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# ASSESSMENT OF PURCHASES IN A CASE COMPANY

Degree Programme in International Business
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The purpose of this thesis was to indicate the total cost difference between case company's purchases of products that are sourced from European manufacturers, products purchased from Chinese manufacturers and products that are manufactured by case company's own factory in Poland.

The study was focused on the total cost of the purchases. The purchasing processes had to be reviewed in order to identify all the various cost drivers involved in the sourcing of the products. After the cost drivers were identified they were analysed by using a Total Cost of Ownership analysis. Since the purchasing processes are different between Asian purchases and European purchases there were distinguishable differences in costs.

Research was mainly implemented by using sample cases. An item which was produced by two suppliers, European and Chinese, was selected as a first case sample. Main cost elements of the purchasing processes were identified and compared between suppliers. It was discovered in this thesis that the total costs of purchases were completely different between Chinese supplier and European supplier. The results were undisputable as the Chinese supplier was over three times cheaper than European supplier, and in addition had a better overall quality.

Subject of lead-time is a crucial factor when purchases are evaluated. Long lead-times and the unsteady customer demand have caused problems for the case company. The purchasing lead time is typically significantly longer when purchasing from Asian countries.

As the case company has a factory in Poland, there was a desire to compare purchases from Asia with in-house production, or in other words, insourcing. According to the research, manufacturing costs of the selected sample item was lower when compared to the purchase price from Asia, therefore insourcing is a valuable part of the case company's sourcing strategy.

CONTENTS

# 1 INTRODUCTION

This thesis was done for the Finnish company, working in the field of sanitary industry. Company has factory and headquarter in Finland and second factory in Poland. Company's turnover in the year 2010 was ~130 million Euros and the company has approximately 1000 employees. Since the company's founding in 1945 the company has developed its products and has always been recognized as a good quality brand.

The company had a desire to evaluate its purchases and especially their costs. The case company implements a lot of outsourcing and therefore identifying all the costs included in the outsourcing activities is vital in order to keep the costs as low as possible without sacrificing quality. It is to be remembered that there are many more additional costs than the purchase price of a product. Some cost elements are obvious and some require thorough research to be identified.

Case company purchases outsourced items from all around Europe and as well from Asia. There are some special characteristics in the purchasing processes whether the items are purchased from Europe or from Asia. These characteristics will be identified in this thesis. Case company has a factory in Poland that can be seen as a subcontractor to the company as well. In addition the costs of purchases within the organization are evaluated, by using a selected example.

# 2 PURPOSE AND CONCEPTUAL FRAMEWORK

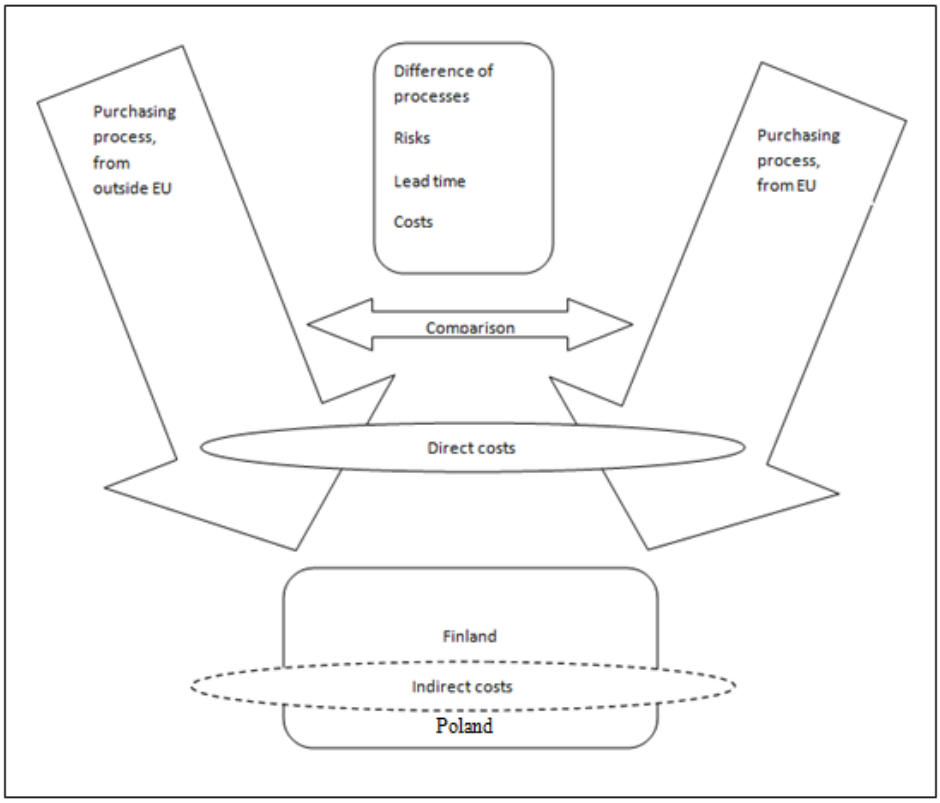
## 2.1 Purpose and objectives of the project

In the case company's company presentation (2011) it is said that "The raw material and the components used in production are sourced from European suppliers". However, currently the purchases from China are still in the range of 2-3%, from total purchases. The desire is to stand out from the competitors in the future, with products that are completely made from European parts. This would be also used in marketing of the products.

The thriving factor of this thesis is to find out the total costs occurred in purchasing processes of products that are purchased from European manufacturers, products purchased from Chinese manufacturers and products that are manufactured by case company's own factory in Poland.

This thesis is to be the document that indicates the total cost difference between purchases in Europe, China and in-house manufacturing. Thesis will support the top management's decisions, considering purchases from China and can also be used as a part of the purchasing strategy.

## 2.2 Conceptual framework




This figure is to illustrate the two different purchasing processes, outside EU and inside EU and the problem areas and tasks that are going to be handled in this thesis. The case company purchases goods from EU countries and Asia; there are two different processes from which all the parts must be identified in order to know all the cost elements in them. The processes are compared and the total cost of each process will be found out. Finally the costs and process of insourcing from case company's Polish factory are identified. All the aspects in this thesis are described and handled from the buyer's point of view.

# 3 RESEARCH METHODOLOGY

This thesis is carried out by using both qualitative and quantitative research methods. It is clear from that most of the cost drivers inside the purchasing process had a monetary value already available, the secondary data simply has to be collected. However there are also issues that can not be identified from the secondary data, so the primary data was to be gathered. In these cases the qualitative method was used. Unstructured and semi-structured interviews have to be used in the research, in order to generate a discussion between the interviewee and interviewer concerning the pre-determined subjects. This way a more deep understanding concerning the subject can be gained. Using semi-structured interview allows the researcher to bring up new questions during the interview and complex issues can be clarified.

# 4 LEAD TIME AND DELIVERY ON TIME

## 4.1 Definition of Lead-time

Lead-time is a crucial concept in the world of purchasing. The concept of lead-time appears several times in this thesis, and therefore it is a good subject to begin with.

“Lead time is the total time between ordering the goods and having them delivered and available for use.” (Waters 2003, 31)

Every buyer wants to get their orders as soon as possible, with minimal delay between the making of an order and delivery of goods. Ideally the lead-time should be as close to zero as possible. (Waters 2003, 31)

## 4.2 Variability of Lead-time

When examining lead time it is also important to remember the crucial aspect of variability. Variability in lead time easily leads to excess inventory or inventory shortages. The length of lead time is less important than the variability and uncertainty in lead time. There are several causes for the lead time variability when purchasing goods: transportation schedules, capacity limitations, equipment shortages, custom inspections, misroutings, data errors that are delaying processing, weather, labor issues and security. (SCDigest editorial staff 2006)

It could be stated roughly that the further the supplier is from the buyer the longer the lead time is. Some deviations to the statement are caused by the efficiency of transport method and the route. For example it usually not wise to use truck as a transportation method if there is a good railway connection also available.

