

*Master Graduation Thesis*

# **The Impact of Supply Chain Management on Financial Performance**



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## Summary

*“Logistics today is as important for success in the digital economy as it was for Roman Empire world dominance.”*

By Leif Enarsson (2006)

*“Successful supply chain management requires cross-functional integration within the firm and across the network of firms that comprise the supply chain.”*

By Douglas M. Lambert (2006)

Many companies initially focus on supply chain management as a way to improve customer satisfaction and reduce operational inefficiencies. While doing this, the company improves visibility and control over its supply chain, which also leads to better financial performance.

Supply chain management is essential to the company’s competitive capacity. Nowadays, especially with the globalization and IT industry development, companies are not competing as individuals but as part of the supply chain in the global environment. How to cut cost, improve quality and also operate effectively is every company’s principle through the supply chain management. With substantially cheaper labor and cost, many companies in the developed countries have started sourcing in the booming economics in China and some other countries. This is also the trend of global supply chain. However, low product price in emerging economics comes together with more communication efforts, longer delivery time, bigger purchase quantities and high inventory level. A minor company therefore finds it rather difficult sometimes to optimize their strategies, and resolve the quality problems.

Benefit and cost are closely linked with supplier performance. Velda B.V. has half of its products sourced in China, and they want to have good quality with low price. But this combines with the quality and delivery problem. This paper will analyze the supplier situation of Velda BV. Beginning with a review of literatures and in order to make the comparison visible, the paper discusses the approach for the supply chain map and analyzes the supply chain map for different ways of purchasing in Velda BV. Then it looks at the SCM functions that impact the financial performance, identify the business processes in the SCM, and determines what can be done to improve those business processes that will improve both SCM and Financial performance for Velda BV.

The main research question is “What to improve in the Supply Chain Management process to get premium financial performance for Velda BV?” In order to get this question answered, started from the basic information of Velda B.V., together with the literature review, the thesis mainly analyzed from SCM process of Velda B.V. and the financial performance

mainly from the control aspect.

The main conclusions of the thesis are that not so satisfactory quality and delivery time issue requires Velda B.V. involves strongly in the supplier development and improvement. The strategic product purchase strategy is OK for Velda B.V. according to the Kraljic portfolio Matrix. While the main problem in the SCM is regarding the OEM production section in China, in the operational and tactical level. Some of SCM functions need improving. Following the analysis in chapter four, the main problems can be clarified in the following table:

The SCM problems in Velda B.V. are shown as follow table:

SCM function	Main situation or problems
Production (Material Flow Management)	Monitor the quality and delivery time.
Supplier Relationship Management	Strengthen partnership with the key suppliers. Aware the Chinese business culture and relationship. Strict the contract and details.
Inventory (Demand) Management	Have a good forecast of demand
Design (Development and commercialization)	Specify the requirement and time planning. Involve the customer and supplier side in the new product development.
Transportation (Order Fulfillment)	OK
Customer relationship management:	OK. Limited analysis in this paper.

Table 1: SCM analysis in Velda B.V.

The paper also emphasized the analysis about the situation with some key suppliers in China. Corresponding to each problem, there are suggestions and recommendations for Velda B.V. in the last chapter.

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## Chapter 1 Introduction / Basic information of Velda B.V.

### 1.1 The history and main products of Velda B.V.

Velda has been developing products for aquaria from 1970. An aquarium is a closed system, to which all kinds of patterns apply. This knowledge of aquaria has been applied to ponds. In the early eighties, a department was started that specifically aimed at pond department in the garden centre, which was still yet to be developed by then. For production, in order to optimize quality, Velda manufactures many products in its own premises by modern means of production. For logistics, products are transported to garden centers in The Netherlands, Belgium and the Germany. Finally, the products of Velda are available in almost all garden centers. Thanks to conveniently arranged shelves you will find all you need for stocking and maintenance of your pond. The main products of Velda B.V. are:

- **Bottom** includes bottom soil, substrates, plant substrates, cover substrates, and marsh substrate.
- **Water Plant** includes Nutrients, plant baskets and bacterial products.
- **Water** includes water testing (Aqua test box, PH, JH, CH, NO<sub>2</sub>, NO<sub>3</sub>, PO<sub>4</sub>, NH<sub>3</sub>, Fe, Cu test) and water improvement products.
- **Fish** includes fish feeding food, feeding devices, medicines, scoop nets (pond net), and protection devices (cover net etc).
- **Algae** includes fibrous and slime (I-Tronic, all clear), green water (UVC filter, bio-clear, UVC light), beard algae, blue algae and bacterial cultures and water ornaments.
- **Filtration** includes Pond pumps, Pressure Filters, pond heating, biological filters, filter sets, surface filters, UV ers, filter materials and accessories.
- **Air** includes air pumps and accessories (air tube and air stones).
- **Help devices** include pond nets, scoop nets, heating (pond heating), socket (4 way outlet), and maintenance (pond tool and pond brush).

Of all the products above, electrical products such as Filtration, Air, Help devices, and some packages are OEM - produced in China, and the rest are mainly produced in Europe.

In order to maintain competence, Velda BV either purchases materials or produces OEM products globally, and some of their products are produced and assembled by themselves. It relies on a lot of global sourcing, and a better control of the supply chain process to reduce

total cost is fundamental. Besides, they also face the problem of purchasing in Asia or within Europe. Products from Asia can be purchased cheaply, but have a higher transportation and inventory cost, and longer delivery time, whereas products from Europe are priced higher but cost less in transportation and inventory fee, and comparatively shorter delivery time. All of these factors in Supply Chain influence the company's financial performance.

### **1.2 Sales Revenues and profits for Velda B.V.**

Table 1 shows the sales revenue and profit for Velda B.V. (in Euro) (Source: Income statement of Velda B.V. 2002-2007) but it is excluded from the text due to confidentiality.

### **1.3 Supplier situation of Velda B.V.**

Around half of the products of Velda B.V. are purchased from China, and the rest are purchased from EU.

Table 2 shows the exact amount of Velda's purchasing from China and EU. in Euros (Source: Annual Report of Velda B.V. 2002-2007). The table and its conclusions are excluded due to confidentiality.

Table 3 lists the supplier situation in China (Source: purchase department and also from interview with Alexander Dalenoort from Velda B.V.). It is not included due to confidentiality.

Most of suppliers in China are in long-term partnership with Velda B.V. These suppliers include the producers of Air Pump, water pump, pond tools, fish net, cover net, and packages etc. Many divisions and functions within the firm are involved in the partnership. They consider each other strategically important.

Particularly, the supplier in Ningbo that produces UV-C filters, I-Tronics, and Press filters shares a significant level of integration with Velda B.V.. Each party views the other as an extension of their own company. The mutual dependence thus diminishes the risks that are usually present with "only one supplier operational".

A few suppliers, especially some new suppliers and the promotion product suppliers are kind of short-term partnership. They usually expect one time order from Velda. BV.



Combining the supplier's situation and the product characteristics in China, it is important to have clear understanding of the importance of products and adjust the purchase and supplier relationship strategy accordingly.

## Chapter 2 Research Questions

Supply Chain Management is complex. The approach is to consider each step of the SCM, and identify these areas offering the greatest potential to affect revenue growth, operating expense and capital utilization. Considering the previous research results and practical problems inside the company, the following research question is raised:

What to improve in the Supply Chain Management process to get premium financial performance for Velda BV?

In order to answer this question, there are some sub-questions:

1. What's the basic information of SCM (Supply Chain Management) in Velda B.V.?

- What are the history and products of Velda B.V.?
- What is the supplier situation of Velda B.V.?

This question will be answered in Chapter 1.

2. What is the SCM model/theory?

- What is the definition of SCM?
- What is the SCM map?
- What are the performance indicators in SCM?
- Purchasing globally or locally?

These questions will be answered in chapter 3.

3. How to analyze the SCM of Velda B.V. according to the model?

- What is Velda B.V.'s Kraljic portfolio Matrix?
- What is the purchase strategy for Velda B.V. according to this portfolio?
- What is the in-depth purchasing strategy in Velda B.V.?
- The SCM map and purchase process in Velda B.V.
- What are the problems of SCM in Velda B.V.?
- What are the goals and elements of SCM in Velda B.V.?
- What's the SCM situation of SCM in Velda B.V.?
- Main supplier problems and solutions analysis

These questions will be answered in chapter 4.

5. What is the impact of SCM on financial performance in Velda B.V.?

- Influence of supply chain to financial performance in Velda B.V.
- SCM process which can influence financial performance

- Financial value chain analysis in Velda B.V.
- ERP system in the process management of Velda B.V.

Chapter 5 will answer the above questions.

6. What to improve in the SCM process in order to get premium financial performance in Velda B.V.?

- What are the solutions?
- What are the conclusions and recommendations?

Chapter 6 will answer these questions and give some recommendations for the company.

According to the above research questions, the paper has the following structure to answer the research question.

The first chapter introduces the Velda B.V.'s basic information. It answered the first research question. It outlines the company's history, business, products, and supplier's information to render a basic image of the company and the field.

The second chapter describes research questions and the structure of whole paper.

The third chapter analyzes the SCM model/ theory based on literature review on the SCM definition, SCM map and related supplier relationship and performance indicators.

The fourth chapter is the SCM analysis in Velda B.V. First part based on the Kraljic portfolio Matrix, it analyzes the product categories and the corresponding SCM strategies to explore the situation in Velda B.V. Second part shows four different SCM maps with explanation, and describes each scenario in detail. With the SCM map, each step is clear and visible. Afterwards, it analyzes the purchase process, and mentions the weakness of these activities in Velda B.V.. The third part of this chapter analyzes the problems in the SCM, especially those regarding suppliers and solutions.

The fifth chapter focuses on financial performance to further elaborate the SCM. It is mainly based on the profit analysis to control the SCM, especially on how to reduce costs. Besides, it also involves the whole management of SCM integrated with IT, which is the ERP system. It introduces the advantages of this system, and also analyzes the problems Velda B.V.

The conclusions and recommendations are shown in the last chapter.

## Chapter 3 Literature Review

This chapter will answer the sub-research question of “What is the SCM model/theory?” Some literatures are mentioned here in order to get the SCM model and the related theory.

This research is aimed at improving SCM of Velda B.V. in order to get better financial performance. It is important to find out which factors in SCM can influence financial performance and related aspects about the supplier’s performance and relationships. Supplier performance, performance indicators, and supplier’s choosing criteria are crucial in the financial performance of a company. The following review of literature describes the definition of Supply Chain Management, Supply Chain Map, the influence of SCM on financial performance, long-term buyer-supplier relationships and lastly the criteria based on which suppliers should be chosen. Since Velda B.V. has a great deal of orders in China, this paper also mentions the researches in this field.

### 3.1 Supply chain management (SCM) definition

What’s the definition of Supply Chain Management? There are many versions of the definition, and according to Lambert, Cooper and Pagh (1998): *Supply Chain Management is the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders.* This definition involves almost every business activities.

Douglas M. Lambert (2006) has the same definition of SCM in his book <Supply Chain Management: Processes, Partnerships, Performance>. This book emphasizes that the supply chain management processes can be used to achieve cross-functional and cross-firm integration, and a description of how customer relationship management and supplier relationship management form the critical supply chain management linkages and how their impact on the financial performance of the organization can be measured.

Among the other definitions, Olsen and Ellram (1997) focused on the buyer-supplier relationship, and Mattsson (1998) defined the supply chain as a line of factors which are mutually dependent and through which material, payment and information flow. Leif Enarsson (2006) mentioned that in order to keep the chain concept, the most proper concept must be value chain. The value chain focuses on internal activities in a company and the physical flows as the primary activities.

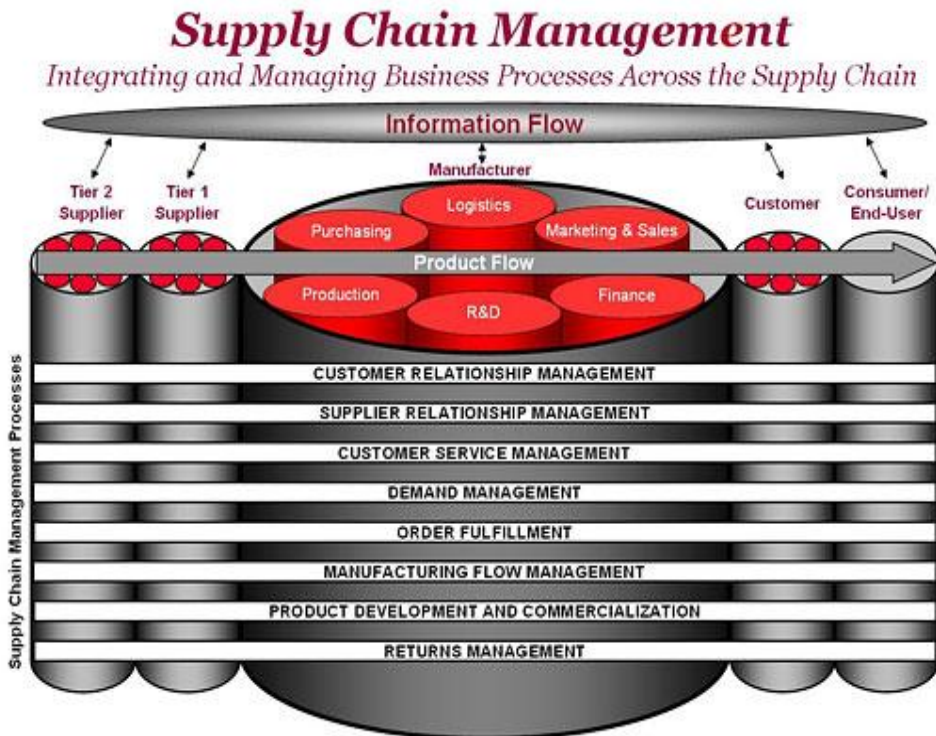


Figure: Supply Chain Management (Source: Douglas M. Lambert, <Supply Chain Management: Processes, Partnerships, Performance>)

**Customer relationship management** provides the structure for how the relationships with customers can be developed and maintained. Management identifies key customers and customer groups as part of the firm's business mission. The goal is to segment customers based on their value over time and increase customer loyalty by providing customized products and services.

**Supplier relationship management** is the process that defines how a company interacts with its suppliers. Just as a company needs to develop relationships with its customers, it also needs to foster relationships with its suppliers. As in the case of customer relationship management, a company will forge close relationships with a small subset of its suppliers, and manage arm-length relationships with others. Long-term relationships are developed with a small core group of suppliers. The desired outcome is a win-win relationship where both parties benefit.

**Demand management** is the supply chain management process that balances the customers' requirements with the capabilities of the supply chain. With the right process in place, management can match supply with demand proactively and execute the plan with minimal disruptions. The process is not limited to forecasting. It includes synchronizing supply and

demand, increasing flexibility, and reducing demand variability. A good demand management process can enable a company to be more proactive to anticipated demand, and more reactive to unanticipated demand.

**Customer service management** is the firm's face to the customer. Customer service provides the customer with real-time information on promised shipping dates and product availability through interfaces with the firm's functions such as manufacturing and logistics. The customer service process may also include assisting the customer with product applications.

Quality, time and cost are the three most important performance factors in the SCM in order to get customer satisfaction and completion strategy. Effective management must coordinate all the different pieces of the chain as quickly as possible without losing of the quality or customer satisfaction, while keeping the costs down. Customer satisfaction is paramount, included in the supply chain process are customer orders, storage, and customer service. Key to success of a supply chain is the speed in which these activities can be accomplished with customer satisfaction. Reduced inventory, lower operating costs, product availability and customer satisfaction are the effective SCM.

The decisions associated with supply chain management cover both long-term and short-term. Strategic decisions deal with corporate policies and look at overall design and supply chain structure. Operational decisions deal with daily activities and problem of an organization. The structure should be through long-term analysis and at the same time focus on the day-to-day activities. Demand patterns, service level requirements, distance considerations, cost elements and other related factors must be understood well in the structure of SCM.

The present focus of SCM research is mainly about the IT-related research, which includes IT-based modeling and simulations (Leif Enarsson 2006). This is also the trend of SCM in the complex, fast changing and developing world of business. Using IT development in SCM can create a better usefulness for us.

Globalization in SCM is another trend. According to Yip (1998), the benefits of global sourcing for companies are cost reduction, improved quality, enhanced customer preference and increased competitive leverage.

### **3.2 Supply Chain Map**

When the company's supply and delivery systems become increasingly global, managing the supply chain becomes more complicated and it's very useful to use the supply chain map to

visualize, track and manage it.

So what is a supply chain map? There are also a lot of definitions. Muehrcke and Muehrcke (1992) defined it as follows: “*A map is spatial representation of the environment. By representation, we mean something that stands for the environment that it portrays, and is both a likeness and a simplified model.*” So the map is a stand-in for the actual environment according to this definition. Rouleau (1993) described it as: “*As is the case with other graphic constructions, maps employ a form of visual language to communicate items of information.*”

In order to visualize the whole process, the supply chain Map is drawn. This paper analyzes four ways of purchasing SCM maps, according to where to purchase and if they purchase raw material or finished products.

