this research, having a close and accurate communication of what’s missing, what’s expected, and what’s required is also vital in relationships with suppliers. Illustrating the possible benefits of better communication for the whole network can get their management on board.

Thereafter, the company must attempt in changing the suppliers mindset. In order to achieve such a goal the buyer company must first realize the Social Factors, knowing the potential and current partners, knowing their rules and regulations, and finally realizing the financial issues in establishing a business with them.

Then, and after aligning the inside objectives and processes, business relations with suppliers are sought after. In order to make the execution feasible, the company must decide which suppliers to develop and to what extent. This requires a strategic segmentation of the suppliers. The most strategic suppliers are prioritized and informed. This is a critical step, because if suppliers are not duly explained of the details and benefits of the program they might not get on board.

Finally, details of the implementation according to each individual supplier potentials and previous plans are set. However, constant monitoring and communication is required for both parties to maintain in track. The buyer company should provide a helping hand such as education in places of need. Having better suppliers will mean having a better competitive advantage.
6.2 Recommendation for future work

Suppliers are the upstream players of the Supply Chain. They have both inner company issues as well as intercompany relations with the buyer company. This presents a vast area of research in the section.

In this research focus was given to Supplier Development finding a general groundwork for mapping the improvement. Each of the steps introduced in this thesis can be opened up and evaluated in detailed implementation possibilities.

Another major area of research not sought after in this study due to limitations, is the improvement of communications. The constant growing of Information Technology brings numerous possibilities on ways to improve communication inter and intra firms.

Finally, areas of Risk Management in order to develop the relationship between the dyads, VMI issues concerning the development, the incorporation of lean thinking, MPC issues in integrating communication with suppliers, and how forecasting can bring dyads closer, are all other areas to look further into.
7 Bibliography


72


Volvo Renault, Mack Trucks, Bus and Parts. 2009. SRM Logistics.


# Appendix a
Analyzing top Problem Supplier (give us difficulties today that must be fixed)

<table>
<thead>
<tr>
<th>Supplier No.</th>
<th>Main Prob.</th>
<th>port of del.</th>
<th>Del prec.</th>
<th>Quality</th>
<th>Logi.</th>
<th>Suggestion</th>
<th>Involved</th>
<th>Start of contract (year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>117</td>
<td>(Flexibility) Doesn't fit with today's demand long time to stop orders in case of reduction restrictions in increases in orders (small faults) Wrong labelled pallets, small parts missing</td>
<td>Italy</td>
<td>68.90 %</td>
<td>small defects</td>
<td>some</td>
<td>work on the flexibility agreement</td>
<td>Purchase contract has been settled w/o Vara’s Knowledge</td>
<td>Year unknown</td>
</tr>
<tr>
<td></td>
<td>(Inflexible) a lot of system errors</td>
<td></td>
<td>95.20 %</td>
<td>small defects</td>
<td>no deviations</td>
<td>Chng sys. frm 4 to 2 frozen wks move prod. To suppl 967</td>
<td>ITT, purchase</td>
<td>Year unknown</td>
</tr>
<tr>
<td></td>
<td>(Bad Del.prec)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Year unknown</td>
</tr>
<tr>
<td></td>
<td>(Slow replies on Q-issues)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Year unknown</td>
</tr>
<tr>
<td></td>
<td>(Del.prec) improvements are being made, from 46 to 58 had problems with the EDI system</td>
<td></td>
<td>58.80 %</td>
<td>not much</td>
<td></td>
<td>under improvement</td>
<td></td>
<td>Year unknown</td>
</tr>
<tr>
<td></td>
<td>(12w leadtime + 6w ocean freight) extra job, have to order airfreight + high sec. stock in Vara</td>
<td>Japan</td>
<td></td>
<td>not much</td>
<td></td>
<td>move deliveries from japan to somewhere in europe</td>
<td></td>
<td>Year unknown</td>
</tr>
<tr>
<td></td>
<td>(bad del.prec.) change/move orders every week</td>
<td></td>
<td>100 %</td>
<td>Turbo break down and the cause not found</td>
<td>small deviation</td>
<td>Meeting with Vara in sprig!!</td>
<td></td>
<td>Year unknown</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Year unknown</td>
</tr>
</tbody>
</table>

...
Appendix b
Questionnaire for Top ten suppliers according to volume delivery (2008)

The following questionnaire is designed as part of the Master thesis on Supplier Development within Volvo Penta and in order to evaluate the top suppliers delivering to the manufacturer. Please kindly answer the questions for the listed suppliers.

Supplier No: 

Questions:

1. What is the history of quality and delivery performance from this supplier?

2. What is the delivery time from the supplier to Volvo?

3. What is the dependency between the supplier and Volvo, how much does Volvo have to say?

4. What is the depth of communication with the supplier, how often and how good is the communication etc.?

5. How flexible would you say the supplier is, what has been the flexibility considering the changes in Volvo?

6. Has this supplier appeared on the “problem list”?

7. If yes, how has these problems been solved?

8. Are there any specific problems in the supplier’s history?