## 4.3 Delivery on time

To receive a delivery on time is the objective of every buyer and every purchase. It is always an unfortunate situation when a company has to tell their customers that they are not able deliver orders because they have not received components from a supplier. If the goods do not arrive in time, sales may be lost, production

may have to be seized and damages clauses may be raised by unsatisfied customers. It is usual that buyers or purchase department are blamed by other departments if suppliers fail to deliver on time. In order to achieve on time delivery it is important that all of the staff that are dealing with (supply chain, sales etc.) the certain goods, know what lead times apply to them. It is quite common that workers in the supply chain for example assume that the new batch of goods can be delivered within a week from the order, but in reality it might normally take two months. It is important that the applied lead time is correct and available in company's MRP system.

The signal for an acquisition comes from inside the company. It may be for example that R&D department has designed a new product and they signal the purchasing department to acquire the goods needed for the product. As the acquisition signal comes in house, usually also does the deadline for acquisition (the date needed on site). It is obviously not a good practice to specify these requirement dates without consulting the supplier. It might be that the supplier is not able to meet the required lead time and it is likely that the end result is a late delivery and the production schedules can be delayed. (Baily et al. 2008, 187-189)

Purchasing department should work on shortening suppliers lead times (and improving reliability of deliveries) and also ensure that all the relevant departments know the lead times that apply. Delivery performance has improved in many cases when recorded performance is used as a basis for discussions with suppliers. On time deliveries are often achieved when suppliers understand that requirement dates and call off schedules are accurate, and it is important that deliveries arrive on time in order to keep production running. Suppliers need to be reminded that whenever they fail to deliver on time they will have to give explanation and that on time delivery is an important part of supplier evaluation criteria. (Baily et al. 2008, 187-189)

# 5 PURCHASING PROCESS

## 5.1 Preparation of purchase from a supplier

During the initial stage of purchasing process, the buyer has to decide the requirements for the purchase. Instead of stating irrelevant specifications, functional specifications should be described. It describes the functionality that the product must have for the user. For example a buyer could describe the exact manufacturing process for an item, instead of really defining how should the final product function and what are the needed specifications for that. This way the suppliers are allowed to use their expertise. The subcontracted products do not usually belong in the field of company's core competency, so there might be new technologies that can be used to manufacture the product that the company does not even know about. The industry develops so fast and new better and more advanced machinery, equipment and more effective processes are invented all the time. (Weele 2005, 47)

A detailed technical specification describes the special technical characteristics, properties and activities carried out by a supplier. Technical specification usually consists of technical drawings and activities performed by the supplier. If the technical characteristics are not exact and clearly understandable it may lead to misunderstandings and the product turns out to be different what buyer sought for. Also over specification can occur if the supplier does not know the key characteristics of the product. For example if tolerance requirements are left out from a technical drawing it may lead to a situation where a supplier manufactures the product to be too precise for the need of a buyer. The buyer ends up paying more for the unnecessary accuracy which has extra no value for the buyer.

(Weele 2005, 48)

Both functional and technical specification are part of concept which is called purchase order specification. This document comprises of the following:

- Quality specifications
    - Specifies what quality certificates should product be delivered with and what are the technical standards that the product should meet.
- Logistics specifications
    - Determines the quantities needed, batch sizes and possibly yearly demand and also delivery time for the batches.
- Maintenance specification
    - Describes how the product is maintained by supplier.
- Legal and environmental requirements
    - Determines what heath, safety and environmental requirements and norms should the product or production process fulfill.
- A target budget
    - Defines the price range that supplier is expected meet and deliver the products with mentioned requirements. (Weele 2005, 48)

## 5.2 Request for quotation

After the buyer knows what is wanted to acquire it is time to send a request for quotation for the selected suppliers. The creation of the RFQ (request for quotation) is easy if the purchase order specifications are done properly. If you know what you want it is easy to ask for a quotation.

RFQ should be as straight forward as possible and the receiver of RFQ should get all the information needed from it. All the terms that are meant to transfer to the purchase order should be already included in the RFQ. The aim is to receive a quotation that can be accepted as it is.

Request for quotation should include the following:

- Individualization of the product
    - Conditions where the product will be used e.g. outdoor use or indoor use, application where the product is meant to be used, performance requirements etc.
- Standards and/or certifications to be fulfilled
    - Sometimes a purchased product or component must fulfill specific standards or certifications, in order the final product can be legally sold in the market.
- Specification and drawings
    - Detailed definition of the products characteristics. Usually raw materials, production method and technical requirements are specified. Standardized drawings help when creating quotation.
- Quantity
    - Standardized units must be used in RFQ e.g. kg, m, $m^2$. Number of batches and single batch quantities must be defined.
- Delivery time
    - Delivery time is always tied to the term of delivery which states where the delivery should be at the defined time of delivery.
- Term of delivery (Incoterms)
    - Buyer should be careful when choosing the terms of delivery. Terms of delivery states as to who (buyer of seller) is responsible for the

cost and risk of delivering the goods. To avoid misunderstandings it is necessary to use straightforward and internationally accepted terms of delivery, such as Incoterms 2010.

- Price
    - In addition to the basic unit price buyer may ask the supplier to define the price more accurately. Buyer may ask the price for example, batches of 1000pcs and 3000pcs or price with different terms of delivery.
- Payment term
    - Usually companies have their preferred payment term that is required to use with every supplier. Payment terms state the conditions under which a seller will complete a sale. Usually the payment term states the period allowed for the buyer to pay off the amount due.

(Koskinen et al. 1995, 158-161)

## 5.3 Purchasing contract

There are many different types of contracts, contract can be just a verbal contract or it can contain several contract documents. When the purchase price and the risk of unpleasant consequences are low, usually some imperfections can be tolerated and the contract tends to be less formal. However, when the purchase price or contract price is seen as high it is worth of some time and effort to create a thorough contract. Many of the daily contracts consist of nothing more than forms or basic templates. (Litja 2004, 10)

Verbal contracts are to be avoided, since the risk of misunderstandings is high and it is difficult to verify the contract afterwards. It is difficult and sometimes

impossible to get proof of what has been said and what kind of actions has been implemented. In practice a simple way to produce a provable business correspondence is to use email and fax. (Litja 2004, 11)

Contract is established when a seller's quotation receives an approving answer from the buyer with the same content. Quotation and accepting a quotation (purchase order) are legally valid actions and bind the both parties. By the binding of the quotation and accepting of the quotation it is meant that they can't be withdrawn without juridical consequences. (Litja 2004, 11)

Most of the large and medium sized companies have their own purchase terms and conditions and all of these have been collected to one standardized document. The terms in this document should define: the parties of the contract, target of the contract, binding of the terms, content of delivery, quantity, delivery time, terms of delivery, quality, price, payment terms, insurance, warranty, reclaim procedure, transfer of ownership, non-disclosure obligation, penalties, conforming order of different contracts and terms and handing of disputes. (Litja 2004, 12)

## 5.4 Creating purchase order

After the terms and conditions have been agreed and recorded it is time to place a purchase order. When the purchase price is seen as low the contract can actually be the purchase order. In some cases a frame order or scheduled order is created which can cover the need of a buyer as far as a year onwards. The advantage of creating frame orders is that the seller is able to buy the raw material needed in production in large batches, since the buyer is obliged to buy the amount stated in the frame order within a time range. This obviously has influence to the purchase price of both raw material and end product, since more you buy less you pay for one item (quantity discount). Creating frame orders can help reducing the lead-time as well. The seller does not have to order the raw material every time the buyer sends the new purchase order and seller can also manufacture the goods to

stock, since one knows that buyer is obliged to buy the amount of goods stated in the frame order. After the seller has received the frame order the buyer can place purchase orders that reduce the amount in the frame order. When the amount in the frame order is zero (or even before that) new frame order is created and sent to the seller. (Weele 2005, 57)

Purchase order is typically initiated electronically through a purchase order requisition or materials requisition. Production and inventory items generate this requisition from materials requirements planning system to the purchase department when the lowest acceptable inventory level is reached and it is time to place new order. The order quantities vary according to the set parameters in materials requirements planning system e.g. if the order period is set to one month the system calculates the amount needed for that period. Nowadays many companies have integrated systems that allow the requisition to be transferred directly to the purchase order. (Weele 2005, 57)

It is important that supplier gets all the necessary information from a purchase order. Generally purchase order includes the following information: an order number, a brief description of a product, unit price, number of units required, expected delivery date or time and delivery and invoicing address. Supplier must use the information provided in the purchase order in delivery documents and invoice in order to easily match the incoming delivery to the purchase order. Usually supplier is also asked to send an order confirmation for each purchase order, from the confirmation buyer can see if the supplier is able to meet the conditions stated in the purchase order, for example delivery time.