### **3.3 SCM functions that impact on financial performance**

Focused on the core business, small and mid-size companies relegate supply chain management solutions to a back-room function, and fail to recognize the impact of SCM on revenue growth, operating expenses and capital utilization (Valerie Bonebrake, 2007). Even if they know that improvement in the current supply chain will help reduce cost for goods sold, days in inventory and overall hidden operational expenses, there are many issues they face to improve their SCM and get better financial performance.

As explained in the previous part, SCM is the integration of key business processes from end user through original supplier that provides products, services, and information that add value for customers and other stakeholders. It includes most business activities.

Academics and practitioners agree that excellence in supply management results in better quality, customer service and channel performance. The research by Shin et al (2000) found that an improvement in the Supply Management Orientation improves both the supplier’s and buyer’s performance, and its influence on delivery and quality performance is more significant than on cost and flexibility performance.

### **3.4 Supplier’s performance and reduced number of suppliers.**

Supplier’s performance is important in the Supply Chain Management. Mentzer and Konrad (1991) stated that performance measurement is the evaluation of effectiveness and efficiency of completing a given task. Effectiveness is the extent to which goals are accomplished.

Efficiency is a measure of how well resources are utilized. Venkatraman and Ramanujam (1986) focused on organizational effectiveness, and classified business performance measures as either financial or operational (non-financial). Operational measures of performance can be classified in two streams: key competitive success factors (e.g., quality, delivery, price, service, and flexibility) and international factors, such as defects, schedule realization and cost.

In the current study, the supplier’s performance is an operational measure of key competitive success factors, which are product quality, delivery performance, price, responsiveness to change request, service support and overall performance. The supplier’s performance directly influences the buying firm and is critical for them (C.Prahinski, W.C. Benton, 2004).

Companies are now trying to reduce number of suppliers. In the past, it was common practice for many companies to contract with multiple suppliers. The underlying premises behind this include 1) competition is the basis, 2) purchasing must not become source dependent; and 3) multiple sourcing is a risk-reducing technique (Newman, 1989).

Reduction of the supplier base is a unique characteristic of contemporary buyer-supplier relationship. Several important factors have caused the current shift to single sourcing or a reduced supplier base. Firstly, multiple sourcing prevents suppliers from achieving the economies of scale based on order volume and learning curve effect (Hahn et al., 1986). Secondly, the multiple supplier system can be more expensive than a single supplier system (Treleven, 1987). Thirdly, a reduced supplier base helps eliminate mistrust between buyer and suppliers due to lack of communication (Newman, 1988a, b). Lastly, worldwide competition forces firms to find the best suppliers in the world.

### **3.5 Performance indicators in choosing and evaluating suppliers**

The impact of outsourcing on supply chain is complex. Five performance objectives developed by Slack et al (2001) are useful.

Category	Content
Quality	External quality( product quality) Internal quality (process quality)
Speed	Delivery time Production time



	Response time Development time
Reliability	Level of reliability Consistency of reliability
Flexibility	Product flexibility Mixed flexibility Volume flexibility Delivery flexibility
Costs	Cost structure Costs inflicted by other performance objectives

Table 4: The five performance Objectives of a supply Chain  
Source: Slack et al, 2001

**Quality:** According to Slack et al (2001), quality has many aspects, external and internal aspects being the main focus. The external quality means executing tasks correctly and producing reliable and correct specifications. It's essential to good product quality. Internal quality means when the manufacturer doesn't deliver products of the correct quality, subsequent operation needs to be completed.

**Speed:** Speed is mainly about how fast the producers can deliver the product after the order is ordered. The shorter the delivery time, the more chances the goods will be sold; the faster the speed, the lower the cost, and also the work in process is lessened. According to Slack et al (2001), speed also includes response time, i.e., the time a company needs to answer a customer's enquiry, which is related to customer service. Product development time is the last aspect of speed. New products can be brought to market through the cooperation of the engineering department, designing department, and the purchase department. Ghausi (2002) mentioned that market share goes to whoever gets there first, and so does the margin.

**Reliability:** Reliability means things are done when they need to be. It is crucial for revenues since delays kill customer satisfaction instantly. Both the level and the consistency are important factors.

**Flexibility:** Flexibility can be subdivided to product/service flexibility, mix flexibility, volume flexibility and delivery flexibility. Product/service flexibility is the ability to introduce new products according to market demand. Mix flexibility is the ability to supply a series of different products. Volume flexibility means the supplier can provide fluctuating demand amount. Delivery

flexibility requires the supplier change the delivery time requested from the customer.

**Costs:** Cost structure of a company is essential to a company. Poor cost structure can take away some of the profits.

All of these performance objectives influence each other in different ways, and they all influence costs.

Quality performance is the number one priority in selecting supplier. Quality has always been one of the most important performance criteria even with a conventional purchasing strategy (Choi and Hartley, 1996). Dickson (1966) stated that three factors: (1) the ability to meet quality standards; (2) the ability to deliver products on time; (3) the performance history, are the most critical determinants in choosing suppliers.

Many studies emphasizing a “quality focus” of the supply management are also conceptual (Manoochehri, 1984; Treleven, 1987; etc.). The basic arguments of these studies are: (1) supplier quality is a critical determinant for overall product quality and cost; (2) information of the supplier’s quality control system and quality performance helps buyers to select the right price level of the components; (3) a close supplier-buyer relationship is requisite of information sharing. Choi and Hartley (1996) explored supplier selection practices at various tiers of the supply chain. They defined a new construct called a “Consistency Factor”, which encompasses important dimensions of the competitive priorities (conformance quality, consistent delivery, quality philosophy, and prompt response) except for “Cost”. They found the “Consistency Factor” to be the most important supply selection criterion in the supply chain.

### **3.6 Purchase methods comparison: internationally or locally**

As already described above, Velda BV has 50% of the products cost purchased in China, and the others are purchased locally, including in Netherlands, Germany, UK, Poland, Italy etc.

How to decide which way to go?

1. One reason to purchase globally or locally is the source availability. For aquarium products such as water pumps and related products, the production center of the world is located in South China; therefore they have more products with good price there. One of the reasons of sourcing in China is because of the availability of the product. Together with the local sourcing, it can meet the increase in product demand. It’s also better to keep local supplier “Sharp” by this way.

2. Cost is the primary reason to source globally. Again, for the example of the I-Tronics product, it is very expensive to manufacture the mould in Europe, so they make it in China. Let aside the lower labor cost, Velda BV however needs to think of the higher transportation and communication cost as well as longer delivery time, therefore the transaction cost is likely to be much higher. Concerning the cost in purchasing, this paper introduces a famous theory in the SCM, the Total Cost of Ownership (TCO).

*“TOC is a method and philosophy which includes more than just the price in a purchasing situation. The model is based on the total cost of ownership where the total cost is the real cost including the purchasing price and all other costs in the chain, related to and created by the suppliers”* (Bhutta, Huq, 2002, Degreaver, Roodhooft, 1999).

Leif Enarsson (2006) also mentioned that the TCO includes all costs for owning a product during its life cycle, i.e., purchasing cost, working expenses, maintenance costs, repair costs and disposition costs.

The TCO includes Price, Communication, Service, Delivery, Managing, and Quality. This model can help companies choose and evaluate suppliers.

Comparison between Local and Global Sourcing in Velda B.V. is shown as follows:

Requirements	Global Sourcing (In China)	Local Sourcing (In EU)
Lead Time	Long, unless using expensive air transport	Short, with opportunities of improvement.
Ability to produce customized products	Yes, but large batches to get acceptable price	Yes, with opportunity of more flexible production systems. Fast transportation.
Workforce	Basic, low wages, low demand	Skilled. Possibilities of multi training and improved flexibility.
Level of production technologies	High for industrialized countries. Low for developing countries, basically low to medium in china.	Medium to high. Need to invest in flexible manufacturing and computer support task.

Risk for deal	High for developing countries. Low for developed countries. Low to medium in China.	Low
Information system comparable	Low to medium in China. Need for trade office and contracts.	Medium to high. Possibilities of improvement through internet with VAN support.
Future (Verticle and horizontal integrations)	Low. Depends on juridical environment and business culture.	High. Varies possibilities for concentrations.

Table 5: Comparison between Local and Global Sourcing (Leif Enarsson, 2006).

The table above shows that the production period in China is longer because of the communication and sample confirmation time. Transportation time is also much longer due to international sea transportation. Because the purchase amount is much bigger in China, the inventory is also much bigger.

The development of Chinese economy promotes the development of China's Procurement system. Supply chain management in China today is mainly characterized by three important challenges: infrastructures, regulations and cultural and business constraints (Easton, 2002, 2003).

Old cultures, modest, collectivism and conservative, are important, while new culture is also obvious, materialism, individualism, professionalism, legalism, nationalism, and a quality of life are obvious new values (Leif Enarsson, 2006). If a foreign company wants to be successful with China, it has to create long term commitments, local alliances, presence and competence, and good cooperation.

When trading internationally, at least two cultures meet. Misunderstanding will occur in terms of how to conduct business. A lot of problems have to be solved to get better cooperation.

This chapter reviewed the literature in the SCM theory and some related researches. As already described in this chapter, SCM function has severe impact on the financial performance of a company. Next chapter will have a deep analysis of the SCM process in Velda B.V.

## **Chapter 4 SCM Analysis in Velda B.V.**

This chapter will answer the sub-research question of “How to analyze the SCM of Velda B.V. according to the model?” It will analyze whether Velda B.V. has the correct purchase strategies for different products based on the purchase strategy - Kraljic portfolio Matrix. Second part of this chapter introduces the four different SCM maps and the process. The last part of this chapter will focus on the problem analysis, especially for the supplier problems, and it gives some solutions in the end.

As described in the previous chapters, products are mainly from China and EU. This chapter will show and describe each step of the supply chain map of these products in different scenarios and analyze it in detail.

This chapter can be categorized into three parts. In the first part, it will analyze and start with the supplier strategy, then it shows the SCM maps of different scenarios according to where to source and assemble the products. In the second part of this chapter, the article will describe in detail each step for the first kind of products, which are produced and assembled in China, and compare the different scenarios. The third part of this chapter analyzes the whole process: the factors involved which can influence the cost, time, and quality. The core questions that will be answered are: Is it OK to do this and are there weaknesses of the company to do that or/and how to improve?

### **4.1 The purchase strategy in Velda B.V.**

In order to analyze the SCM, especially the purchase process, knowing the products well is fundamental, and one should adopt suitable purchase strategies for different products. According to Capgemini, the procurement processes can be described as strategic, tactical and operational .

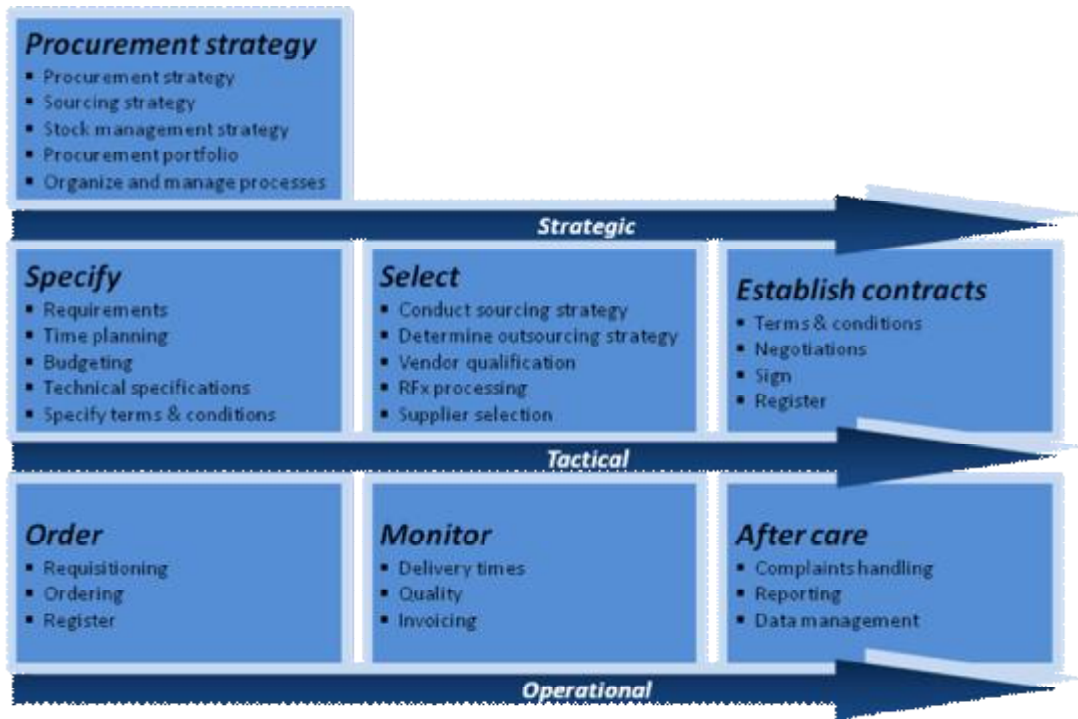


Figure 1: Standard Procurement Processes (Source: Capgemini SRM training)

#### 4.1.1 The Kraljic portfolio Matrix

According to supplier relationship module introduced by Kraljic, category products in a matrix and sensible guidelines are important for managing supplier relationships.

In this module, they have 4 categories of products; each one has a different level of supply risk and purchase impact on financial result, which is mainly about how expensive each item is.

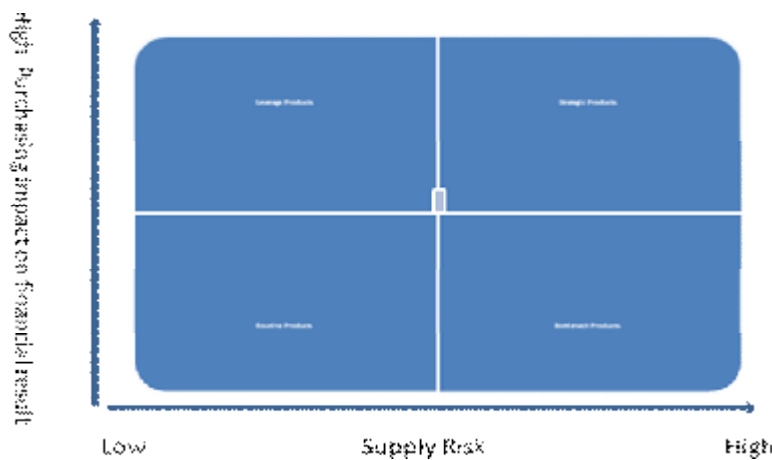


Figure 2: Kraljic's portfolio Matrix

**Routine products** mean they have a low unit value and can usually be provided by many alternative suppliers. Normally they have few technical or commercial problems from purchase point of view. These products have more handling cost than the product value itself. The purchasing strategy should be focused on reducing administrative and logistics complexity. Simple, efficient ordering and administrative routines with suppliers in the forms of systems contracts are important for buyers. Systems contracting or stockless buying is the establishment of the arrangement with supplier. It is better to have the whole product group provided by only one specialized supplier (Leif Enarsson 2006).

**Bottleneck products** represent a relatively limited value in terms of money, but they are vulnerable in regard to their supply. The supplier is dominant in a relationship that results in high prices, long delivery time and bad service. The purchasing strategy should focus on the security of continuity of supply, and reduce the dependence of the suppliers. Of course, the costs involved may exceed the price profits obtained. Risk analysis to determine the most important bottlenecks in short-, middle- and long-term supply is necessary.

**Leverage products** can be purchased from various suppliers and normally at standard quality grades. They represent a relatively large share of the cost-price of the end product, and a small change in price has relatively strong effect on the cost-effect for the end product.

The purchasing policy should be on the principle of bidding or tendering. Buyers need to look for suppliers with the minimum price while maintaining the required quality level and continuity of supply.

**Strategic products** are products that are often supplied to customer specification. Only one source is available, and this can't be changed in a short-term without incurring considerable costs. The product normally represents a high share in the cost-price of the end product.

The purchasing policy for these products should be partnership or collaboration, and the goal is to create mutual participation based on planned co-operation.

#### **4.1.2 Velda B.V.'s products portfolio Matrix**

Water, Bottom related products can be the routine products of Velda B.V., as they have small value per item especially the cost itself, but the handling cost is higher. Normally these products have many alternative suppliers for the materials.

For bottleneck products, in Velda BV, some products are not expensive themselves, but the supply risk is high because of the dominating supplier. Most of the time, they have delay in the products. For example, the bottles for the water test and some labels on the bottles.

For the leverage products, in Velda B.V., most of the products like the air pumps, water pumps, help devices such as the fish net, cover net and also the pond tools can be categorized into this group. These products can be supplied by many companies with qualified products, and the price is the main factor to choose from these suppliers.

For strategic products in Velda B.V. the supply risks are high. The products include the I-Tronics, UV-C filters, Press Filters, and Pond Skimmers. These products only have one supplier, and usually they have very expensive mold fee, so it's very costly to change the supplier. Besides, these products are quite expensive in themselves. So, Velda B.V. should keep very good relationships with these suppliers to form sound cooperation.

According to the supplier analysis from above, we can get the Kraljic's portfolio Matrix of Velda BV. We can see the products purchased in China are normally strategic products and leverage products.

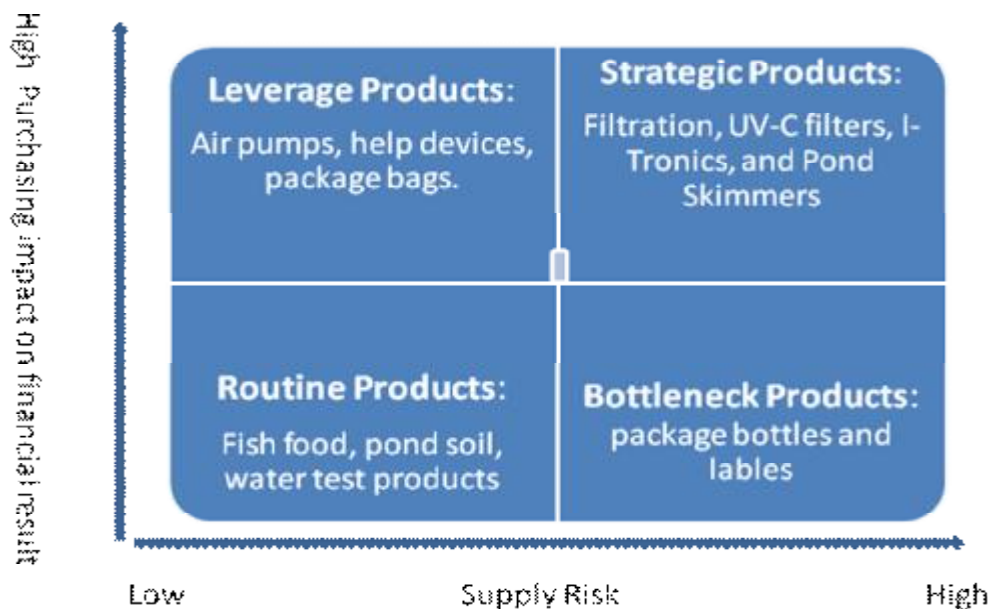


Figure 3: Velda BV's products in Kraljic's portfolio Matrix

#### 4.1.3 Velda B.V.'s supplier strategy



According to the previous analysis, Velda B.V. should have the following supplier strategies with different products:

Routine Products (Fish food, pond soil, water test products): The purchasing strategy should focus on reducing administrative and logistics complexity. Simple, efficient ordering and administrative routines with suppliers in the forms of systems contracts are important for buyers. Systems contracting or stockless buying is the establishment of the arrangement with supplier. It is better to have the whole product group provided to just one specialized supplier (Leif Enarsson 2006).

For bottleneck products (package bottles and labels), the purchasing strategy should focus on the security of continuity of supply, and reducing the dependence of the suppliers. Of course, the costs involved may exceed the price profits obtained.

For leverage products (Air pumps, water pumps, helping devices), the purchasing policy should focus on the principle of bidding or tendering. Buyers need to look for suppliers with the minimum price while maintaining the required quality level and continuity of supply.

Strategic products (Filtrations, UV-C devices, I-Tronics, and Pond Skimmers), the purchasing policy for these products should be partnership or collaboration, and the goal is to create mutual participation based on planned co-operation.

#### **4.2 Four different SCM Scenario maps.**

In order to distinguish different SCM maps for further analysis, we need to know where the products are produced or assembled. Most of the products Velda BV purchased are already finished products, but there are a few that need to be assembled in the company. Besides, they also have different purchase areas, and it is distinguished as in China or in EU. According to these two criteria, four different supply chain maps can be defined, which are: purchasing and production in China, purchasing in China and assembly in Velda, purchasing and production in EU, and purchasing and assembly in Velda.

##### **4.2.1 Scenario 1: SCM map for the products which are completely produced in China**

For the first group of products, they are completely produced in China, and when these products arrive in Velda BV, they are already finished products. Most of the strategic products and also leverage products belong to this type. Filtration, UV-C filters, I-Tronics,

Air pumps, helping devices, such as fish net, pond cover net, and package bags are categorized to these products.

The whole SCM map can be shown in the following figure, followed by a simple explanation for the map.

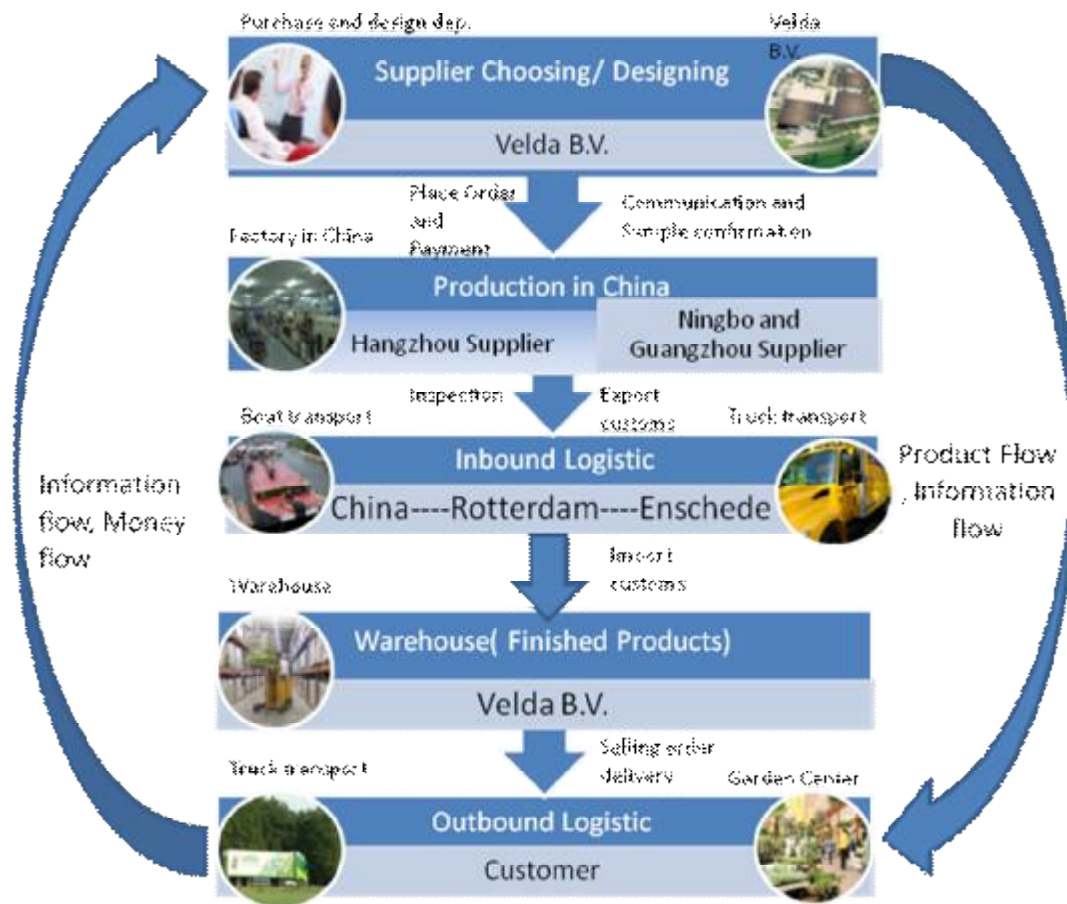


Figure 4: SCM map for products produced and assembled in China

Who is involved in this map? The SCM map for these products is formed with 8 factors: Design, Purchase and Finance Department in Velda B.V., Supplier of Velda B.V. (Factory in China), International Forwarder (Boat and Truck transportation), Warehouse Department in Velda B.V., Delivery Company, and also the Customers of Velda B.V. (Garden Center). We can see there are mainly 5 factors in the chain if we consider the Design, Purchase, Finance, and Delivery factors inside Velda B.V. as a big one.

How do these factors link to each other? There are three flows here. These factors are connected and integrated with each other by the instruction of information flow, the products and money flow. The whole map is integrated as a circle, with the products flowing from producer of Velda B.V. through the transportation company and warehouse management in Velda B.V. to the customers, and at the other aspects, with the money flowing from the customer of Velda B.V. to Velda B.V. and then to the suppliers of Velda B.V.. It runs as a complete circle and needs to be well connected and integrated in order to run smoothly.

How to manage this chain to run smoothly is crucial for the company, and the second part of this paper will deal with this. Firstly, we still need to look at the other three kinds of SCM maps.

#### **4.2.2 Scenario 2: SCM map for the products with parts produced in China, and assembled in Velda**

Among the products produced in China, some are assembled in Velda BV's warehouse and some are packaged in Velda BV. Pond skimmer and cross flow filter are the only two products to be assembled in Velda BV. They do final assembly in Velda BV because the products are difficult to transport and store in an assembled state. The SCM map is similar as in the previous steps, except that when they arrive the warehouse, they will go to the area for assembling, and production/assembling department will assemble these products, and move these products to the order delivery areas. The Pond cover net is packaged in Velda BV, so the procedure is similar to the pond skimmer and cross flow filter.

Other procedures such as transportation and sales delivery are the same. The SCM map is as follows:

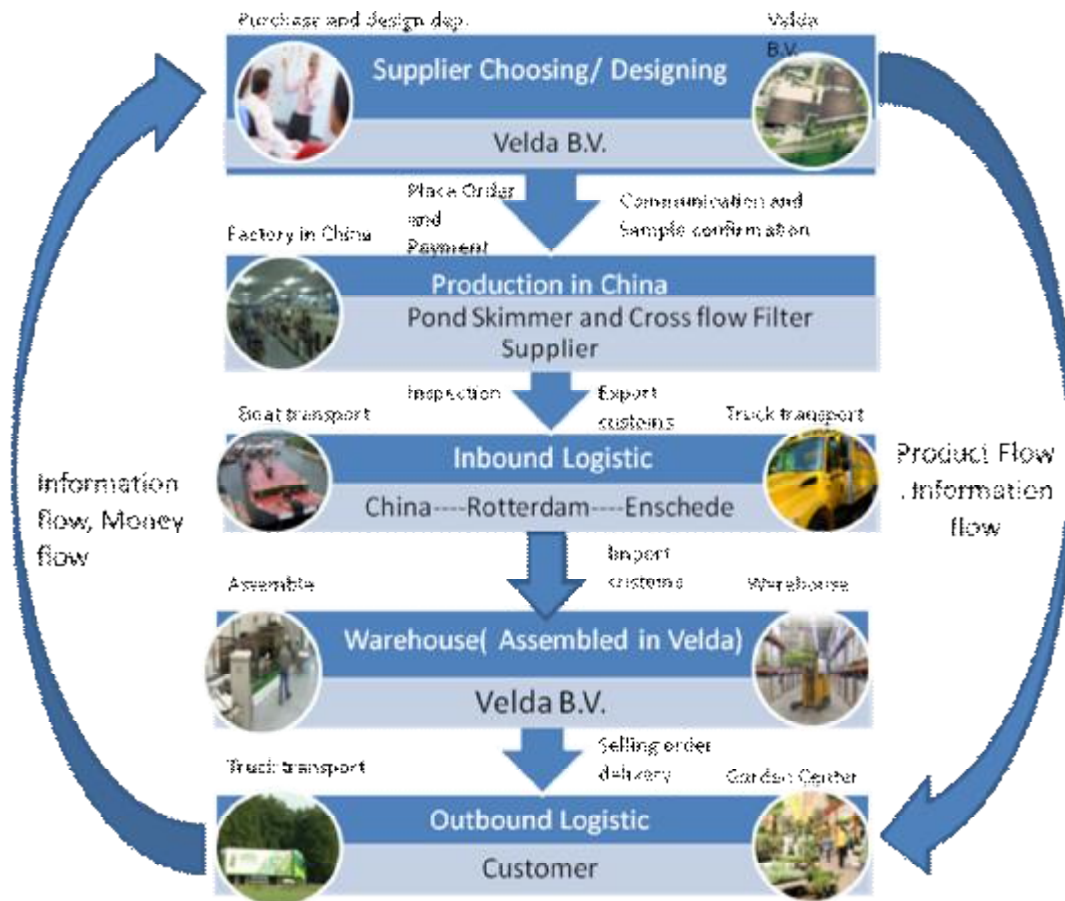


Figure 5: SCM map for products with parts produced in China and assembled in Velda B.V.

It can be seen that the factors are the same as before except the Assembling Department. There are 9 factors involved in the map: Design, Purchase and Finance Department in Velda B.V., Supplier of Velda B.V. (Factory in China), International Forwarder (Boat and Truck transportation), Assembling and Warehouse Department in Velda B.V., Delivery Company, and also the Customers of Velda B.V. (Garden Center). The only difference with the previous one is the Assembling Department here.

How do these factors link to form a chain? There are three flows here. These factors are connected and integrated with each other with the instruction of information flow and also the products and money flow. The whole map is integrated as a circle, with the products flowing from producer of Velda B.V. through the transportation company, assembling and warehouse management in Velda B.V. to the customers, and at the other aspects, with the money flowing from the customer of Velda B.V. to Velda B.V. and then to the suppliers of Velda B.V.. Therefore, for the product and information flow, prior to storage in the warehouse, there is the

assembling procedure different from the previous one; there is no difference in money flow.

We have drawn the SCM maps for the products which are purchased from China, and now we will have a look at the products from EU.

#### **4.2.3 Scenario 3: SCM map for the products which completely produced in EU.**

Not so many products are completely produced in EU, as most of the products purchased in EU are finally assembled or produced in Velda BV.

Purchase in EU is much easier in terms of communication, payment term and delivery. It is agreed that payment has be completed within 30 days after receiving the products, and Velda BV will have 2-3% discount for prompt payment within 8 days. The transportation is normally done with trucks in a much shorter delivery time, and there is no import and export customs issue.

Among the purchase from EU, not so many products are finished products upon arrival. This is because of the cost control, inconvenience and also the core business.

We can draw the SCM map in the following figure for the products purchased in EU and with a simple explanation of the map following.

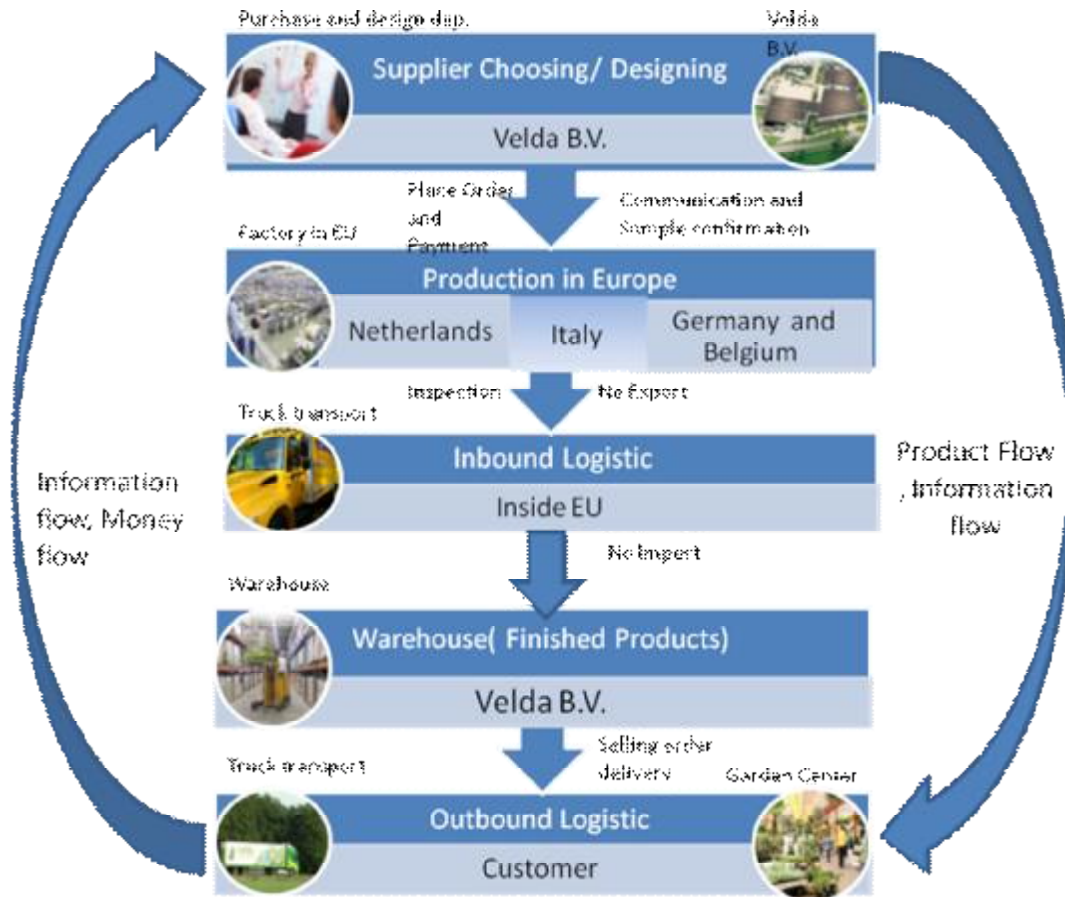


Figure 6: SCM map for products produced and assembled in EU

Who is involved in this map? The SCM map for these products is formed with 8 factors: Design, Purchase and Finance Department in Velda B.V., Supplier of Velda B.V. (Factory in EU), Forwarder (Truck transportation), Warehouse Department in Velda B.V., Delivery Company, and also the Customers of Velda B.V. (Garden Center). We can see there are mainly 5 factors in the chain if we consider the Design, Purchase and Finance factors inside Velda B.V. as a big one. The main difference of factors with SCM map with the one in China is the Supplier and Forwarder is inside EU, and no boat transportation is involved, which makes it much easier.