(Weele 2005, 57)

## 5.5 Expediting the goods

### 5.5.1 Lead-time and costs of transport

Company can benefit significantly by reducing lead times and variability of its purchase deliveries. If the deliveries come regularly on schedule with short lead time company has a good condition to plan its production on tight schedules, reduce the amount of safety stock and reduce forecasting errors. It is easier for a company to manage with large inventory stocks when suppliers and freight forwarders understand the lead-time requirements and support purchasing to respond to these demands. Use of express deliveries can reduce the lead time and variability even more. It is rarely advisable to use express deliveries in all of company's transportation activities, but with strategically important products or items with low safety stock it may be vise to use fast transportation even though it costs extra when compared to regular transport. (Cavinato & Kauffman 2001, 964)

Purchasing can have influence on company's transportation costs by optimizing transportation services. Through carefully planned transportation network and effective negotiating, purchasing may limit its carrier base and obtain better pricing and services from the carriers that meet the company's requirements. However it is to be remembered that higher transportation costs may result to greater savings in other areas. Buyer should always look at the big picture and attempt to achieve the lowest possible total cost. (Cavinato & Kauffman 2001, 964)

The channel of distribution will vary by the condition at hand. Also the priorities of each purchasing executive are different. The chosen distribution channel must be most efficient and consistent with the buyer's objective and also support to achieve the company's objectives. (Branch 2002, 190)

When purchasing goods internationally, there are four basic channels or modes of transport – road, rail, air and water. A single transport from a supplier to the buyer

may include more than one mode of transport, for example first the goods are loaded in to the truck which will deliver the goods to the port where they leave to destination by ship. Severe delays may occur in international transporting, for example strikes are quite common at ports, especially in Middle East and Africa. To prevent the harm done by the delays a company that is importing the goods, may have to hold safety stock, however, this can be expensive. A major advantage of airfreight is that it is fast and therefore safety stocks can be kept low.

(Baily et al. 2008, 325)

### 5.5.2 Transport arrangements

Transport arrangements are done either by the buyer or the supplier, depending on the delivery terms.

The contract made between the buyer and supplier will identify which party will be responsible for arranging the insurance for the goods in accordance with the Incoterms used. The party who is responsible in insuring the goods will give insurance company instructions for insuring, these include for example type and value of the goods and transport method. It is important that the insurance covers the whole delivery process from loading to unloading and temporary storage. When insurance company has accepted the event to be insured they will deliver insurance certificate to either party (supplier or buyer). (Branch 2009, 86)

Usually the supplier is the party who calls up the freight forwarder to pick up the goods, regardless of the delivery term used and agreed on. The company purchasing the goods may for example give its customer number of the desired freight forwarder to the supplier and ask the supplier to inform forwarder when goods are ready to be dispatched.

After the forwarder has picked up the delivery, forwarder will send dispatch advise to the buyer.

### 5.5.3 Customs clearance and value added tax

The importer has the responsibility to complete all the necessary forms for goods to be licensed for import and cleared through customs. There are many documents that are needed for import customs clearance, these may include: certificate of origin, suppliers invoice, import license, packing list, health certificate and a copy of the bill of lading, air waybill or sea waybill. It is important to deliver all the necessary documents, since the incorrect documentation may cause delays in the clearance process. (Branch 2009, 158-159)

When the goods are arriving to the destination country, forwarder will notify the buyer with notice of arrival – document. For the customs declaration custom will need the commercial invoice, where the amount of customs duty is calculated, packing list and a certificate of origin. After the customs declaration customs will send in customs decision and customs invoice. (Website of Finnish Custom 2011)

Value added tax has also to be paid for imported goods. Tax is paid from the total amount of commercial invoice including transportation costs (from supplier to inside EU) and customs duties. (Website of Finnish Custom 2011)

Customs duties are applicable to all goods imported into European Union, excluding few certain circumstances (such as moving with one's personal belongings to a country outside the EU). The rates of customs duty differs is depending on the type of import and destination country of the imported goods. (Website of European commission 2012)

### 5.5.4 Other activities

After import customs clearance, when the goods have arrived to buyer's premises insurance company will send an invoice for the insurance of the goods to the party that is responsible for insuring the goods. Forwarding company will also send in the invoice for the transportation and possibly other services, for example custom clearance (if buyer is responsible of delivery). Before the company can pay any invoices the imported goods have to be carefully inspected in order to find out if the goods have arrived in quantity and quality that is consistent with the order. Incoming inspection is to be done carefully, since if the defects are detected at production or even by customers the costs become higher and reclaiming becomes more difficult. (Koskinen et al. 1995, 193)

All the invoices are checked and approved, if everything was correct. After the buyer has paid all the invoices that are entitled to the buyer the import process can be seen as complete.

# 6 PURCHASING PROCESS, INSIDE EU

## 6.1 Differing processes

There are some differences in the purchasing processes whether purchase is made from outside European Union (EU) or inside EU. Due to the similarity of the purchasing processes, only the differences in purchasing process from inside EU compared to outside EU is described in this chapter. See flowchart of the process described in this chapter from Appendix 1.

## 6.2 Lead-time and transportation network

Lead time tend to be longer when goods are purchased outside EU, this is mainly because trade taken place inside EU does not involve customs clearance. It is fairly common that a shipment lies in custom's warehouse long period of time, For example some document might be missing or the packages are thoroughly inspected. Distances across EU are also fairly short and there are many freight forwarders that operate in EU. Transportation network in EU is efficient and it enables deliveries to move with high speed.

## 6.3 Value added tax and Intrastat

Purchase from another VAT-registered company is called intra-community acquisition. Intra-community acquisition is defined as an acquisition of an ownership of good(s), if seller or purchaser or some party on behalf either one transports good(s) to the purchaser from one EU-country to another. A company can reduce the tax paid (VAT) for the intra-community acquisition, if the good(s) have been acquired to a purpose that is tax reducible. Company that is practicing intra-community acquisitions must report the purchases in the fiscal declaration. Consumers are not entitled to act as a party in intra-community trade. (Website of Finnish tax office 2011)

Statistics of foreign trade are collected with two different systems in EU. Statistics of trade with non-EU countries is collected from the customs declaration system. Information from intra-community trade within EU countries is collected with separate system that is called Intrastat-system. The law of collecting statistics in intra-community trade, is based on the European Union wide act and every member is obliged to give Intrastat statistics. There are two separate Intrastat exemption thresholds that apply: arrival 275 000€ and 500 000€ for dispatches. This means that companies that do not have trade with another EU-member countries totaling more than these amounts per year are not obliged to deliver Intrastat information. Intrastat information can be either submitted separately for each transaction or alternatively data can be collected and submitted once per month. (Website of Finnish Custom 2011)

Currently there are three different electronic methods that a company can use to declare intrastat information, internet declaration, EDIFACT messages or email. If a company does not have more than fifty declarations per month, handing the intrastat information is best done by internet form. No additional investments is needed when using this system. If a company has a lot of intrastat information to declare it may send an csv- or ascii –file to the customs office via internet. This method is best suited to companies that have lot of intrastat actions and the information can be easily composed to a single file from a company’s own

computer system. For a large corporations that already use EDI-messages it is most suitable to use EDIFACT-messages to declare the intrastat information. If the company's system is well built it will not bring any extra work to declare the intrastat information. The information sent as an EDI-message is electronically checked and if errors are detected they are reported automatically.

(Website of Finnish Custom 2011)

# 7 MAIN CHALLENGES IN PURCHASING

## 7.1 Cultural differences

Cultural differences between buyer and seller can raise a number of problems in the international business relations. Seller and buyer may have a different understanding about variety of things such as ethics, even if they can communicate with common language. What is considered ethical in one culture may not be ethical in another. Also different customs and interpretation differences may cause misunderstandings when the parties are interacting with each others. The parties may have differing meanings considering the trade terminology and technical vocabulary, this is especially important when contracts are made as parties must know exactly what are they agreeing on. (Baily et al. 2008, 315)

When purchasing from international suppliers the costs of carrying out the business are higher. Due to the possible communication problems a translation

service may be required and on-site visits are more difficult and more costly to arrange due to the distance. (Shridhara 2009, 109)

## 7.2 Payment of goods

Buyers naturally prefer to pay the goods after the reception and inspection, however in many cases seller may ask for paying in advance, prior to the shipment of goods. In these cases letters of credit are used commonly, and purchaser's funds may be committed for a longer period of time than if a domestic counter party were involved. (Shridhara 2009, 108)

Currency fluctuations can pose a risk when a purchase order is issued at one currency rate and invoice is paid with another rate. Company can however protect itself against these fluctuations by locking in an exchange rate in advance.

(The Leading Edge Training Institute Limited 2004, 27)

Many exporters prefer to sell in their local currency but creditworthy buyers can also insist to pay in their local currencies. If we think of a case where Finnish exporter chooses to sell in foreign currencies, foreign exchange risk is the exposure to potential financial losses due to devaluation of the foreign currency against euro (€). It is obvious that foreign exchange risk can be avoided if a buyer’s payment is made by a local currency. (U.S. Department of Commerce 2008, 25)

## 7.3 Length of lead-time

Long lead times are very common especially when trading with international suppliers; this is because of the variable shipping schedules, unpredictable time required by customs clearances, strikes of dock workers and shipping companies, nature phenomena's etc. The lead time usually increases according to the distance, and the longer the distance, more there is time to something go wrong. Air freight may cut away some of the problems connected with sea freight, but usually there will also be considerable increase in freight costs. Because of the long lead times and other problems that may occur, a company may have to hold more stock to compensate. This of course adds costs. (Shridhara 2009, 108)

## 7.4 Quality defects

Quality problems may arise in both international and domestic purchasing. Quality problems do exist because of differences in quality standards, measurement systems, manufacturing tolerances used etc. Common understanding between the parties and carefully composed contract are vital factors in to avoid the quality problems. It is also more difficult to monitor the quality when purchasing from international suppliers. If a company has a considerable amount of purchases from for example China, it might be vise to use an agent who is monitoring the quality and other things at the suppliers location. This way the risk of receiving wrong quality reduces significantly. If however the amount of purchases is not that high, the costs of hiring an agent might be too high for the achieved gain. (Shridhara 2009, 108)

# 8 TOTAL COST OF OWNERSHIP

## 8.1 Definition

Total cost of ownership (TCO) can be defined as a philosophy for developing an understanding of all relevant supply chain related costs of a particular purchase transaction or process. In supply chain management TCO usually focuses on doing business with a supplier providing certain good or service. TCO considers the total cost of acquisition of particular item's or service's process cycle, from buying of the item to disposal. It is not necessary to identify and calculate all the costs involved in the cycle, but to look at the major cost issues that are relevant in the moment. TCO analysis focuses on quantifiable costs, matters like user preference can't be quantified so these type of issues are left out from the TCO analysis, but can be taken into account at the final analysis. (Cavinato 2006, 476)

## 8.2 Situations to use TCO analysis

When a company is dealing with the "make or buy" issue it is important to perform TCO analysis. Without clearly understanding all the costs that occur in outsourcing and in-house operations it is impossible to know which one brings most value to the organization. If decisions are made without proper cost analysis it might lead to a situation that is expensive and time consuming to reverse. The total cost of ownership might be multiples higher than the purchase price; this is why the price alone should not be used as criteria of selection.

(Cavinato 2006, 487-488)

Every purchase process is not a good candidate for TCO analysis. Since TCO analysis can be complex and therefore time consuming there should be some assurance that the potential benefits of the analysis outweighs the costs that occur when implementing TCO. (Cavinato 2006, 488)

## 8.3 Two approaches of TCO analysis

There are two general approaches in performing TCO analysis, a one-time project or ongoing system. A one-time analysis is usually implemented to support a specific decision making situation. Following situations are well suited for one-time analysis:

- Outsourcing
- Reducing supply base
- Forming alliances
- Looking for cost drivers
- Selecting suppliers

The one-time approach is commonly used since it is adaptable to many kind of situations. The level of detail in this analysis can vary significantly, depending on the importance of the purchase decision. The computerized ongoing analysis is much less common approach. It is most suitable for analyzing recurring purchases like raw materials and supplies. (Cavinato & Kauffman 2000, 490)

## 8.4 Implementing TCO analysis

Price is only one part of TCO, but usually the largest one. Rather than simply buying from the cheapest supplier, buyer should look at the big picture and take into account all the relevant costs in the acquiring process. Buyer should determine what a particular purchase actually costs to the organization. Issues such as transporting, customs duties and on time delivery are rather obvious issues that affect the total cost of a purchase. There are also more difficult issues to identify such as supplier's education and training to the use of product and administrative support needed to work with a supplier. (Cavinato 2006, 476)

It is usually a good way to map out all the costs in the process, the costs are categorized in three parts: costs occurring before the acquisition, costs related to acquisition and costs after the acquisition. The basic principle is to take into account all the costs that occur preparing the acquisition or request for quotation, supplier selection and cooperating with specific supplier, should be taken into account when implementing the analysis.

(Iloranta & Pajunen-Muhonen 2008, 186-187)

When getting started with the TCO analysis it is important to keep the scope compact enough in order to make sure that benefits exceed the implementation costs. The team implementing the analysis should identify all the key TCO cost elements and then think what are the relevant ones, when considering the decision. The relevant ones are the significant cost elements that vary among the decision alternatives. For example quality inspection can be rather high cost inside a company, but if two supplier's items are compared and there is no difference in the inspection costs, then the cost element is not relevant, because it has no effect to the decision outcome. (Cavinato & Kauffman 2000, 494)

It is common that a company does not have accurate cost information for most of the cost elements. This is why some effort may have to be used to:

1. Developing a process flowchart to clearly identify the cost elements throughout the process.

2. Determining the most significant cost components and determining how to monitor and calculate them.
3. Gathering and summarizing the relevant cost data
4. Analyzing the results.

Usually data gathering phase will involve a lot of manual effort.

The company should then decide where to begin the project. TCO analysis can be implemented with just one item, item group or items belonging to a certain buying category, such as raw materials. (Cavinato & Kauffman 2000, 490)

Company must determine how and where TCO will be used. It could be selected as a tool for the critical items or it could be used more broadly. TCO could also be used to select new suppliers, allocating purchases between suppliers or manage costs with current suppliers. The decisions that a company makes has effect on which TCO approach would be wise to implement, if TCO is going to be used frequently and broadly it is probably most effective to use computerized ongoing system. (Cavinato & Kauffman 2000, 495)

# 9 RESPONSIBLE PURCHASING

## 9.1 Criteria for purchases

It is to be remembered that price is only one factor when selecting suppliers. Achieving and maintaining good reputation is important in the world of today. If a company is in the news for example because it has purchased components from a

supplier that uses child labor, it will have a drastic influence to the reputation of a company. People value more and more products that are economic, ecologic and ethically produced. People do not want to support unethical behavior by buying products that are produced in a way which violate human rights. People are also willing to pay more for responsibly produced products. (Baily 2008, p. 380)

In the ideal world purchasing professionals would only make purchasing contracts that ensure that products and services bought are not only cost competitive and high quality, but also socially and environmentally responsible. In the real world however it usually is enough for corporations that their purchases are high quality with minimum price. Products with poor environmental performance can cause an increase in employee health problems, expensive cleanup, liability, or disposal costs in addition to associated environmental damage. Avoiding these potential costs and environmental damage, is an important factor when evaluating overall value and quality. (Baily 2008, 380-386)

## 9.2 Responsible business practices

The Chartered Institute of Purchasing & Supply (CIPS) represents purchasing and supply professionals all over the world. In the institutes document "Ethical Business Practices in Purchasing and Supply Management" it is said that buyers should work with the suppliers to make sure that the following clauses happen in reality:

- Suppliers uphold health and safety requirements.
- Suppliers work according to the laws of their country.
- Suppliers do not abuse or intimidate employees in any way.
- Suppliers do not try to prevent or discourage employees from joining trade unions.