How do these factors link to each other to be a chain? There are also three flows here. These factors are connected and integrated with each other with the instruction of information flow and the products and money flow. The whole map is integrated as a circle, with the products flowing from producers of Velda B.V. through the transportation company and warehouse management in Velda B.V. to the customers, and at the other aspects, with the money flowing from the customer of Velda B.V. to Velda B.V. and then to the suppliers of Velda B.V..

All of these three flows are simpler than the flows in China. Product flow will be faster, as the distance from supplier to Velda B.V. is shorter, and there is no boat transportation, so the time is also shorter. The money flow is simpler, as there is no T/T payment terms and the information flow is also smoother, because of the comparably easier communication.

The last SCM map for Velda B.V will be introduced below.

#### **4.2.4 Scenario 4: SCM map for products with parts/material produced in EU and assembled/produced in Velda B.V.**

Most of the products purchased in EU are assembled or produced in Velda BV. These are mostly routine products, and bottleneck products. For example, pond soil, the water test products, package bottle etc are all purchased from different companies, and final assembled in Velda BV. There are many suppliers in EU, so it's also important to manage the map well in order to get everything done well.

After the material is purchased, they will make the filling or packaging in Velda BV's production area. Then the products will be moved to the warehouse.

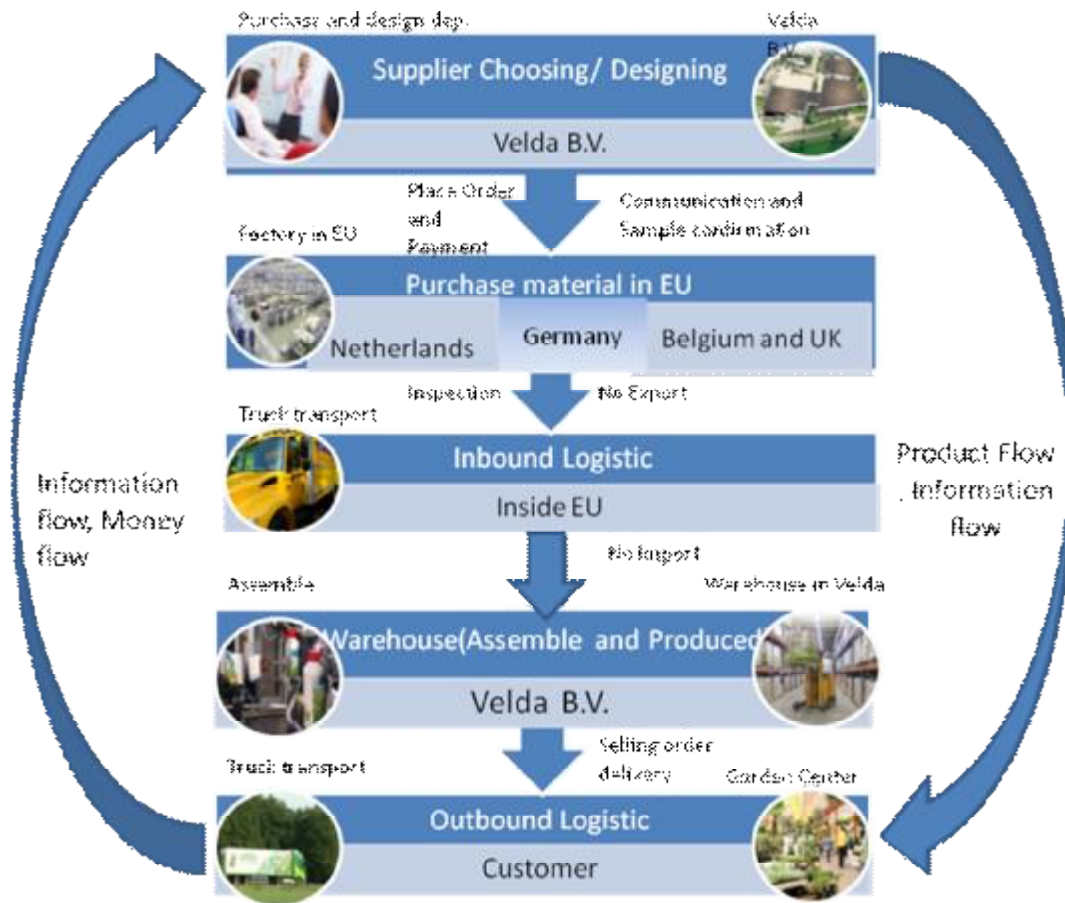


Figure 7: SCM map for products with parts/material produced in EU and assembled/produced in Velda B.V.

Who is involved in this map? The SCM map for these products is formed with 9 factors: Design, Purchase and Finance Department in Velda B.V., Supplier of Velda B.V. (Factory in EU), Forwarder (Truck transportation), Manufacturing/Assembling and Warehouse Department in Velda B.V., Delivery Company, and also the Customers of Velda B.V. (Garden Center). We can see there are mainly 5 factors in the chain if we consider the Design, Purchase and Finance factors inside Velda B.V. as a big one. The main difference of factors with SCM map with the previous one is the manufacturing and assembling procedure is involved before moving the products to the warehouse management.

How do these factors link to each other to be a chain? There are also three flows here. These factors are connected and integrated with each other with the instruction of information flow and also the products and money flow. The whole map is integrated as a circle, with the products flow from producer of Velda B.V. through the transportation company and warehouse management in Velda B.V. to the customers, and at the other aspect, with the money flow from the customer of Velda B.V. to Velda B.V. and then to the suppliers of



Velda B.V.. The product flow will be first to the manufacturing/assembling department, and then to the warehouse department, with the money flow the same as the previous map.

So far, this paper has drawn and explained SCM map of different routes, and the next part of this paper will describe each step into detail for the whole process about how to do it. The paper will focus on the first route into detail, and with necessary compares with other routes.

### 4.3 The detailed SCM process description in Velda B.V.

In order to understand the complete process of the SCM map, we will start from the new products and go back to the SCM map of the first route.

Velda BV continually searches new products for both existing and new customers. New products usually command a higher profit margin. Pond cover net is a pond protective device, and it was marketed in 2007. After the supplier is fixed, and the following step for the following up orders will be easier.

The first step in the SCM map is the purchase process. We will use Capgemini and van Weele (2002)'s purchase process model to analyze it.

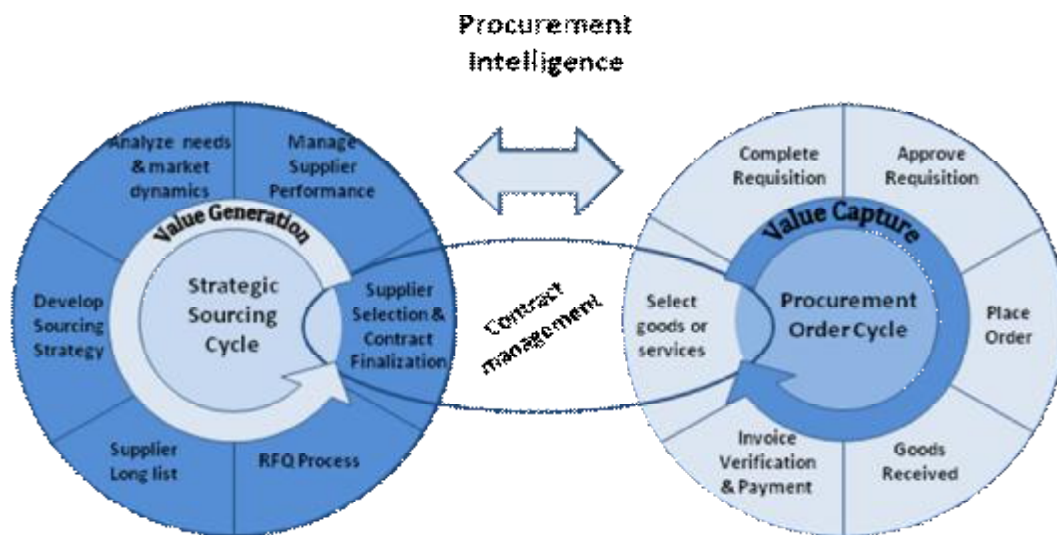
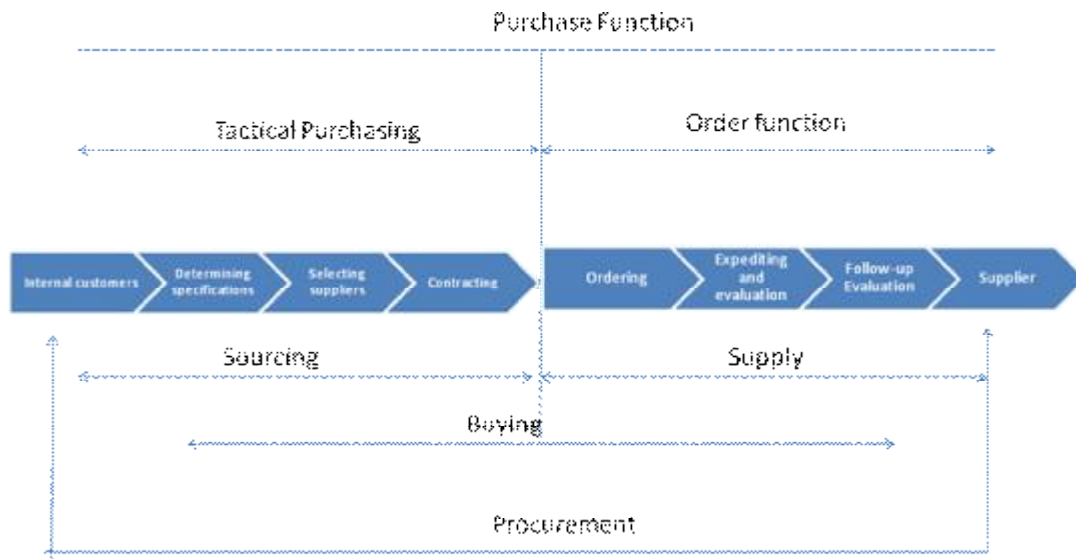


Figure 8: Supplier Relationship Management closes the loop (Source: Capgemini SRM training)

Van Weele (2002) uses the following Model to explain the purchase process.



**Figure 9: Purchase Process Model (Source: van Weele, 2002).**

In van Weele (2002)'s purchase process model, there are sourcing and supply, and the complete process includes: Internal customers, Determining specifications, Selecting suppliers, Contracting, Ordering, Expediting and evaluation, Follow-up Evaluation and then to the supplier.

Internal customer means the management board in the company who makes the decision. After made this decision, the purchase department will determine the specification and also start the supplier selection and then have the contract and place the order.

The purchasing process in Velda B.V. covers the activities:

- l Purchase department in Velda BV determine the specification, including quantities and quality, needs to be bought.
- l Purchase department in Velda BV Selects the most suitable supplier (Assure adequate supplier)
- l Marketing department makes the design of the product. (Designing)
- l Purchase department in Velda BV communicate with the supplier about the requirement and negotiate in order to establish an agreement. (Prepare contracts)
- l Purchase department in Velda BV place an order with the selected supplier (Establish ordering)
- l Purchase department monitors and controls of the order (Establish routine, expediting trouble shooting)
- l Purchase department in Velda BV makes follow-up and evaluations, including setting

claims, keeping product and supplier files up-to-date, supplier rating and ranking (Assess supplier)

The following part will describe the most important steps in this process.

### **Step1: Supplier Selection—Supplier Relationship Management.**

There is also involvement of product development and commercialization in this stage. “It is the supply chain management process that provides the structure for developing and bringing to market products jointly with customers and suppliers. The product development and commercialization process team must coordinate with customer relationship management to identify customer articulated and unarticulated needs; select materials and suppliers in conjunction with the supplier relationship management process; and, develop production technology in manufacturing flow to manufacture and integrate into the best supply chain flow for the product/market combination (Douglas M. Lambert, 2006)”.

According to Douglas M. Lambert (2006), “Supplier relationship management is the process that defines how a company interacts with its suppliers. Just as a company needs to develop relationships with its customers, it also needs to foster relationships with its suppliers. As in the case of customer relationship management, a company will forge close relationships with a small subset of its suppliers, and manage arm-length relationships with others. A PSA is negotiated with each key supplier that defines the terms of the relationship. For segments of less critical suppliers, the PSA is not negotiable. Supplier relationship management is about defining and managing these PSAs. Long-term relationships are developed with a small core group of suppliers. The desired outcome is a win-win relationship where both parties benefit.”

After made the decision of issuing a new product pond cover net, the purchase department in Velda BV has to find and choose the suitable supplier. There is no existing system for Velda B.V. to follow to look for suppliers, but normally they do as the following ways.

1. First of all, look for suppliers. There are several ways to find the suitable suppliers.
  - A. Official manufacture yellow page and online trade webpage. There is a lot of information on the webpage now, and how to make full use of them is important. Official manufacture yellow page is important. Normally [www.alibaba.com](http://www.alibaba.com) is very useful online trade webpage. Besides, there are special products category webpage for special discussion. It’s also useful to find them.

- B. Trade shows. These should be deemed as the pilgrimages needed if you are serious about being in the know and being the first to issue latest products. China export and import fair (Canton fair); which is held twice a year is a very important method to find suppliers in China. Besides, China international pet and aquarium show (CIPAS) is also a good one for pond industry. On the trade show, you can also talk with the people and communicate.
- C. Online forums. Join online forum has multiple benefits. First, you can get the information where the source of product come from, and second, you can have the feeling which company or supplier is doing well in this industry. Furthermore, you will get to know what kind of products the consumers like and want.
- D. Trade journal and magazines. Good trade journal is also one way to collect the latest products information from manufactures if can't join the trade show.

When Velda BV wants to issue a new product, and look for suitable suppliers, it normally goes through the above ways to collect the suppliers' information. Actually for the biggest supplier of Velda BV, it was through the Canton fair, and the others mainly through the online trade webpage such as [www.alibaba.com](http://www.alibaba.com).

2. After get these suppliers information, Velda BV needs to choose which one is the most suitable one. Price is an important determining factor when choosing the supplier, while quality, lead time and reliability are also crucial to the company. After get the quotation and also sample from some suppliers, Velda BV will compare and choose the most suitable one according to price, quality, delivery time and also reliability. From literature, there are following aspects the company needs to consider when choosing a supplier, and Velda B.V. also follows these aspects.

- A. Quality is crucial to a company. For poor quality product, company need to replace or repair the item, and it can also damage the perceived image and can further reduce the sales opportunity. Velda B.V. has met many times of poor quality products from China. For example, the Velda brand Cover Net in 2007, as the sample was good, and everything was OK, but for the final products, the supplier didn't do exactly the same quality as the sample, which is a big damage for Velda B.V. This is caused by the quality and also the supplier's reliability, because the supplier could make it better, but they didn't do.
- B. Reliability is important but difficult to evaluate especially for a new supplier. It is worth to investigate from past or current customers or from this industry to see if the

supplier can supply consistent product quality on time. Reliability includes the credibility of a supplier and also the delivery reliability. Information from internet maybe not true, and sometimes, company may meet the people who want to cheat the customers. Velda BV has also met these problems during the past years. It is difficult for Velda BV to guarantee this since it doesn't have branch office in China to help investigate. The second part of reliability means the delivery reliability. This maybe from a faithful supplier, but it's a larger supplier, and it may place Velda BV's order in a lower priority when it's busy and if Velda BV is its small customer. This can cause the delivery delay, so Velda BV needs to have extra stock or otherwise the delay to deliver the products to its customer, which can cause the higher costs for Velda. It's better to have a reliable delivery at the expense of longer lead time in order to have other activities well planned in advance.