- Suppliers' employees' level of wages and benefits meet national standards and industry benchmarks.
- Employees' regular working hours per week should not exceed 48 hours.
- Employees can decide themselves whether to work for employer or not.
- A clear contract is made with every employee that includes the salary that is to be paid.

(CIPS 2007, 1-9)

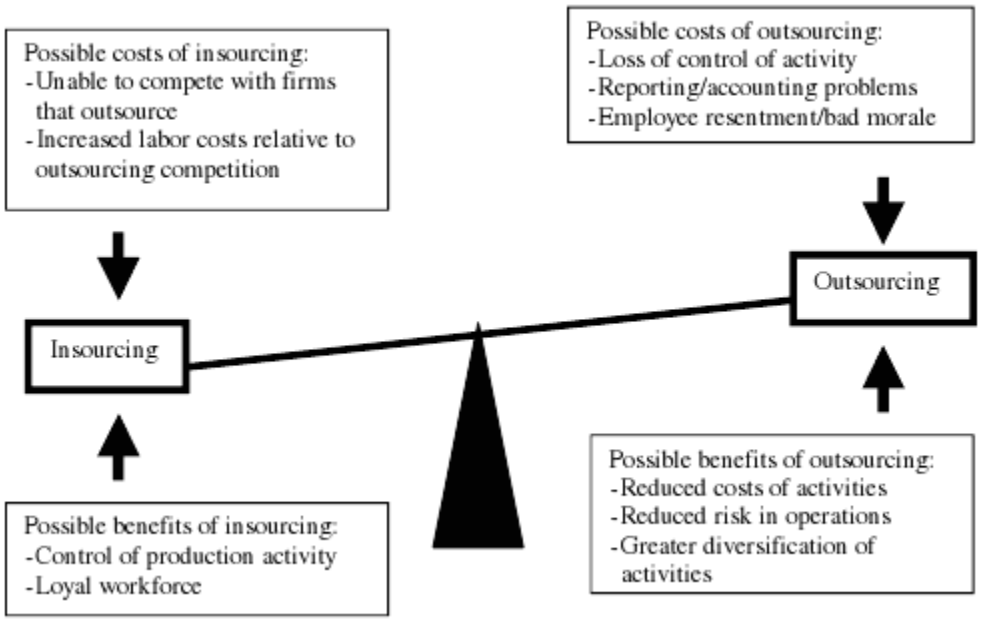
To ensure that the suppliers have responsible production processes etc. it is a good idea to demand an environmental certificate, such as ISO14001, from the suppliers. When sourcing for new supplier is to be remembered to make sure their actions and policies are ecological and have minimal impact to the environment. It is definitely an advantage in marketing if a company can say that all their components ecologically sound and fulfill certain environmental certificates. Nowadays there is a great pull for "green" products and many companies have their own line of products that are manufactured for example from biodegradable or recycled raw-material.

# 10 OUTSOURCING VS INSOURCING

## 10.1 Outsourcing and insourcing explained

As outsourcing can be defined as the procurement of products or services from sources that are external to the organization, consequently insourcing can be defined as internal sourcing of business activities. Insourcing is not dependant to geographical location, however the business transactions must occur within one organization. It is quite common that a company has a headquarter for example in Finland and factory or factories in "cheap labor" countries such as China or Vietnam. (Schniederjans et al. 2005, 3)

It is common that new businesses insource their activities at the beginning, but when time goes by and business grows, they might find limitations in their labor force, services, materials or other economic resources in a particular geographical location. This may force them to subcontract services or procure materials from external sources. Organization has to balance the potential benefits of outsourcing with its potential costs in order to determine the right proportion of outsourcing to insourcing. The correct balance has been achieved when the costs are reasonable and the decisions in outsourcing and insourcing help the organization to achieve its objectives. The picture below indicates the possible pro's and con's of both insourcing and outsourcing. (Schniederjans et al. 2005, 3)




(Schniederjans et al. 2005, 4)

## 10.2 Advantages of outsourcing

The first advantage to mention is the focus on core activities. Outsourcing allows the business to concentrate on activities that are most important. Functions like customer care, documentation, IT up gradation and administrative tasks such as internal audit and payroll processing are usually the non-core tasks for a business and consume the time of the management if handled in-house. When these non-core activities are outsourced, the company management can focus on the company's core competency and bring better products or services into the market. (Schniederjans et al. 2005, 23)

The cost of business activities that are outsourced can be less than insourcing the same activity. The potential cost savings of outsourcing is probably the most major factor for companies to increase outsourcing. Outsourcing enables businesses to reduce their cost in various sectors such as management, labor and facilities. By outsourcing a company can take advantage of other company's core

competence, for example if the payroll activities would be outsourced to accounting company. For the same reason vendors may be able to produce better quality product or services than it would be possible in house. They are specialized in their field and have effective processes and technology. (Schniederjans et al. 2005, 24)

It is much easier to change a supplier than to change a full-time employee. Outsourcing provides flexibility, since the supplier can be changed without any special actions for example if the supplier does not provide the correct quality. (tutorial-reports.com 2011)

New operations are much faster to kick off, since there is no need for large investments such as new machinery, if a new product is outsourced. Suppliers are usually focused to certain field and this enables them to keep up-to-date with the technology required in their business. (tutorial-reports.com 2011)

Outsourcing can help to share the risk. This is because potential problems lie in e.g. resources and technology, for example machinery may break down. If a company has only one large plant and has no outsourcing if the machinery breaks down the production may be stopped. However if the company would have outsourced most of its production the risks are much smaller, it is very unlikely that all suppliers would stop manufacturing at the same time. (Schniederjans et al. 2005, 26)

## 10.3 Disadvantages of outsourcing

Every advantage of outsourcing that were mentioned earlier has only a probability of actually occurring, none of them are certain. Therefore also disadvantages are only at risk to happen in reality. (Schniederjans et al. 2005, 28)

When a company signs a contract to have another company perform a task or function, it is giving the management and control of this task or function in question away to another company. In this case the managerial control belongs to

another business that may not be driven by the same mission that the outsourcer's company. The supplier will be driven to make profit from the provided services or goods to the client. (operationstech.about.com 2011)

Usually there is a flow of information between the supplier and client company. Sometimes there is a risk that confidential information get to the wrong hands. Once for example a product drawing is sent to the supplier there is a risk that the confidentiality is compromised. The evaluation of the outsourcing company is to be done carefully to make sure that the data is protected and the contract includes a penalty clause if data gets compromised. (operationstech.about.com 2011)

As already mentioned the outsourcing company is motivated by profit. Usually the prices are fixed and stated in the contract therefore the only way to increase profit is to decrease expenses. Sometimes when expenses are decreased at the same time the quality is decreased. This phenomenon is quite common especially in far-eastern countries such as China. At first the quality seems fine but as time goes by the quality goes down until the client company complains about the insufficient quality. (operationstech.about.com 2011)

## 10.4 Planning International outsourcing-insourcing

### 10.4.1 Strategic planning

The outsourcing-insourcing (I-O) planning can be devided to three different types of steps; strategic, tactical and operational steps. The first strategic planning step is to state the company's mission and goals. Company's mission includes the long-term goals of the company and therefore strategic goals are the shorter term objective. Mission could be for example to seek only profitable business actions and goal to seek 10 percent growth in sales every year for the next five years. Next step is to analyze the strengths and weaknesses of the organization. This is

an important step to go through since if a company has a very good research and development department, but is lacking the manufacturing expertise or the costs are too high, it would perhaps be vise to keep the R&D in-house and outsource the manufacturing. Before making any decisions however the organization has to study whether or not it would be worth the effort to make the manufacturing more efficient and keep it in-house instead of outsourcing it as a whole. If it is seen as unprofitable to keep manufacturing insourced, then it is time to look for other alternatives. If for example the manufacturing is decided to be outsourced, then the company must implement a thorough risk-assessment of outsourcing of the activities. (Schniederjans et al. 2005, 50)

### 10.4.2 Tactical planning

In the tactical planning stage the company's outsourcing strategic plan would be converted in to outsourcing project that has specific time frames for outsourcing tasks to be accomplished. Company's tactical goals should act as a base of outsourcing agreement specifications. For example if a company has a medium-term goal to increase sales 10% and cut down costs 15% in every year for the next five years, the company should be able to determine how much capacity is needed from the new supplier and how much should the maximum cost of outsourcing be. When all the required criteria are determined it is time to identify and select the outsource provider. Usually the list of potential providers can be created from the industry association directories and from outsourcing directories, but it is also general to use outsider to do the provider mapping. There are companies that are specialized in searching the potential suppliers. Thse kind of services are useful if there is no in-house expertise for example from a specific foreign market, such as China which is a popular destination to outsource activities. (Schniederjans et al. 2005, 54)

### 10.4.3 Operational planning

In the operational planning stage is moving further to actual implementation stage. There might be dilemmas if the operational planning is done by upper-level managers only. In operational planning stage it is important to take middle- and lower-level managers along with the planning meetings. Purchase agreements made by upper-level managers only may not suit to middle- and lower-level managers. The purpose of the outsourcing design meetings should be to keep all managers informed of ongoing plans and allowing them to participate in to the decision making process as much as possible. All managers should be encouraged to identify and deal with possible conflicts that might occur during the planning or transition implementation periods. By informing people what is going on in the planning process and how it can affect their work or jobs, is the best way to avoid fear, suspicion, anger and disruptive behavior. (Schniederjans et al. 2005, 64)

The transition planning at the operational level should be done with care and it should be very detailed. It must cover human resources, facilities, equipment, software, third-party agreements, processes and business activities related to the outsourcing agreement. In addition all managers who's responsibility area is going to be changed, must be informed about the new responsibilities early enough. There are two important dimensions in the transition phase: "who" and "what time". Who reports to employees that are going to be affected by the outsourcing decision, who will have one's responsibilities changed, who will lose one's job etc. What time obviously states the time frame of the changes. (Schniederjans et al. 2005, 65)

During the transition process it is important to establish measures for monitoring the goal achieved. The measures should be viewed as a quality assurance system which ensures the client company that the outsource service provider is acting according to the agreement. Once the measurement tools are established the monitoring of outsourcing activities should be a continuous process. It can be implemented by periodic meetings between the client company's outsourcing managers or outsourcing team where the project is evaluated and information is

shared between the participants. Monitoring of the project can also include periodic audits performed by the client company's staff or by an outside audit company. The advantage out outside audit companies is that they represent a third party opinion with all the necessary expertise to monitor business performance. (Schniederjans et al. 2005, 66)

# 11 PROCESS DESCRIPTION

Empirical part of this thesis is based on the information handled in the theoretical part. The information will be used to identify all the different cost drivers in the purchasing process and to analyze them properly. The theory will support the empirical part of the thesis, although the actual data has to be gathered elsewhere.

Secondary data was mainly gathered from the case company's records. The main sources for the secondary data was the company's ERP system, quotations from the suppliers, invoices and documents generated by the staff of the case company (such as incoming inspection protocol). All the relevant data was selected and then used in total cost of ownership analysis. The primary data exists as a result of the analysis of secondary data and results of the implemented interviews.

Empirical part of the thesis was mainly constructed by using semi-structural or unstructured interviews and writer's own observations. As the author himself

worked as a buyer in the case company during the whole research process the gathering of information was rather easy. The access to all internal documents in the company and the possibility to interview the staff helped the construction of the research.

Primary data was used to support the total cost of ownership analysis. Primary data was present when an aspect could not be presented with numbers of figures, e.g. buyer's perception on workload when working with Chinese or European suppliers.

# 12 RESEARCH FINDINGS

## 12.1 Case examples

The empirical part of the thesis will consist of total cost of ownership analysis of a selected item that has been purchased from European supplier and also from Chinese supplier (case 1). Since the case company also has a factory in Poland, where the labor costs are noticeable lower than in Finland, the production costs in Polish factory are in addition compared against the total cost of purchase from the Chinese supplier (case 2). The goal is to give a clear image of the total cost of purchases and to find out the costs of insourcing.

The purchased items used in these cases are not to be specified accurately because of the confidentiality matters involved. However it can be stated that items are made from metal.

## 12.2 Purchase prices

The first and most obvious cost is the purchase price of an item. There are many cases where the purchase price plays a big role in the total cost, but on some item it may be a secondary cost. In the sample case selected for this thesis there are two suppliers that have both sold a certain item for the case company. As we can seen from the TCO table found in Appendix 2, in this case the purchase price is totally different between two companies. The company A's unit price is over three times lower than company B's unit price. Item in question is purchased in batches of 1000pcs, so if only the price of a product is taken into consideration, company B is 13 540€ more expensive than company A (per one batch). The invoiced currency of both companies is Euro (€). For this item suppliers have tooling costs that are invoiced separately and paid only one time. Tooling costs are expenses that are incurred by a manufacturer in acquisition or fabrication of the necessary tooling for the production of ordered items. Tooling costs can consist for example of manufacturing/acquisition of molds, machining clamps or plating racks. Suppliers require that tooling costs are paid before the production can start. This is because the tooling costs can sometimes be as high as tens of thousands Euros. The amount of these costs in this case seems to be in relation with the unit price, again the company A's tooling costs are over three times lower than company B's.

The difference between purchase prices seems to be extremely high, however it is to keep in mind that there are a lot of additional costs that influence the total cost of ownership.

### 12.3 Transportation, lead-time and customs duties

Since the distance from China to Finland is much longer than from Germany to Finland, it is obvious that the costs of transportation are different if the lead time remains the same.

The transportation costs are easy to compare since the delivery term is FOB (Free on board), Incoterms 2000, for both companies. FOB is to be used only in water transport as in this case. Once the seller places the goods that are cleared for export on board of a ship, at the port named in the contract, seller's obligations end. Once the goods pass the ships rail the buyer is responsible of the risk of loss or damage. For company A the delivery term is FOB Shanghai (Incoterms 2000), and for company B FOB Lübeck (Incoterms 2000). The case company therefore has to pay the sea transport from the port of departure to the destination port and onwards to the destination factory. (Baily et. al. 2008, 294)

The production lead-time is the same in both cases, 60 days in average. The difference in transport lead-time however is totally different between A and B. This is obvious since the distance from Finland to Shanghai is much longer than from Finland to Lübeck. When the lead time is considered company B is a clear winner. From company B the transport lead-time is seven days and from company A approximately 50 days. It is possible that the lead-time from company A is even longer if the shipment goes through customs inspection process. The company has to have relatively large safety stock due to variability and uncertainty of lead-time. It is also possible to transport the goods from company A with air freight, but the total transport costs will then be approximately 3,5 times higher than with sea freight. This is estimation is based in the previous (sea and air) freight invoices received by the case company. The transport lead-time would be seven days in this case. (Case company, purchasing department, 2011)

When items are purchased from company A there are also customs clearance and customs duties to be taken care of. The amount of duty in this product category is

2,2%. The amount of duty is calculated from batch price added with the cost of sea freight.