- C. Lead time. Lead time is the time needed from place the order until the supplier deliver the products. The longer the lead time, the higher the cycle inventory and safety stock must be meet the requirement. Higher inventory means high cost to maintain it.
- D. Flexibility. This is about if the supplier can supply the amount Velda want and if it can respond quickly to the change. Forecast can be wrong, and there maybe a rush delivery, so the mechanism should exist for these changes. It is very common that forecast can be wrong; especially for new products and rush delivery is normally caused by the bad planning, which is not so frequently. When the forecast is wrong, then the inventory is too high or too low, and this may cause the high inventory cost or the inefficient inventory to supply for the customers. So it's important that a supplier can supply flexibly.
- E. Transportation cost. Transportation cost associate with delivering the products to Velda's location is part of the purchase cost. The purchase department needs to calculate the quantity in a container and also the cost. This part is involved with the forwarders. On Time express and HST are the forwarders of Velda BV. From the port in China to Rotterdam is done by boat and for samples by air. From Rotterdam to Enschede is transported by truck.
- F. Pricing term and payment term. Normally Velda BV uses T/T 30% payment terms to do business with suppliers in China, which means 30% of deposit payment and 70% of balance payment after the shipment. For the pricing terms, suppliers normally offer quantity discount for larger batch sizes. But the inventory cost should be considered if

the quantity is much bigger than requirement. Some suppliers also offer additional discount if there is early payment. It can be beneficial to the company if the company to utilize its working capital.

- G. Language and technology ability. The supplier needs to be easily communicated by English language ability and also the internet operation ability. There are no fixed criteria in Velda B.V. to measure about this aspect, but normally when the supplier can be easily communicated, it is the basic requirement.

The above are all the factors to consider when choosing a suitable supplier. After choosing the suitable supplier, purchase department of Velda BV needs to negotiate with the supplier about the terms, and place the purchase order (P.O.).

### **Step 2: Purchase Order and deposit payment—Order Fulfillment Management.**

“The order fulfillment process involves more than just filling orders. It includes all activities necessary to define customer requirement and to design a network and a process that permits a firm to meet customer requests while minimizing the total delivered cost as well as filling customer orders. This is not just the logistics function, but instead needs to be implemented cross-functionally and with the coordination of key suppliers and customers. The objective is to develop a seamless process from the supplier to the organization and to its various customer segments (Douglas M. Lambert, 2006)”.

After confirmed all the product, payment information and received the Proforma Invoice from supplier, purchase order will be issued by purchase department of Velda BV. Purchase order acts as the contract in business procedures. It’s important to place the purchase order at the suitable time, and with the suitable content. There are several aspects Velda needs to be careful about.

- A. The timing in issuing the purchase order is important, considering the vendor (supplier) needs time to prepare and delivery the products on time. Velda B.V. doesn’t have a time table to follow this, while they just put this in head. This is difficult to control since you can’t remember everything clearly.
- B. The cover letter of purchase order. Velda BV uses a very simple purchase order, and it doesn’t include purchase order cover letter, the terms and conditions of purchase.

- C. Content and form of purchase order. Currency of purchase, Terms of delivery, Total Amount, Terms of payment, Item No. Description of goods, Quantity, Unit price, Amount, Packing, Delivery date, Delivery to, Inspection, Samples, Marks and numbers, and Production completed date are all the contents needs to be on the purchase order.
- D. The inspection and samples content. It should write: 1) Vendor to notify Velda BV and submit Velda BV detailed Packing List in triplicate (10) days prior to delivery to arrange for Velda BV's or independent surveyor's inspection of the merchandise. 2) Transportation and other expenses will be on vendor's part if inspection after confirmation by vendor is not available. Sample part: 1) Samples must be approved by Velda BV prior to production. 2) ( ) samples of each of this shipment shall be supplied to Velda BV's authorized representative for his/her keeping on actual inspection of the finished production. 3) Above samples shall be included in this P.O. and shall be supplied to Velda BV at no charge (According to [www.export911.com](http://www.export911.com)).

Above are the aspects a Purchase Order need to be involved. After issued the purchase order, the production will start in the supplier's factory. A sample purchase order made for Velda will be included in the appendix.

For the payment term of T/T payment, after issuance the Purchase Order, it's still not enough. The vendor will start the production after they confirmed the deposit arrived. Velda BV needs to consider this time into the whole delivery time. Normally, the purchase department will pay the deposit after the issuance of purchase order. Normally it takes 4—7 days for the vendor to get the money. This is because of the financial department will send the instruction to Velda International (HangKong) side, and then they will pay it. HongKong side will pay the money to the vendor by USD. It takes approximately 2 working days for the international transfer to arrive.

### **Step 3 Production and product inspection—Manufacturing Flow Management**

“Manufacturing flow management is the supply chain management process that includes all activities necessary to move products through the plants and to obtain, implement and manage manufacturing flexibility in the supply chain. Manufacturing flexibility reflects the ability to make a wide variety of products in a timely manner at the lowest possible cost. To achieve the desired level of manufacturing flexibility, planning and execution must extend beyond the four walls of the manufacturer in the supply chain (Douglas M. Lambert, 2006)”.

Most of the production in China is the form of OEM (Original Equipment Manufacture), which means the factory produce a given product. Velda has the special requirement on the product. So the OEM supplier should exactly follow the specification, quantity, design, packing and labeling from Velda BV.

Since the products are produced in manufacture's factory, it's difficult to control the quality of the product and thus guarantee the final products will meet Velda BV's requirement. It may necessary to tour the supplier's production plant. And the pre-shipment inspection is necessary and needed to do. This is an important step Velda BV neglects or with difficulty to do in the purchase procedure.

The purpose of product inspection is to ensure the vendor's consignment complies with the contractual requirements. Safety, performance, appearance, and packing are the aspects of products inspection. According to the defect seriousness, they have defect classification. There will be an inspection report, including the information of Lot size, sample size, and AQL %( accepted quality level), and also the inspection result.

It's important to have inspection before the products are shipped, so Velda BV needs to add this procedure in the process. Trust is not enough in the business, and some restrictions are needed in order to get the good quality product. In the previous orders, there had product quality problems, which might be avoid if they did inspection before the shipment. Velda BV can have their own representative or ask the independent third party to do this for them.

#### **Step 4 Transportation and shipment**

The trade term from Velda BV with the vendors in China is FOB or CIF. This means the supplier needs to prepare all the export documents and clear the export customs, or ask a customs broker to do that. Velda BV has its specified freight forwarder, so the supplier also needs to contact Velda BV's freight forwarder about 1 week in advance before the delivery to book the shipping date.

Supplier will transport the product to the port by truck, and the freight forwarder is responsible to deliver the goods from the exporter's port (Shanghai, Ningbo, Qingdao, and Guangzhou) to Rotterdam. After the delivery of the goods, exporter (supplier) will get the documents such as bill of lading, packing list and other documents. They need to fax to Velda BV, and then Velda BV will pay the balance. Receiving the balance, the supplier needs to



send all of the original documents such as the Bill of Lading to Velda BV by express post. It takes 26-28 days for the goods to arrive Rotterdam port from China port.

After the goods arrive Rotterdam, Velda BV will clear the import customs and an external forwarder will use truck to transport the goods to Velda BV's warehouse in Enschede. The use of container in the shipment makes the transport and handling easier and faster.

It's important to have a reliable and efficient freight forwarder. Besides, Velda BV needs to communicate with the freight forwarder and the supplier both in order to know the accurate shipping date and make sure the cargo will arrive on time. And it's also important to get all the documents Velda BV needs for the import.

### **Step 5 Warehouse Management—Demand Management.**

“Demand management is the supply chain management process that balances the customers' requirements with the capabilities of the supply chain. With the right process in place, management can match supply with demand proactively and execute the plan with minimal disruptions. The process is not limited to forecasting. It includes synchronizing supply and demand, increasing flexibility, and reducing demand variability. A good demand management process can enable a company to be more proactive to anticipated demand, and more reactive to unanticipated demand (Douglas M. Lambert, 2006).”

Warehouse management is influenced by the demand management in Velda B.V.. After the products arrive the warehouse of Velda BV, how to move them and where to storage them is important. The process also includes shipping, receiving, put away and picking.

Warehouse management system often utilizes Auto Data Capture technology, such as barcode scanners, mobile computers, and wireless LANs to efficiently monitor the flow of the products. Once the data has been collected, there is real-time transmission to a central database. The database can provide useful reports about the status of goods in the warehouse.

The objective of the warehouse management system is to provide a set of computerized procedures to handle the receipt of stock and returns into a warehouse facility, model and manage the logical representation of physical storage facilities, manage the stock within the facility and enable a seamless link to order processing and logistics management in order to pick, pack and ship product out of the facility.

Warehouse management systems can be stand alone or modules of an ERP system. It can data track products during the production process and act as an interpreter and message buffer between existing ERP and WMS systems.

Velda BV uses the Unite 4 system as the whole ERP management system, and the warehouse management is also involved in it. Warehouse planning is very important for Velda BV since the pond biology business is very seasonal.

Every product has its location, and there is also code for location marking. Every day, there will be a check from the order and see if there is product replace and make a list to do, after they replaced these products, the information in the system will change. There are two areas, one area is the place for small order, and which should be always filled with products, and another area is for big order and also for the space storage, which can move to small order area when needed. 3 people are in charge of the warehouse management, and they use mobile computer to update the information in the system, and it works smoothly.

However, it is hard to accurately estimate the demand from customer, and this has severe influence on the warehouse management. Especially the Bullwhip Effect is common issue for Velda B.V.

### **Step 6 Sales process—Customer Relationship Management**

The sales process is mainly about the Customer Relationship Management in SCM.

“Customer relationship management provides the structure for how the relationships with customers will be developed and maintained. Management identifies key customers and customer groups to be targeted as part of the firm’s business mission. The goal is to segment customers based on their value over time and increase customer loyalty by providing customized products and services. Cross-functional customer teams tailor Product and Service Agreements (PSA) to meet the needs of key accounts and for segments of other customers. The PSAs specify levels of performance. The teams work with key customers to improve processes and eliminate demand variability and non-value added activities. Performance reports are designed to measure the profitability of individual customers as well as the financial impact on the customer (Douglas M. Lambert, 2006)”

After got a sales order from the customers, Velda BV will transport the products to the customer’s location by truck. The transportation is done by a logistic company. When there is

an order, there will be automatically email information send to the logistic company, and they will come to pick up the goods and transport to the customer.

The payment term normally is 30 days after the order delivery. There is no discount if there is early payment before 30 days. Often there is a special discount when customer pay within 8 days.

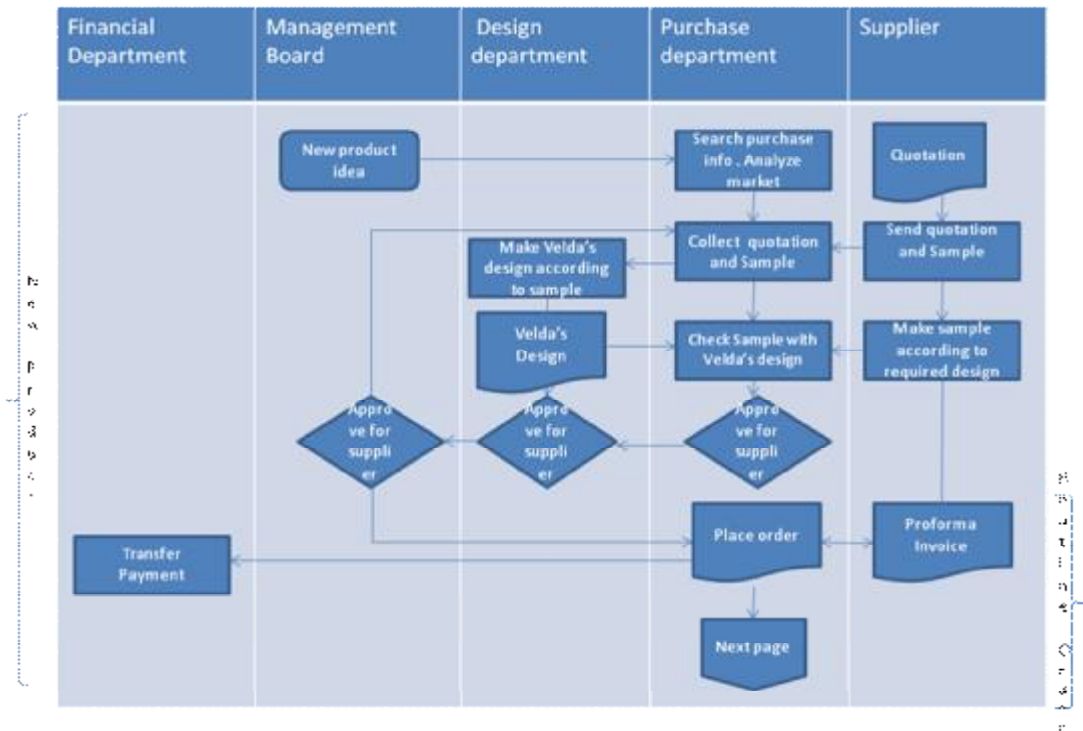
So far, we have described the whole process of the SCM from products in China into detail, and in the other 3 kind of production, we have also mentioned at the beginning. In the next part, we will analyze the whole process especially the purchase process combined with the cost, time and quality factors and try to find the weakness in Velda B.V and how to improve.

The above content analyzed the process in detail about the SCM in Velda B.V. In order to make the process more visible, a figure has been drawn.

#### **4.4 Purchase process Management in Velda B.V.**

Purchase process is an important part and also the basic part of the SCM. Different departments are involved in the whole process. The detailed management flow can be showed below. The whole process starts from the top down. Until so far, we can draw the purchase process management in Velda B.V. in the following figure.

Purchase Process Management in Velda BV-1



Purchase Process Management in Velda BV -2

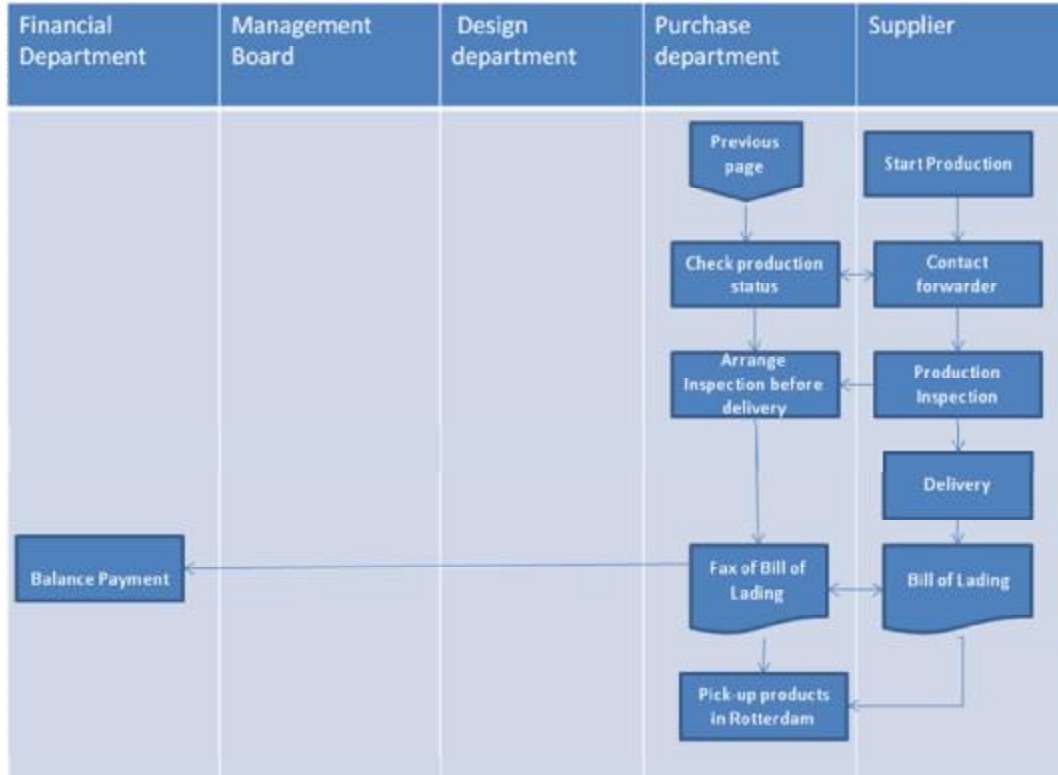


Figure 10: Purchase process management in Velda B.V.

The whole purchase process can be shown in the figure above. It's for the completely new product purchase process, and when it's the routine products, it will be simpler.

There are 6 parties involved in the whole process, and they are the Management board of Velda BV, Purchase department of Velda BV, Design department, Supplier, Finance department and also the Transportation Company.

This purchase process can match with the Purchase Process Model from van Weele (2002). This process is just more customized and more to detail.

#### **4.5 The analysis of SCM in Velda B.V.**

Quality, time and cost are the three most important performance indicators in the SCM in order to get customer satisfaction and completion strategy. Since Velda BV needs to increase the competition in the global market, it needs to react quicker to changing market condition, to squeeze out costs with greater focus, launch new products faster and ensure that no prevailing opportunities go unmissed. Effective management must coordinate all the different pieces of the chain as quickly as possible without losing of the quality or customer satisfaction, while keeping the costs down. Customer satisfaction is paramount, included in the supply chain process are customer orders, storage, and customer service.

Key to success of a supply chain is the speed in which these activities can be accomplished and with customer satisfaction. Reduced inventory, lower operating costs, product availability and customer satisfaction are the effective SCM.

The decisions associated with supply chain management cover both long-term and short-term. Strategic decisions deal with corporate policies and look at overall design and supply chain structure. Operational decisions are those deals with daily activities and problem of an organization. The structure should be through long-term analysis and at the same time focus on the day-to-day activities. Demand patterns, service level requirements, distance considerations, cost elements and other related factors must be understood well in the structure of SCM.

There is a serial-process model. If the supplier of a critical component can't deliver on time, and entire operation can go dark. The SCM is an all encompassing term for the processes that

make up a complex sequence of events, so the goal of this part is: Minimize the impact of a weak link, maximize resources and create an environment in which profit and loss can be measured by hour. Analysis and also reporting solutions to get greater visibility operational areas of the business, decrease the variability across the SCM and get more accurate planning capabilities are important.

The SCM process is complex across the five key areas: Demand, logistic, manufacturing, design and supply. All the processes that make up the SCM have one end game: optimization. The goal is to deliver goods and services to customers in the most time and cost efficient manner. We need to analyze each component of the SCM and see which link is the weakest and how to improve.

There are five key elements in the SCM map as we described before:

- Design: Product development and commercialization
- Supply: Supplier Relationship Management
- Production: Manufacturing flow Management
- Transportation: Order Fulfillment
- Inventory: Demand Management
- Delivery: Customer Relationship Management

The main functions of these elements are as follows:

- a) Design requires the design department can make the design of the new product outlook or packaging timely. This requires the department can develop and bring the products to market jointly with customers and suppliers.
  - b) Supply means if the facility is able to produce high quality product. It is also the Supplier Relationship Management. If the supplier is qualify enough for outsourcing. The focus on choosing supplier should be on developing reliability, quality and flexibility while also reducing cost and maintain low cost level. From the previous description that Velda B.V. chooses suppliers, we know that this link is quite weak in Velda B.V.'s SCM management because it's hard to get the reliable supplier in China with limited information. It is important to set up a system or criteria which Velda B.V. can follow to choose the suitable supplier.
- Production focus on what the customer wants and the market demands, which is also the Manufacturing flow Management. It also involved outsource to capable suppliers. It must

focus on capacity, quality and volume of goods keep in mind the customer satisfaction must be met. Quality control and workload balancing are issues which need to be considered when making decisions. It's the weakest link in the chain for Velda B.V. as the product quality couldn't reach Velda B.V.'s expectation. The reasons are because of the supplier and also the lack of inspection before delivery.

- c) Transportation decisions are closely related to inventory decisions, as well as meeting customer demands. It is about the order fulfillment management. How to get the best way of transportation to transport the product from supplier to Velda B.V. and also to the customer. Using air transportation obviously gets the product out quicker and to the customer expediently, but the costs are high as opposed to shipping by boat or truck. Using sea or truck often means having higher level of inventory in-house to meet quick demands by the customer. It's wise to remember that for bigger items since 30% of the cost of a product is encompassed by transportation, and small items 10%, using the correct transport mode is critical strategic decision.
- d) Inventory strategic decision focus on inventory and how much product should be in-house, which is demand management. The balance should be between too much inventory and not enough inventories. There should have optimal levels of stock to ensure customer satisfaction as the market demands fluctuate.
- e) The location decision depend on market demands, and it focus on the placement of production plants, distribution and stocking facilities. Once customer markets are determined, long-term commitment must be made to locate production and stocking facilities as close to consumer as is practical. Tax and tariff issues should also take into consideration especially in worldwide distribution. Besides, Information is crucial from the point of end-user and throughout the chain to resources. Internet and also some software are used to help the management of information flow.

#### **4.5.1 What are the SCM problems in Velda B.V.?**

In order to know which part in the Supply chain has problems, and what are the problems, this paper analyze and get the finding through interviews with some employee in Velda B.V., especially with Alexander Dalenoort, from experience of the purchase department and also combine with the literature analysis.

#### **4.5.2 The possible problems in the SCM.**

What could be the problems and where can go wrong? It's important and also hard to find out which element in the link is weak and crucial. Each element can have problems, from design until deliver to customers. But some of the problems are serious, and can have severe impact.

The problems in the whole chain may be as follows:

1. In product development and commercialization, the design has problem in the product. For the new products, sometimes, Velda B.V. has a not so clear design or is not so clear about the product itself. The design has delay. The design for the new products has excess the required time.
2. In the SRM, in choosing the supplier, the supplier is not reliable, and not capable to deliver the products. This means the supplier doesn't have enough production capacity or can't reach the quality requirement from Velda B.V. The supplier doesn't know the requirements from Velda B.V. because of lacking communication. This is can cause quality problem.
3. In the production monitoring sector, the production is not well organized and scheduled. This can also cause quality and delivery time problem. The production lack of quality inspection. This may cause the supplier not paying enough attention to Velda B.V.'s quality requirement.
4. In order fulfillment management, the logistic company has delay or wrong destination. This is caused by the supplier's wrong information on the papers or the mark.
5. In the warehouse management, or demand management, the warehouse may have limited space or there is too much inventory. It is very difficult to estimate the real demand from customers, and thus the inventory is not good size.
6. Order fulfillment management; deliver the products late to customers. Normally this is caused by the late delivery from suppliers.
7. In the Customer Relationship Management, the customers don't satisfy with the products from suppliers. This may be caused by quality or delivery time or high cost.

Which problem is major problem? How often and how serious the problem is? What's the impact of the problem? With these questions, I interviewed Alexander Dalenoort in Velda B.V. Since it's difficult to get the accurate data about the defect rate of products each year through the order and also the frequency, so the data I use here is by experience from the staff in Velda B.V.

As described above, every aspect can have problems in the link, according to the analysis, this paper gets that the most important problem which needs to be strengthened is the production



in China, which also involves the supplier communication, and this is also confirmed by Alexander Dalenoort,. He said the following: “We don’t have any idea what they are doing there and sometimes, they are not clear about our requirements especially for new products.” He explains that lack of checking and miscommunication is very crucial in this element.

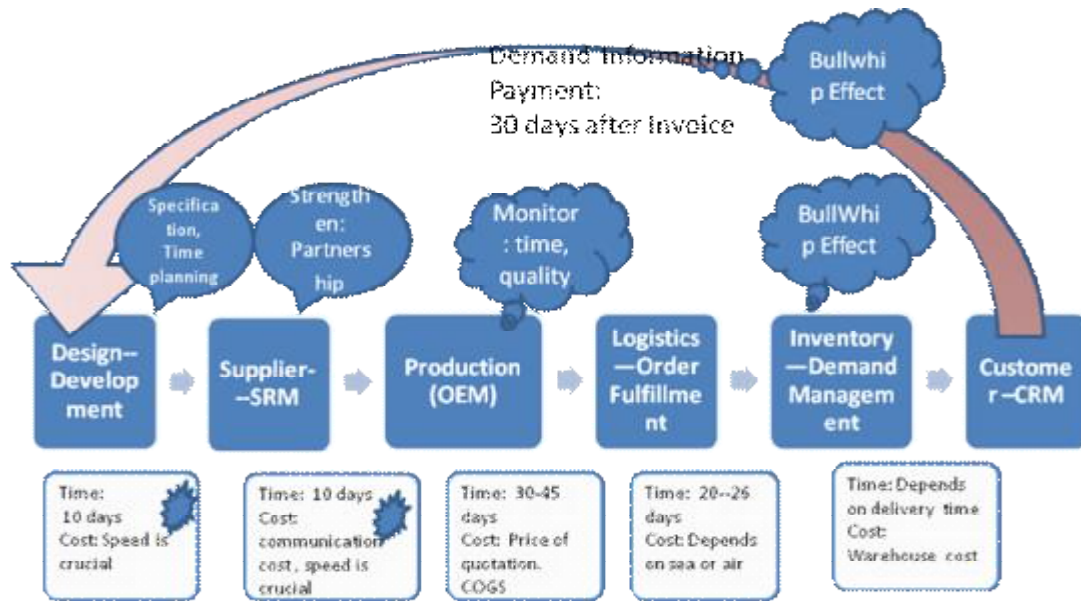


Figure 11: The SCM analysis of products from China for Velda B.V.

Design and product development management can have problems, and this is only for some technical products, for example the electrical skin. This product has quality problem is because of the design is not OK from Velda B.V.’s side. So the producer can’t understand and produce it well.

Logistics, which is the order fulfillment, is OK in the link according to the analysis and the interview from Alexander Dalenoort. There maybe once in a month the logistic has a mistake. Velda B.V. has many logistic companies to choose from, and normally when the price is higher, the service is better. These are very mature companies. Logistic won’t be a problem for Velda B.V.

#### 4.5.3 The compare of different SCM map analysis.

For the products purchased from EU, the SCM is different from the products purchased from China. The main difference can be the transportation, and also payment terms. The chain is much better when they purchase from EU, because of the better quality and shorter

transportation time.

The SCM analysis of the products from EU can be shown in the following figure:

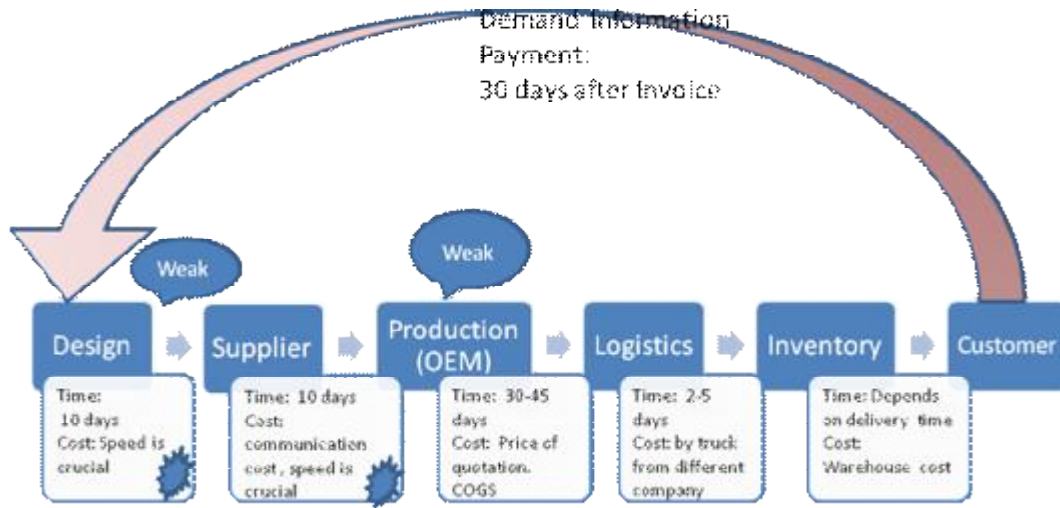


Figure 12: SCM analysis for products from EU for Velda B.V.

*“There are 300 suppliers from EU, and with 150 of them Velda B.V. can change freely. 10% of the products may have delay.”* according to Alex.

The overall chain and communication is much better than the chain in China, because of the easier communication, and short distance for transportation.

According to the interview with Alexander Dalenoort, we get that the link is much better than the chain of products from China. So the main problem is from the products purchased in China. We get some suggestions for the way to purchase from China.

#### 4.5.4 The detailed analysis about SCM Problems

Each sector in the whole chain is analyzed in the following part. Production (Material flow management), Supplier (SRM), Design (Product development and commercialization), Logistic (Order Fulfillment), Inventory (Demand management) and Customer (CRM) are all analyzed, and the paper analyzed each one by its influence to the quality, delivery time, and also cost.

##### 4.5.4.1 Production (Material flow management) management analysis.

Since the production is mainly done in the suppliers sides, Velda B.V. needs to have the good monitor on the delivery time and quality during this process. There is a lack of monitor after place the order to the supplier from Velda B.V.'s side. There is no monitor of delivery time or quality, which is normally the quality inspection before delivery.

The biggest supplier from China is Ningbo Mine Metals and Jebao from Guangzhou. These two companies produce 80% of the products. Ningbo Mine Metals has the products with quality problem, and the products qualities are not stable. Jebao has the problem of delay. Every year, the first order is on time and the second and third orders have severe delays.

It's important to know what the real problems that causes the delay or poor quality. Discuss with each other for the two parties is necessary. Punishment is not a good choice for the long term cooperation, and how to control the business with other party is very important. Therefore, it's important to keep good and long-term relationship with the suppliers.

Hailiya is a very good supplier with good product quality and good delivery time. Velda B.V. needs to learn from this, and find out why this company has better quality and delivery time. Velda B.V. hasn't really studied yet the reason why Hailiya has better performance.

First, how about the quality? Quality is improving as we can see, although the products from Ningbo are still not stable in quality. The primary product quality problem comes from Ningbo Mine Metal Company, which can also be found in new products. According to Alexander Dalenoort, the poor quality is mainly because of the cheap material the supplier uses. *"5-10% of products imported from China are concerned with poor quality; however, it's improving."* according to Alexander Dalenoort.

Secondly, concerning the delivery time, there are 4 suppliers out of 8 have delay problems. As stated by Alexander Dalenoort, approximately up to 50% of the orders from China have been delayed for at least 2 weeks to 2-3 months.

Firstly, the quality aspect in the production is analyzed.

During production process (the OEM production in China), it is difficult to guarantee the premium quality products. Products are occasionally delivered without inspection from Velda B.V. It is very often than not unclear to the company of the quantity of shipments and actual quality is not as good as that of the samples.

Doing business only by trust is not viable. Even a qualified supplier without check and high requirement can become lazy. This is the reason the final products are not as good as the sample. This situation may happen at least twice a year, so inspection is very important.

Secondly, time aspect in the production analysis. This may be because of the planning from Velda B.V.'s side, but most of the time, production delay is due to the fact that the supplier was too busy in production and they didn't put Velda B.V.'s order as high priority because of the limited size of the order.

It also may be because of the communication, especially with the frequent job change in China. Some employees who know well of the business and the order situation leave the company, and newcomers don't know much about it. This has caused a mess in the factories in China, and the worst thing was that they didn't inform Velda B.V. immediately, who as a result had not finished the production by the delivery time.

Therefore, Velda B.V. needs to have a strict order or contract to guarantee this and also monitor the order timely.

#### **4.5.4.2 The Supplier Relationship Management (SRM).**

This includes the criteria based on which the supplier and also the communication to place the order. How to get the reliable and qualified supplier is crucial in the company.

According to Douglas M. Lambert (2006), "Supplier relationship management is the process that defines how a company interacts with its suppliers. Just as a company needs to develop relationships with its customers, it also needs to foster relationships with its suppliers. As in the case of customer relationship management, a company will forge close relationships with a small subset of its suppliers, and manage arm-length relationships with others. Long-term relationships are developed with a small core group of suppliers. The desired outcome is a win-win relationship where both parties benefit."

Table 6 shows the detailed problems of suppliers of Velda B.V.. It is not shown due to confidentiality. To sum up, firstly, for the quality of supplier's analysis, how to guarantee that the supplier is good enough in a short time? It is extremely important to get hold of as much information about the supplier as possible. This may be difficult for Velda B.V. because of the language issue. Especially for many products in this industry is not big companies, so it's hard to get the information in English even.

There should have a system to measure and value the supplier. Velda B.V. needs to set up a system to follow when decide which supplier is good enough to cooperate and then also set a follow-up evaluation system for each supplier. The order management and the contract is not strict and to detail enough. The moment Velda B.V.'s don't have contract with suppliers, only have purchase order. So the order can have the function as a contract, and must be very strict and to detailed, it should have specify if there is delay and quality problem, the supplier should be responsible for that and pay the cost to Velda B.V.

Second, the time aspect in choosing supplier until place the order is also weak. Speed is crucial in communication with the supplier. It's hard to remember each project the time, and make sure everything is on time. How to guarantee this? Set up a time table about the new product process, but not only by remember in head. Do according to the time table.

#### **Set up the partnership for the major suppliers.**

For the main supplier, such as Ningbo Mine Metal and Jebao, a partnership should be set. It is a tailored business relationship based on mutual trust, openness, shared risk and shared rewards that results in business performance greater than would be achieved by the two firms working together in the absence of partnership.

Drivers are the compelling reasons to partners: Improvement in asset/cost efficiencies, improved customer service enhanced marketing advantage and profit growth/stability. Managerial controllable elements of a partnership: planning, joint operating controls, communications, risk/reward sharing, trust and commitment, contract style, expanded scope and financial investment.

Facilitators are: Environment factors which increases the likelihood of partnership success: corporate compatibility, compatible management philosophy and techniques, a strong perspective of mutuality, symmetry between two parties.