## 12.4 Incoming inspection at the case company

All the items that are purchased for the production to use, are to be inspected by incoming inspection before taken in to use by production or before items are warehoused. This is performed to minimize the possibility of defected products or components ending up to the customer. At the incoming inspection the inspectors check the sample for measure defects and surface defects. All the batches in which the amount of defects, or defected items exceed the terms of acceptance are handled as deviant. Deviant batches can be either returned to the supplier or be scrapped by the case company. It is always the buyer's responsibility to negotiate with the supplier to find out the right way to operate with deviant batches. Sometimes when the transportation costs are high and the value of the batch is relatively low, the supplier may authorize the case company to scrap the items. On the other hand if the items can for example be fixed and the raw material is relatively expensive, the supplier may want to take the deviant batch back to ones site.

The size of a sample at the incoming inspection is determined by: the quantity of the products in the batch, importance of a product or product's feature(s), the manufacturing process of a product and supplier's proven ability to produce required quality. (Case company: Work instruction of incoming inspection, 2008)

Rarified inspection can be taken in to use for product when supplier's ability to produce required quality is proven: every second delivery of certain product is inspected when three sequential deliveries are accepted without defects, when ten sequential deliveries of the same product by the same supplier is accepted without defects computer draws two out of ten deliveries to be inspected. Illustration of rarified incoming inspection can be found in Appendix 3. (Case company: Work instruction of incoming inspection, 2008)

If time between deliveries is six months or more the rarified inspection is not applied and the deliveries will be inspected at every arrival. If a supplier's products stay in rarified inspection or in other words the quality is consistent, the costs of incoming inspection are as low as possible and indirect costs from purchase order returns do not occur. (Case company: Work instruction of incoming inspection, 2008)

## 12.5 Quality

Incoming inspection at the case company uses software that is able to provide information concerning the quality of the received deliveries. In Appendix 2 in the section "Overall quality" there is a percentage of the batches that have cleared the incoming inspection without detected defects. This percentage reports the accepted batches concerning all the products that come from a supplier. It is to be noticed that these figures do not state the percentage of accepted items (without defects) but only the accepted batches in which no defects were found in the incoming inspection sample. Selected time span is from the beginning of year 2011 till the end of September 2011. (Case company, incoming inspection: supplier report, 2011)

Figures in the section "Overall quality" are totally different for suppliers' A and B. There are 76% of accepted batches without deviation in quality for company A and for company B only 4%. For reference, the average percentage of all the deliveries from all of the suppliers combined from the same time span is 87%. This means that both of the suppliers are behind the average quality of all the case company's suppliers. Company A is 11% behind the average and Company B 83%. It can be clearly seen that there are some serious problems with the quality of supplier B's products, there were defects in almost all of the batches delivered. Despite the efforts of the case company the quality produced by this supplier has not been improved sufficiently.

There are numerous indirect costs that take place when the defected goods are received. The greatest costs to the case company come from creating the complaint and purchase order return documents, communicating with supplier concerning the defect and from the second incoming inspection when the replacement batch arrives. The process description of purchase order return can be seen in Appendix 3. There are many stages to go through before the complaint can be closed and replacement of defected goods or credit note is received. All the stages in this process equal some amount of labor in the case company and therefore add up costs to the purchase as well.

## 12.6 Working with European and Chinese suppliers

Generally working with the European suppliers has been easier than with Chinese suppliers. Perhaps the main challenge with the Chinese suppliers is the differing quality perception with the case company. The quality requirements have to be described in detail and all the possible specifications must be explained with care. It is quite common that Chinese suppliers make their own assumptions concerning the acceptable quality if the requirements are not specified carefully; they often have a tendency to think that "this is probably good enough". After the initial sample batch has arrived to the company it must be inspected thoroughly, all the defects and deviations are reported and explained to supplier. Supplier needs to realize what kinds of things are not accepted in the products. (Case company, purchasing department, 2011)

Variations in quality are also fairly common in Chinese products. It is noticed in the case company that the quality tends to follow a wave like pattern; it does not stay steady for a long time and it goes up and down. Chinese suppliers tend to forget the quality requirements after a while and they "test" if the lower quality would be accepted. This situation is the bottom of the wave and the quality starts

to improve once again when it is made very clear to the supplier that poor quality is not accepted by the company. (Case company, purchasing department, 2011)

With European suppliers there are also sometimes differing perceptions concerning the quality, but explaining, reaching and maintaining the target quality is usually not as difficult as it is with Chinese suppliers.

The long distance between Finland and China also bring a challenge in maintaining good supplier-customer relationship. It is much easier for the case company to for example audit a German company than it is a Chinese company. Without a doubt the cooperation with a supplier runs better if the buyer and seller regularly see and discuss with each other in person. The communication flows more smoothly when there is, so to say, the name has a face. Day to day decisions are taken care of by middle managers. If they have never seen the buyer, they will take care of other customers that they have met personally.

Cultural differences between countries are something needs to be taken into account when doing business with foreign countries. Inside Europe the cultural differences are somewhat small, but when comparing Chinese and Finnish cultures differences do exist. Perhaps the most challenging characteristic in Chinese culture according to the buyer in the case company is that they rarely say things straight. Finnish people are used to say things as they are, but in Chinese culture they do not want to say negative things to the customer. They tend to sugarcoat things and for example delivery delays are usually revealed only when customer starts to wonder where their delivery is. (Case company, purchasing department, 2011)

The bottom line is that working with Chinese supplier requires more working hours in the case company than with European supplier. This is something that has to be taken into account when purchasing from China. However when the difference in purchase prices is as high as in the case between companies A&B, the extra work required by Chinese suppliers is still worth it.

# 13 OUT- VS. INSOURCING

The case company has a factory in Poland which can be considered as a cheap labor country. In this case polish employee costs approximately 2/3 less than Finnish employee. Because workforce is so affordable in Poland, especially products that require a considerable amount of manual labor are economically beneficial to produce there rather than in Finland. In addition in the case company's own factory it is possible to manufacture a complete, finished product without any outsourced services needed.

By the time this thesis was conducted, purchasing department requested an offer of 'item X' from a Chinese supplier (Company A). The supplier's offer was seen as relatively high and there was a desire to compare the quote to the costs of manufacturing the item X by case company's Polish factory.

In Appendix 5 there is a table in which various costs of item X are calculated. As we can see in the table there is no obvious difference between costs of the Chinese supplier and case company's factory in Poland.

However, the price of an item X, produced in Polish factory of the case company is a standard price without any margin. There are various costs taken into account when the standard price is calculated, such as; labor, overhead, material costs and overall yield is estimated as well. On the other hand there are also costs that are not included in the standard price calculations. It has been estimated by the case company that it costs approximately 3000€ to maintain an item (component) in the inventory. There are for example incoming inspections, tooling maintenance and inventory maintaining that are indirect costs that are not included in standard price calculations as such. It is also almost impossible to precisely define the standard price of an item, especially if the production chain is long.

# CONCLUSION

The subjects in theoretical part of this thesis were selected for the reader and writer to understand better subjects handled in the empirical part of the thesis. Perhaps the most important sections of theoretical part were the process description of purchasing processes and the total cost of ownership analysis. In order to identify the costs that occur during the process it was vital to identify the parts in the purchasing processes. This thesis is cost orientated and therefore it was important to study the subject of total cost of ownership analysis.

Subject of lead-time was selected as one of the topics because it is a crucial factor when purchases are evaluated. Long lead-times and the unsteady customer demand is not a positive situation. There are many pitfalls when it comes to outsourcing and purchasing, therefore the most important challenges were selected, identified and analyzed. Nowadays people usually do not just look at the price of a product but want them to be socially and environmentally responsible, especially when talking about medium or high-priced products. Case company values the aspect of responsibility and due to this fact responsible purchasing was selected as one of the topics.

Insourcing was a subject that was included in to the thesis in the last meters. As case company has a factory in Poland, there was a desire to compare purchases from China to in-house production.