This represents an expectation-setting session that is critical for partnership success. The partnership, if appropriately establish and effectively managed, should improve performance for both parties. Profit enhancement, process improvement and increased competitive advantage as likely to be the outcomes of effective partnerships. Partnerships are not appropriate in all situations. General guidelines exist to determine if a partnership is appropriate.

#### **4.5.4.3 Design sector analysis---Product development and commercialization.**

This is mainly about new product and also the speed in the design. Since Velda B.V. has new products each year, they need to have a strong team in the design department, and they are not only responsible for the package design, but should also be able to handle the new product design. The moment it's hard for Velda B.V. to get the new product design by itself.

Besides, speed is crucial in the process of design and also communication with suppliers. Many times, the design takes more than 10 days or even 2 weeks to finish, and the supplier has to wait to confirm, and all the process makes the time much limited.

#### **4.5.4.4 The inventory management analysis—Good Forecast**

“Demand management is the supply chain management process that balances the customers’ requirements with the capabilities of the supply chain. With the right process in place, management can match supply with demand proactively and execute the plan with minimal disruptions. The process is not limited to forecasting. It includes synchronizing supply and demand, increasing flexibility, and reducing demand variability. A good demand management process can enable a company to be more proactive to anticipated demand, and more reactive to unanticipated demand (Douglas M. Lambert, 2006).”

Only one thing in the inventory is about the amount, and this is from the estimation from sales. This is the cause of the good forecast.

Velda B.V. has the good forecast problem. It is hard to estimate the real demand from customers. This can cause the over stock or stockouts. Forecast errors, overreaction to backlogs, lead time variability, no communication and no coordination up and down the supply chain, delay times for information and material flow, batch ordering (large orders result in more variance), rationing and shorting gaming, price fluctuations, product promotions, free return policies, inflated orders can all cause the false forecast. Excessive inventory investment: it makes the demand more unpredictable, Velda B.V. needs to safeguard itself against the variations to avoid stockouts.

Velda B.V. has prediction from the whole seller about the amount of the product demand, but it's not accurate. Besides, in many situations, Velda B.V. needs to order a big quantity, and this causes the over stock. There are some measures to counter the forecast problem.

Countermeasures to the Forecast problem:

Establish the monitoring of actual demand for product to as near a real time basis as possible.

Understand product demand patterns at each stage of the supply chain. Increase the frequency and quality of collaboration through shared demand information.

Minimize or eliminate information queues that create information flow delays, centralize demand information.

#### **4.5.4.5 The Logistic management is comparatively good or strong in the company.**

The logistics management from the outside company and Velda B.V. uses different partners to work on different task. It works well.

#### **4.5.4.6 The CRM analysis in the company.**

They have sufficient people to work in different market. “Customer relationship management provides the structure for how the relationships with customers will be developed and maintained. Management identifies key customers and customer groups to be targeted as part of the firm’s business mission. The goal is to segment customers based on their value over time and increase customer loyalty by providing customized products and services. Cross-functional customer teams tailor Product and Service Agreements (PSA) to meet the needs of key accounts and for segments of other customers. The PSAs specify levels of performance. The teams work with key customers to improve processes and eliminate demand variability and non-value added activities. Performance reports are designed to measure the profitability of individual customers as well as the financial impact on the customer (Douglas M. Lambert, 2006)”

Because of the limited information, this paper doesn’t have much analysis on this point.

#### **4.5.4.7 The cost analysis in the SCM of Velda B.V.**

All the factors we analyzed above can influence the company’s cost and revenue. This can be analyzed as following.

In the production process, good product quality and on time delivery can get customer satisfaction, and this can get higher sales revenue. On time delivery can also decrease the emergency transportation fees.

In the supplier relationship management, good supplier relationship can have efficient communication and is capable to produce the good quality product on time. This can save a lot of cost on the quality and communication.

In the design procedure, correct and accurate design with clear information to the supplier can save the production and communication time and can improve the product quality.

In the inventory management process, the good prediction of the accurate need can save the inventory cost.

The logistic process, good service can get the product to the destinations on time.

The good CRM, can get the higher sales revenue through the better customer satisfaction.

For example, if there is production delay, then the delivery have to use air, which will increase a lot of cost for the company, so it can cause the whole process dark. If the product has quality defect, then the sales is not good, and this maybe cause a huge repair or return fee, which is a big cost to the company.

For the inventory, if the company can estimate the accurate amount the company need, then the inventory can reach a premium amount and it can lower the inventory level and save cost.

All the factors above can influence the cost and revenue in the Velda B.V.

#### **4.6 Main supplier problems and solutions analysis.**

In order to have clear understanding about the supplier problems and solutions, three tables were created.. The first table (Table 7) is the general supplier problems analysis. Table 8 and 9 are the tables which are more detailed analysis for the two main suppliers: Ningbo Mine Metal and Jebao. These tables are not shown in the paper as they are confidential.

Table 7 describes the main suppliers from China, analyzes the possible problems and gives the possible solutions.

Table 8 analyzes the supplier relationship with Velda B.V.'s primary supplier in China. The table lists the standard and actual analysis from three stages: before the production, during



production and after production. The actual analysis has three columns: performance, problem reason analysis and the solution. Performance means the field of problems. The possible solutions are respectively from Velda B.V. and supplier's side. Table 9 is the analysis of the second biggest supplier for Velda B.V. in China.

Three tables analyze the supplier problems in China, and with some solutions. From the analysis we get that Velda B.V. needs to specify the requirement and set the clear time schedule for the planning and inform the supplier, during the production, Velda B.V. needs to strengthen the monitor of the quality and delivery time, and after the production, Velda B.V. should improve the complaint handling ability together with strengthen the partnership cooperation. About how to do in order to get better performance, the paper will give the answer in the last chapter, the recommendation part.

Below are some points Velda B.V. should aware in the business process with Chinese suppliers.

When analyze the relationship with suppliers, we need to know if the supplier is dependent on the Velda B.V. or other way around. For the supplier who isn't dependent on Velda B.V., it is important to have strategic way of cooperation.

**1. Business is cultural.** The understanding of business relationship is different from Chinese supplier to the western companies. The Chinese suppliers take business relationship more personal. They take clients first to be friends. Problems with orders, request are all personal. Although China is changing fast and it different a lot from different area, western companies should always aware that the business culture is different. Velda B.V. is aware of this already since they have cooperation with Chinese suppliers for more than 8 years.

**2. Close cooperation.** The Chinese supplier may not pay enough emphasize to the order if the control is loose by the customer side. Close cooperation can stimulate the understanding of Velda B.V.'s requirements and also act as monitoring. Supporting team or at least one observer from Velda B.V.'s side will be efficient as the Chinese supplier consider it to be closer relationship with Velda B.V.

**3. Contract and details.** The moment, Velda B.V. doesn't have strict contracts with the main suppliers. Company can choose to go to court when it has issue with suppliers, but it won't help much. The practical questions are who represent the company in China, and even if you go to court, the Chinese court system favors the domestic development over international law.

Besides, it's time and energy consuming. So the bottom line is that the company does not want to go to court. But Velda B.V. should work under consumption that the contract is binding and will hold up in court. Velda B.V. should take all the legal precaution for the Chinese supplier as the way with western suppliers. The contract should be in detail.

#### 4.6.1 Conclusion of this chapter

This chapter analyzed the Supply Chain Management of Velda B.V. Started with the Kraljic's portfolio Matrix, the paper analyzed purchase strategy in Velda B.V. according to different products. The conclusion is that Velda B.V.'s product strategy is OK. Afterwards, this chapter described the SCM process in Velda B.V. from the four different supply chain maps and described each step in the SCM. The purchase process was emphasized here by the purchase process management. The last part is the SCM analysis with problem analysis, and it analyzed the problems with the key suppliers in China, and gave some possible solutions.

The purchase process was analyzed in this chapter, and we can give a figure to conclude the purchase process problems. The figure has the X-axis represents for the problems: Supplier Choosing, Order Management, Product Inspection and Order Monitor. The Y-axis represents for the importance and the serious the problem, with 10 is the most serious, and 1 is least serious.

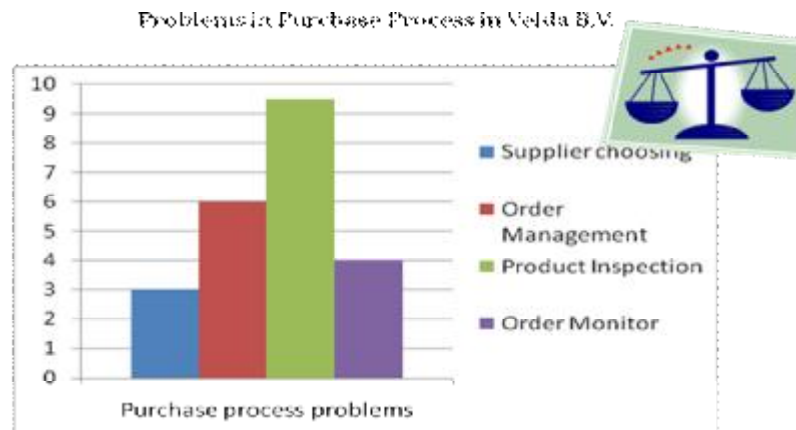


Figure 13: The problem in Velda purchasing process

This chapter can get the following table for the main problems in the whole Supply Chain Management in Velda B.V.

The SCM problems in Velda B.V. are as follow table:

SCM function	Main situation or problems
Production (Material Flow Management)	Monitor the quality and delivery time.
Supplier Relationship Management	Strengthen partnership with the key suppliers. Aware the Chinese business culture and relationship. Strict the contract and details.
Inventory (Demand) Management	Have a good forecast
Design (Development and commercialization)	Specify the requirement and time planning. Involve the customer and supplier side in the new product development.
Transportation (Order Fulfillment)	OK
Customer relationship management:	OK. And not much analysis in this paper.

Table 10: SCM problems in Velda B.V.

The table shows the main problems in the Production, Supplier Relationship Management, Inventory Management, and Design.

This chapter analyzed the problems in the SCM in Velda B.V, with the emphasis of the supplier relationship, and next chapter will analyze the financial aspect influenced by SCM, mainly from the control aspect to analyze.

## **Chapter 5 Financial Performance analysis and control**

This chapter is mainly from the financial performance aspect analysis to analyze what can be controlled in the SCM in order to get a better financial performance. The main financial performance indicator this paper uses is the net profit. The sub-research question of “What is the impact of SCM on financial performance in Velda B.V.?” will be answered in this chapter. Besides, this chapter will also include the financial value chain and the ERP system in the end of this chapter.

### **5.1 SCM linked to financial performance in Velda BV**

The basic purpose of financial measurement system is to provide feedback, relative to the company’s goals, and to increase the chances of achieving the goals efficiently and effectively.

Improvements in the current supply chain will help reduce the cost of goods sold, days in inventory and overall hidden operational expenses. For Velda B.V., there are many issues it face that keep it from embarking on improved supply chain management.

To support profitability objectives, companies need to optimize supply chain performance. Companies are challenged to continuously improve their financial performance indicators. Ratio analysis is the basic way to evaluate the financial performance in a company. Financial ratios addressing related venture attributes are often grouped together. There are liquidity (the ability to meet short term obligations), conversion period (the time taken to convert another asset into a cash receipt), leverage (the use of debt), and profitability and efficiency. Some of these ratios are severely influenced by the SCM, especially the conversion period and also the profitability and efficiency ratios. Here this paper uses the profitability and efficiency ratios for the analysis. Using these ratios, we can have trend analysis, cross-sectional analysis and also have industry comparable analysis (Leach, Mielicher, 2006). Because of lack information from other companies’ data, this paper doesn’t have the trend analysis, cross-sectional analysis, neither the industry comparable analysis.

Supply chain management extends wider girths of the value chain, and it includes inventory cost, logistic cost, and the purchase cost, and other cost incurred to service customers.

The other factors linked to financial performance include asset utilization, product quality, and operational flexibility. Asset utilization, such as inventory turns, measures how effective

assets are being utilized and how they contribute to the financial status of a company. Product quality is a traditional measure, it is also critical to a company's long term survival and growth, and evidence show it directly linked to financial performance. Operating flexibility measures a company's ability to cope with the uncertainties and therefore improves the company's ability to win financially in a highly-uncertain and super-competitive environment. The ratio of this paper emphasize is the profitability and efficiency ratios. For the quality factor, this paper doesn't have analysis here in the financial performance part.

**Profitability and efficiency ratios:** Indicate how efficiently a company controls its expenses and uses its assets.

- Gross profit margin: = (Net sales-COGS)/Net Sales
- Operating profit margin =EBIT/Net sales
- Net Profit Margin= Net Profit/Net Sales
- Return on asset (ROA)= Net profit/ Average Total Assets = Net Profit Margin \* Asset Turnover = (Net Profit/ Net Sales)\* (Net Sales/ Average Total Assets)
- Return of equity (ROE): = Net Income (Profit)/ Average Owner's Equity = ROA\* Equity Multiplier= ROA\* Total Assets/Average Equity

Table 11 indicates the financial data of Velda B.V. according to the definitions above. It is not shown due to confidentiality. It shows the gross profit margin, operating profit margin, ROA and ROE. It is a bit difficult to get performance analysis because there is no data to compare in the same industry. We do find the gross profit margin is very high around 44%-49%, but with a low operating profit margin. This means the cost for other reasons are also very high besides the COGS; therefore, it's important to control them. This paper already mentioned what these costs are in the previous chapter. The ROE is not available here because there is some transaction between Velda B.V. and the mother company each year.

## 5.2 Control of factors in SCM to get better Net Profit

### Factors that influence the Net Profit in Velda B.V.



Figure 14: Factors that influence the Net Profit

From the above figure, it shows that in order to get a good net profit, Velda B.V. needs to control well of each factors involved: Sales Revenue, Cost of Goods Sold, Commercial cost, salary and Machinery and inventory cost. Therefore, how to control these factors is essential to get a good Net Profit. The following will analyze the control of each factor.

### 5.2.1 The control of Sales Revenues

The sales revenue is mainly approached by the CRM, customer relationship management. There are two different control factors in the sales revenues, controllable and uncontrollable. Controllable factor includes the good quality of products, on time delivery, good sales services, which lead to satisfactory of customers and also with excellent sales people.

Uncontrollable factor is the weather issue and economics factor. Weather influences a lot about the sales of the pond products, and rainy days in the weekend in spring and summer is bad for the sales. According to Alexander Dalenoort, the weather can influence 20% of the sales revenue in the really bad year.

The second uncontrollable factor is the economic situation. Unlike the daily necessities, when the economics is not in good situation, people are not willing to spend money on pond products. This factor is also uncontrollable.

From the above analysis, it shows that Velda B.V. needs to have better control of the products quality, excellent sales people, and some encouragement policy to have better sales revenues.

### 5.2.2 The control of Cost of Goods Sold

It is more or less controllable by Velda B.V., Since Velda prices products according to the COGS plus the profit margin. They can also control the COGS through comparison with different suppliers.

### 5.2.3 The control of Other Costs

This category includes commercial cost, salary, machinery and inventory costs. It is very difficult to control this, because it is influenced by a lot of factors, especially with logistics cost. Factors that can influence this cost might be product delay, ways of transportation, new product research, advertising, and inventory costs. These factors combine to influence. Budget and cost track are very important. Velda has to improve on this.

In the commercial cost, logistic cost is the highest. SCM function can influence these factors. Good product quality can get better sales revenues, which can be explained in the following figure.

Figure: Factors in the SCM that influence the Sales Revenues



Figure 15: Factors in the SCM that influence the Sales Revenues

The second part of getting high net profit is by lower the cost, which includes the Cost of goods sold, and the logistic cost etc. This will be analyzed in the cost control section below.

The net profit margin is quite low for Velda B.V. According to CFO of Velda B.V., there might be the investment is high:

- 1) Velda B.V. constantly launches new products and widens the new market. The market in

Netherlands is full, and Velda B.V. is investing a lot in the new market, for example in UK.

- 2) Cost is very high these years for the new buildings.
- 3) Transportation (Logistic) cost keep going high, because of the higher gas cost.

In order to improve the net profit, Velda B.V. needs to raise the products price, which might be difficult for the customers to accept. For lower cost, Velda B.V. maybe needs to better control the purchase process and if necessary cut the unnecessary cost.

### **5.3 Cost control in SCM on influence of financial performance**

Cost control involves the planning and budgeting systems, forecasting and cost tracking. In the beginning of each year, the financial department will make a forecast about the total cost, and at every month, the financial department will compare the cost of this month with the estimation and also the cost from last year to check if there is some problem in the cost and try to find out the reason.

Table 12 describes the cost element of Velda B.V. from 2002 to 2007 (Source: Annual Report of Velda B.V. 2002-2007). It is not shown due to confidentiality.

It can be concluded that besides COGS, Salary, the biggest cost is Other Cost, but it is not clear what these costs are from the annual report. This is the cost that Velda B.V. needs to control much better.

According to the financial department, the other cost includes the following:

- 1) Building repair and energy cost
- 2) Machinery maintenance and inventory cost
- 3) Commercial cost, which includes:
  - I Logistic cost
  - I Advertising cost
  - I New products research and design cost
  - I Travel cost and trade show cost

Table 13 includes the influence of net profit margin when 1 percent decreases on the cost. It is not shown due to confidentiality.



#### **5.4 Financial value chain analysis**

Financial value chain analysis is mainly about the money flow in Velda B.V. It is about the account payable, account receivable management, and how many days it takes Velda to transfer the money to the customer and how many days to get money from the customer. This paper doesn't have deep analysis here as this is not complex procedure in Velda BV. But Velda B.V. needs to pay attention to the days of money transfer as it can also influence the delivery time from suppliers.

FSC (Financial Value Chain) optimization will achieve significant cost and strategic advantages. FSC brings high supply chain savings, working capital efficiencies and overall improvements in earning/cash forecasts. (Killen & Associate. Inc)

“Financial Supply Chain Management makes a substantial contribution to optimizing existing financial processes within a company and between enterprises”, explains Hans-Dieter Schueurmann, senior vice president of SAP's General Business Unit mySAP Financials. “The results are more accurate cash management, a reduced volume of outstanding debt, lower invoicing costs, earlier processing of incoming and outgoing cash flows and improved customer relationship management.”

The financial value chain in Velda B.V. is fine, and only with the accounts payable takes a bit more time to transfer. The normal way of account payable payment is through the instruction of financial department of Velda B.V.to the bank in Hong Kong. After placing the order, it takes 5-7 days to finish this procedure. If Velda B.V.can makes the account payable less time to transfer, then the delivery time from supplier's side will be better assured.

#### **5.5 ERP system in SCM the system**

The reason we use the ERP system in the SCM analysis is because of ERP system can help the efficient management of SCM. How to manage the whole process more efficiently? ERP (Enterprise Resource Planning), which integrate the date and the processes of the organization into one system is commonly used to improve the management of the business process these days.

Before ERP systems, each department in an organization would most likely have their own computer system, data and database. Unfortunately, many of these systems would not be able to communicate with one another or need to store or rewrite data to make it possible for cross

computer system communication. So it makes more intensive and complicated to process certain functions.

ERP's main goal is to integrate data and processes from all areas of an organization and unify it for easy access and work flow. ERP's usually accomplish integration by creating one single database that employs multiple software modules providing different areas of an organization with various business functions.

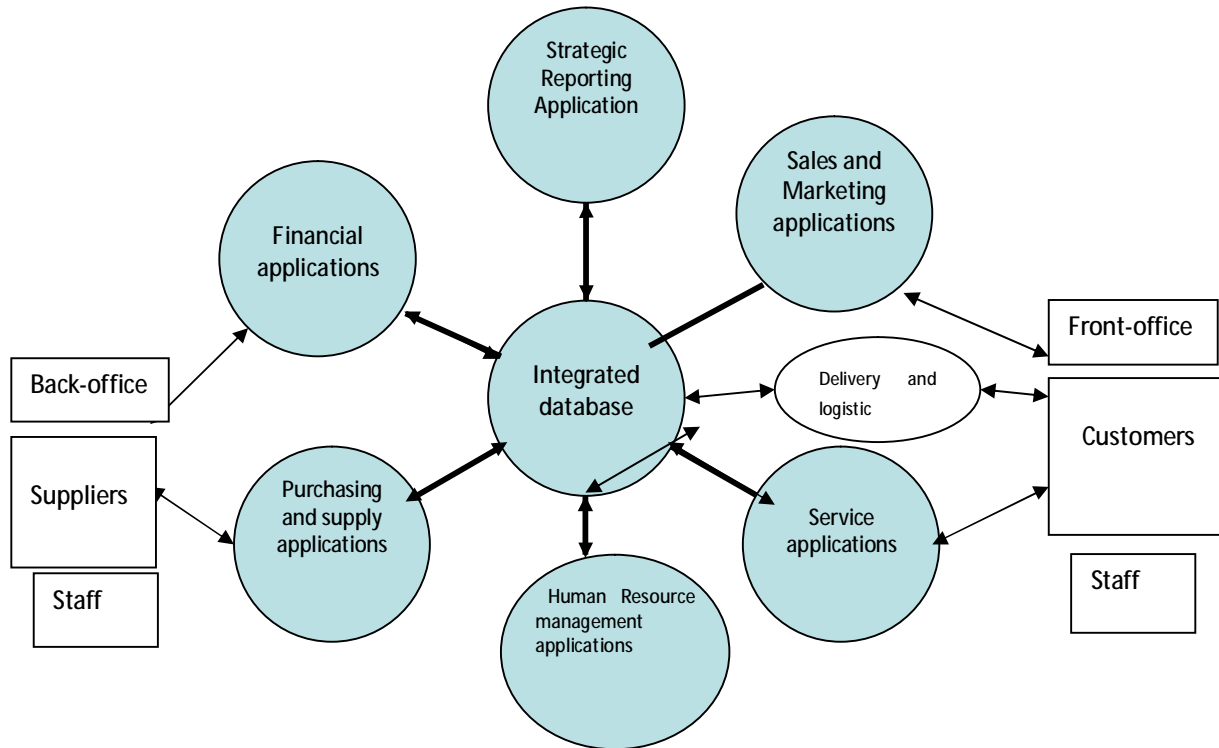
The ideal ERP system is when a single database is utilized and contains all data for various software modules. The modules can include: Manufacturing, Financials, Human Resources, Supply Chain Management, Projects, Customer Relationship Management, and data warehouse.

Velda BV also uses the ERP system to manage the whole business process. For many products, they only have the assembling in the company. The logistics and supply chain concept shifted from a focus of manufacturing to the focus on the chain. How much material to buy for the production and how much in stock is all managed by the ERP system.

After using the ERP system, it has the ability to streamline different processes and work flow. It can share data across various departments in an organization. It can improve efficiency and productivity. It has better tracking and forecasting, and it also lower the cost, have better/improved customer services.

But it's expensive to install and implement the system; the company need adequate training, and skilled staff to adapt quickly to the new environment. The customization maybe limited, and sometimes, they need to reengineer the business processes, and maybe it's too rigid in some organizations to move in a new area in the future.

Slack (2001) has illustrated the different information areas (figure bellow) which build the integrated database that can be seen as the heart of the ERP system. It has a very high degree of integration. It means that everyone linked to the server can access required information.



**Figure 16:** Application of an ERP system (Source: Slack 2001)

What's the future extension of ERP? ERP will be more involve more collaboration with supply chain partners, such as suppliers, and customers. It will enable business partners from multiple companies to exchange information posted on an e-commerce exchange.

Although ERP is very efficient for the company's management, it can't manage every aspect of the business process. For example, the order can still be delayed and with quality problem even if the company is using ERP system.

This article mainly focuses on the SCM process, and the factors in that process which can influence financial performance. It has very limited research about the financial value chain analysis in the company.

This chapter is mainly about the financial performance influenced by the Supply Chain Management, and analyzed the financial performance mainly through profit aspect. In order to get premium profit, this chapter analyzed the revenue and cost aspect, and how to control these factors. It answered the last research question.

## **5.6 Conclusion of this chapter**

In this chapter, the sub-research question “What is the impact of SCM on financial performance in Velda B.V.?” is answered. The main financial performance indicator this paper uses is the net profit. In order to get a good net profit, Velda B.V. needs to control well of each factors involved: Sales Revenue, Cost of Goods Sold, Commercial cost, salary and Machinery and inventory cost. Therefore, how to control these factors is essential to get a good Net Profit. From the analysis we get the sales revenue and the cost are the most important element to control in order to get a good financial performance.

About the control of sales revenues, the sales revenue is mainly approached by the CRM, customer relationship management. There are two different control factors in the sales revenues, controllable and uncontrollable. Controllable factor includes the good quality of products, on time delivery, good sales services, which lead to satisfactory of customers and also with excellent sales people. Uncontrollable factor is the weather issue and economics factor.

About the control of Cost of Goods Sold, it is more or less controllable by Velda B.V., Since Velda prices products according to the COGS plus the profit margin. They can also control the COGS through comparison with different suppliers.

About the control of the commercial cost, it includes commercial cost, salary, machinery and inventory costs. It is very difficult to control this, because it is influenced by a lot of factors, especially with logistics cost. Factors that can influence this cost might be product delay, ways of transportation, new product research, advertising, and inventory costs. These factors combine to influence. Budget and cost track are very important. Velda has to strengthen the control of this.

SCM function can influence these factors. Later in this chapter, financial value chain and ERP system was analyzed.

Next part, this paper gives the conclusion and some recommendations.

## **Chapter 6 Conclusions and Recommendations**

This chapter will answer the main research question: “What to improve in the Supply Chain Management process to get premium financial performance for Velda BV?” This chapter will make the conclusion and give some recommendations.

Implementing improvements in a supply chain does not need to be a major investment in time and money. However, it does require an understanding that the supply chain has significant impact on the financial performance of the company.

Improving supply chain management will improve the company’s operational efficiencies and increase productivity. Increased customer satisfaction will help the company achieve revenue and growth projections. Quite simply, better supply chain management can have a direct impact on revenue growth, profitability and capital utilization and ultimately help Velda B.V. create a competitive advantage in the marketplace.

The paper firstly introduced the basic situation of Velda BV, then described and analyzed SCM in Velda B.V. With the main research question of what to improve in the SCM process in order to get premium financial performance, the paper firstly have the literature review in SCM, then draws the picture of the SCM map for the different routes of products, described each steps and analyzed them.

Better financial performance comes from higher sales revenue; lower COGS and lower Other Costs, which includes the logistic cost, inventory costs etc. All of the factors can influence the financial performance, especially the gross and net profit margin. SCM is essential in order to keep good customer satisfaction, good product quality, good sales revenue, and with the cost control in SCM is also important in order to get COGS down. No delay in SCM can lower the logistic cost and improve the customer satisfactory. Therefore, it’s essential to get good control of each sector in SCM and get a good financial performance.

### **The conclusion of this paper is as follows:**

Velda B.V. sources half of its total products in China, and it requires the good quality at low price. Not satisfactory quality and delivery time issue requires Velda B.V. involves strongly in the supplier development and improvement. The conclusion of this paper is that according to Kraljic portfolio Matrix, strategic product purchase strategy is OK for Velda B.V., while in the

operational and tactical level, main problem in the SCM is in the OEM production section in China, and also includes other SCM functions. With the strategy, Velda B.V. tries to create long term relationship with stable fulfillment of requirements. Close cooperation and stimulation understanding of Velda B.V.'s requirements emerge to be important factors leading to successful relationship. Realizing the business difference in China is also crucial in the success in the cooperation.

The main cautions can be seen in the following table.

The SCM problems in Velda B.V. can be shown in the follow table:

SCM function	Main situation or problems
Production (Material Flow Management)	Monitor the quality and delivery time.
Supplier Relationship Management	Strengthen partnership with the key suppliers. Aware the Chinese business culture and relationship. Strict the contract and details.
Inventory (Demand) Management	Have good forecast of demand
Design (Development and commercialization)	Specify the requirement and time planning. Involve the customer and supplier side in the new product development.
Transportation (Order Fulfillment)	OK
Customer relationship management:	OK. And not much analysis in this paper.

Table 14: SCM problems in Velda B.V.

Analyzed each main supplier, and get the idea how to improve it. In the problem areas of quality and delivery delay, products delay is a very serious issue. With too much order from the suppliers side and not good planning production schedule and lower emphasis of Velda's order is the main reason of the delay or quality problem from these suppliers. Strategic cooperation and better communication is important to improve the situation and with better management and control. Velda B.V. needs to let suppliers aware the importance of Velda B.V.

Some recommendations are given in order to get better financial performance in Velda B.V. As Velda B.V. increasingly emphasizes cooperative relationship with critical suppliers, Velda B.V. needs to use supplier evaluation to ensure their performance objectives can met.

Improving supplier performance and capabilities is urgent for Velda B.V. Increase effort of cooperation and commitment can influence supplier's commitment.

**Recommendations are as follows:**

Recommendations can be categorized into long-term and short-term based on Velda B.V.'s supply chain situation – the core issue being occasional poor product quality, frequent delay in delivery and the loose cost control.

Short-term recommendations are as follows:

1. Close cooperation and strengthen the control. This can be done by investing in HR capacity and more time in supplier relationship management. A support team or one observer should be sent to China to be responsible for the relationship management. Enhance the communication and cooperation between suppliers and Velda B.V. Establish efficient partnership and close cooperation with key suppliers, so that product quality can be improved since they are better tailored according to the exact needs and requirements of Velda B.V.. In the beginning of each relationship, an explanation should be given to the supplier, and give the supplier understanding why quality is required and how it can be attained. Engineering team should have site visits. The delivery time can also be shortened because of a better understanding of Velda B.V.'s need and a resultant priority. The cost associated can also significant for the sound benefits it introduces.
2. Strengthen the monitor (inspection) of product quality before delivery, which can be done satisfactorily by either Velda B.V. itself or third party companies. The former apparently costs more for frequent international travel expenditure. On the other hand, third party companies cost moderately, but they are likely to lack a profound understanding of the involved products, which makes the inspection process questionable. Generally speaking, a third party company that has a long-term relationship is necessary, and in many cases, mandatory. Send an observer from Velda B.V.'s side might be a good measure. The observer should have a good understanding of Chinese thinking and close monitoring.
3. Enlarge the safety storage capacity due to quite often delay in delivery so that timely delivery from Velda to its customers can to the largest extent be assured. This has no influence on product quality. However, it is very costly. Recently Velda has increased its stock by 1 million Euros, and the storage capacity is expected to be extended to 1 year

compared to 3 months previously. As a result, delivery is kept in time and cost is arisen dramatically.

4. Try to have an accurate sale prediction so that the amount of order can be tailored. However, a sound prediction on sales is by no means non-trivial as multiple factors contribute e.g. weather, economics, etc. An elaborate market survey conduces to a good prediction. This measure helps optimize the amount of order and cut down cost henceforth.
5. Strengthen and track the cost by financial department, in order to save the cost and get lower cost.
6. Strict contracts and details. Contract is very important especially when there is severe delay and also quality problems, then we can claim for the payment according to the contract. Use a detailed and strict order formation, and set up the system of time table about the project management and monitor the whole progress according to the time table.

Besides the short-term recommendation, there are also long-term recommendations, which are more from strategic analysis, are listed below:

1. Evaluate purchase strategies regularly for products with different Kraljic's portfolios. For routine products, bottleneck products, leverage products and strategic products, supply risk evaluation is strongly recommended, in particular for strategic products, since Velda has only one supplier for this product, and it is highly risky to count on one particular supplier, especially if its performance is not good. It is thus important to have strong partnership and collaboration with the supplier to create mutual participation in order to boost the supplier's performance. If this fails to work, new suppliers should be looked for, or at least the amount of order from this supplier be lowered gradually. This can assure product quality and delivery time, as well as enhance cost control.
2. Set up supplier performance criteria, based on which suppliers can be selected and evaluated: quality, delivery time, cost and flexibility. In terms of quality, the following factors are to be concerned: performance, features, reliability, and conformance to specifications, durability and serviceability. Delivery speed, reliability and production lead time are important for delivery. For cost, production costs and production lead time should be examined. With regard to flexibility, process flexibility and volume flexibility



should be considered. A regular evaluation of suppliers should be performed and they should be selected accordingly.

3. Utilize the ERP system cautiously and efficiently. This system is very efficient in improving management of business process, but it should be noticed that this system cannot satisfactorily manage all aspects of the business process; therefore communication and control over suppliers still need to be taken care of additionally. Employees should be adequately trained for using this system.
4. In the long run, appropriate communication strategies are critical in developing and maintaining good relationships with suppliers so that their performance can be optimized. Good strategies include indirect influence strategy, formality, feedback, and they help develop long term relationships with crucial suppliers. Velda has to improve its formality and feedback communication, especially in terms of purchase order management and inspection. In addition, Velda is recommended to strengthen its feedback activity, in order to inform them about the done business so that improvements can be made in the future.
5. An extra effort should be put into considering cultural difference when dealing with overseas companies. It has to create long term commitments, local alliances, local presence, local competence and good cooperation in order to win. But misunderstanding and different culture should be pay special attention to when do business with China.

Long term cooperation with critical suppliers is emphasized by Velda B.V. It's dangerous to rely on an untested supplier without first taking time to build an effective relationship to ensure specific performance objectives. For the suppliers which can't confirm Velda B.V.'s expectations, Velda B.V. must determine the most appropriate action to resolve the issue. To maintain the working relationship, Velda B.V. must find a way to communicate the problem and motivate the supplier to improve its performance.

Although many methods are given to suggests for Velda B.V., it still not easy to get everything under control. Barrier can be the motivation from the supplier's side and the often changing employee. The cooperation also depends on the size of the supplying company. The smaller the order is for the supplier, the more it leads to lack deliver reliability as the order is prioritized lower.

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