Research was mainly implemented by using a sample cases. An item which was produced by two suppliers, German and Chinese, was selected as a first case sample. All the cost elements were identified and compared between suppliers. The results were undisputable as the Chinese supplier was over three times cheaper than German supplier, and on top of that had a better overall quality.

The second sample case in the empirical part consisted of comparing costs of a Chinese supplier against the case company’s own factory located in Poland.

According to calculation, manufacturing the item X in case company's own factory was 6% cheaper than the purchase costs from Chinese supplier.

However it is to be remembered that the purchasing costs do not tell the whole truth as the case company is inspecting a possibility to source all items needed in manufacturing within Europe. If all outsourcing activities would concentrate within Europe, case company could market its products as completely European made products. This would be a valuable asset in case company's marketing, but according to this thesis it would also have costs to the company.

# RECOMMENDATIONS

According to the findings of this research the case company should no longer work with the supplier; Company B, mentioned in chapter 10. The costs of this supplier are unbearable and the quality is not anywhere near to what is needed. In the future the case company should focus on finding good quality suppliers in Europe for the type of items used as an example in Appendix 3. The company should also decide at what costs they are willing to stop sourcing from Asia. Transferring all the outsourcing activities from Asia to Europe is definitely going to have some costs, since the total purchasing costs in Asian countries are generally lower when compared to European countries. It is to be determined how valuable marketing asset the fully European product actually is.

Other option to outsourcing is to insource from case company's factory in Poland. The costs of manufacturing can be considered rather low, mainly because the labor costs are only approximately $^1/_3$ when compared to for example Finland. Insourcing can be seen as more favorable option against outsourcing since the

company does not have to source for new suppliers, which is a time consuming and expensive process.

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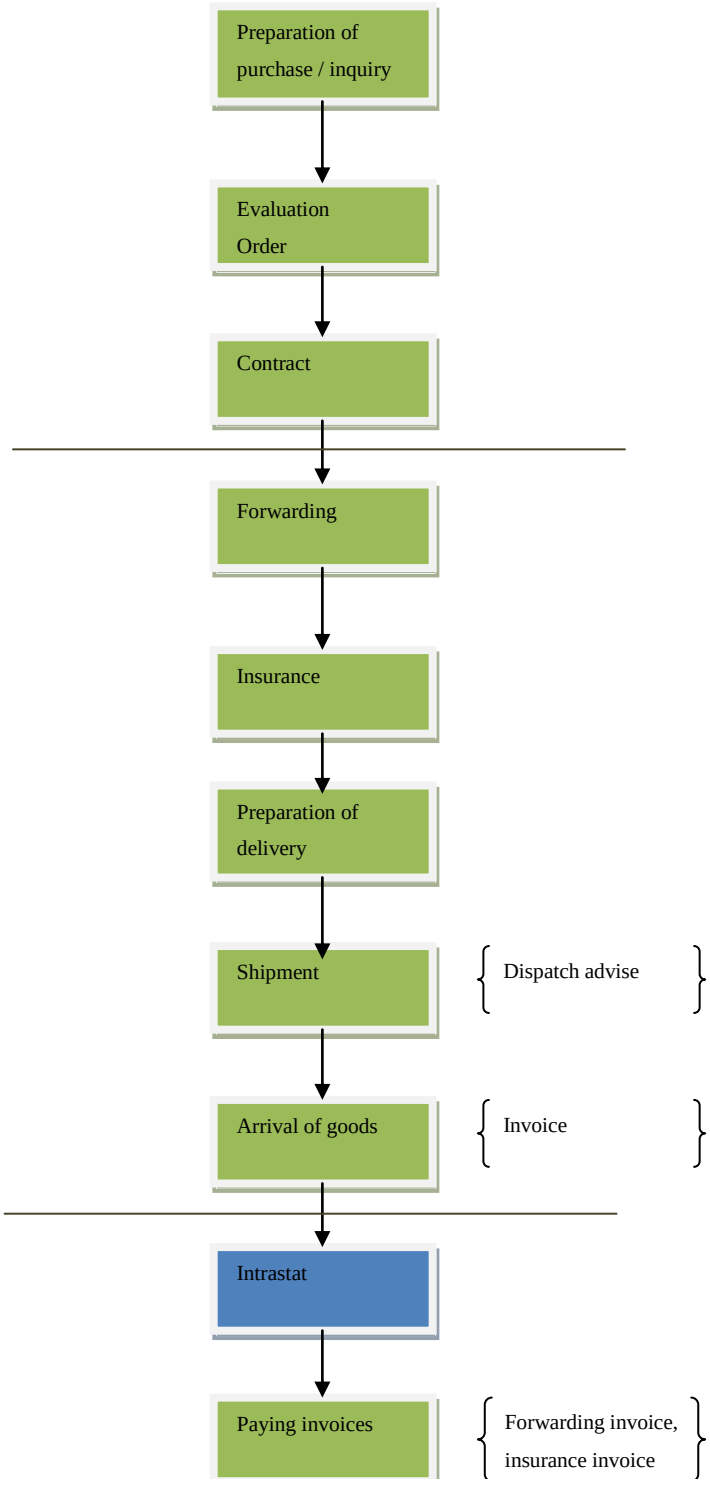
Appendix 1

Purchasing process, inside EU



Appendix 2

TCO analysis

Due to the confidentiality matters this appendix is left out from the published thesis.

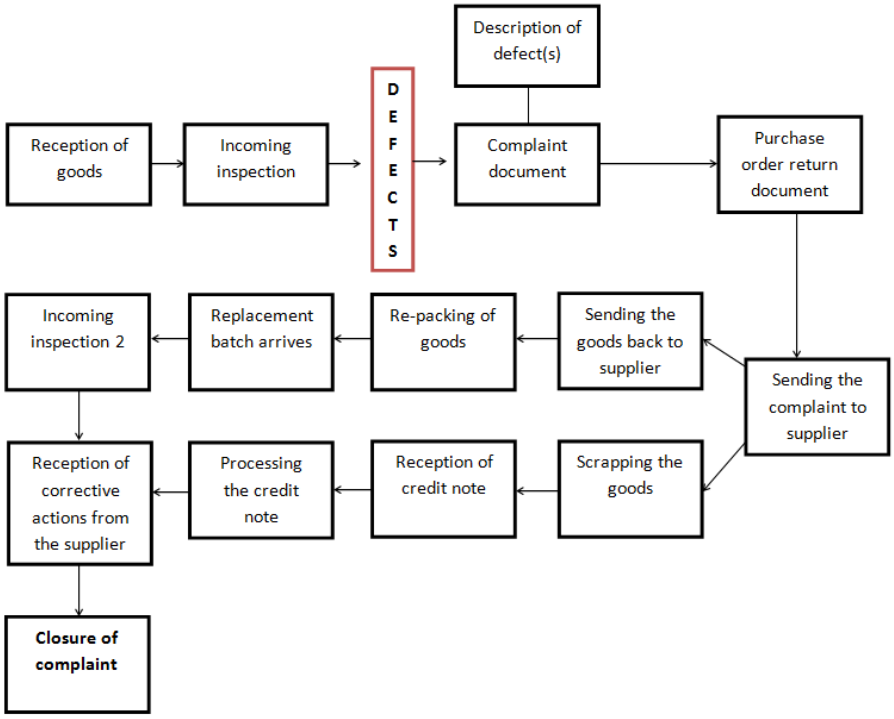
Appendix 3

Rarefied incoming inspection

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1** | **2** | **3** | 4 | **5** | 6 | **7** | 8 | **9** | 10 |
| 11 | 12 | **13** | 14 | 15 | 16 | 17 | 18 | **19** | 20 |
| **21** | **22** | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | **39** | **40** |
| **41** | 42 | **DEFECT** | Return to square 1 | | | | | | |

Appendix 4

Purchase order return process




Appendix 5

TCO Analysis

Due to the confidentiality matters this appendix is left out from the published thesis.