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# Improving the New Supplier Search and Selection in the Sourcing Process

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<p>This thesis focuses on the improvement of the sourcing process in the case company sourcing organization. The defined area of the sourcing process is supplier search and selection processes. The case organization works successfully globally, but there are still uncertainty and some deviations in the procedures related to supplier search and selection which leaves room for improvement.</p> <p>The study is carried out by exploring the existing processes related to supplier search and selection in the sourcing process, as well as conducting a survey from a group of pre-defined key stakeholders from the organization. The challenges identified from these two sources are compared to available knowledge and best practice found from literature. The identified issues from the current state analysis and the best practice found from literature are then used to create a conceptual framework for solution. After which the final proposal was built extended by insight and feedback given by the key stakeholder defined for this study. After the final proposal, validation suggestions were obtained, as well as recommendations for the sourcing organization on how to proceed.</p> <p>The thesis is using qualitative methods to search for data and information from the sources available. The main sources for data are the case company databases, discussions with the key stakeholder, sourcing organizations intranet pages and the key stakeholder's survey results.</p> <p>The outcome of the thesis is an improved process for supplier search and selection for the sourcing organization. The improved process includes the exact work flow and attributes that can be used as they are defined. The outcome has not been implemented yet as presented in this study, but gives a good overview what the current sourcing process can be in the future, and also indicates that changes are needed for the current sourcing process.</p>	
Keywords	Sourcing process, Supplier selection, Supplier search

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## 1 Introduction

Manufacturing industry has changed quite a lot in recent years. Companies have pressures to be more cost efficient and reduce unnecessary value of stock. In order to have a wide scale of product offering and complexed products, industrial companies use a lot of different suppliers and other manufacturers to fulfil these categories in order to produce their own products. Importance of the supply-chain has increased, as well as outsourcing due to complexity of products. In addition, the move related to cost cuts has been one of the key strategies in the case company, in order to be more competitive price wise in the market and also to serve customers in with more customizable products.

The thesis focuses on streamlining the current process for new supplier search and supplier selection in the case organization, Global Sourcing unit of the case company. These two are parts of the sourcing process used in the case company on the Global scale. The Sourcing process was created in 2012, and being quite new, does not yet give very detailed information on how the sourcing process is done in terms of guidelines for supplier search and selection.

### 1.1 Key Concepts

*Sourcing process* - in the case company context, a sourcing process means managing and finding new suppliers to provide services and goods and includes the overall process from searching to managing and auditing the suppliers and minimizing the risks related to supplier actions.

*Global scale* – in the case company context, it means controlling and handling sourcing related activities globally for the business division and the plants related to the business division.

*Sourcing organization* – is responsible of creating processes and managing day-to-day activities related to sourcing processes defined by the case company and the case organization.

*Local supplier* – is usually a supplier that is focusing on certain products that are delivered to local plant near by geographically.

*International (global) supplier* – is a supplier type that can deliver goods to multiple plants across the regions.

*Category* – is a section that defines what kind of items or products belong to this category and what are the typical characteristics of the item or product group.

## 1.2 Case Organization and Case Company Background

The case organization of this thesis, a Global Sourcing unit and works for the case company that is one of the world's leading manufacturers of industrial equipment. More specifically, the case company is one of the biggest equipment provider for process industry in the world. (Case company web-site, accessed 5.11.2015)

The case organization where the thesis work is done to is part of the case company's business division that produces valve combinations. The business division mostly manufactures the uniquely engineered valves and valve related equipment for process industries at its Helsinki plant. The case organization of this thesis is a Sourcing organization responsible for managing and finding new suppliers for this business divisions products and parts. Sourcing organization also actively compares the existing 3rd party partners and subcontractors regarding their prices and expenses in order to be competitive price and time wise. Sourcing is eventually the first and the most important part of the supply-chain for the production in the Helsinki plant and other plants as well.

## 1.3 Business Challenge

The thesis focuses on streamlining the current process for new supplier search and supplier selection in the case organization, Global Sourcing unit of the case company. These two are parts of the sourcing process used in the case company on the Global scale. The Sourcing process was developed in 2012, and does not yet give detailed guidance how the sourcing should be done in terms of supplier search and selection, as well as shows some mixed procedures since there are two processes overlapping with the same subject. The current processes give only general guidelines on how the sourcing organization should work globally. Therefore, there is a need to specify and improve/streamline the current supplier search and supplier selection process and adjust it to the needs and practices of the case organization. Currently, the sourcing is done as somewhat ad-hoc, meaning that the key stakeholders have their own way of using the processes and also own way in general how to do the sourcing.

More specifically, the thesis focuses on Global Sourcing, which have different needs than the local sourcing offices. In the Global scale of the case company, suppliers are mainly global, but for the local plants both, local and international suppliers, should be used.

Moreover, to have costs down, it is believed in the case company that stock levels of components should be minimal and this also means that there is less capital attached to warehousing items that circulate slowly. As such, cost efficiency is one of the key action points in the current strategy that the case company published in 2014. Moreover, the trend is that most customer orders are custom designed for their needs, which is one reason why the case company has a good reputation and is competitive in the area of business they operate in. Customer customized products and services, in turn, leave little to no room for stock products and mass production, which also means that the number of certain products on a yearly basis is hard to predict. At the same time, many suppliers and 3rd party machine shops usually want to make series of items instead of individual orders, which comes in contradiction with what the case organization, Purchasing and Sourcing, is heading for in the Helsinki Plant.

Challenge for the case organization in this current situation is to find suitable 3rd party partners and suppliers for defined category groups for globally for other plants. Also it is challenging to find suitable suppliers pricing wise, which would at the same time provide quality defined by the case company standards for their products. The current sourcing strategy should also reflect on the subject and business challenge, as well as reduce the ad-hoc way of working, which will be examined in detail in the current state analysis, in Section 3.

In this situation, the case organization needs to improve its current supplier search and selection process, so that they to be able to find and select suitable suppliers through in a structured, improved way of working and achieve the organizational and strategic aims mentioned above.

#### 1.4 Objective and Scope

Objective of the thesis is to further develop/streamline the current processes of new supplier search and supplier selection in the Sourcing organization and reduce the ad-hoc type of way of working. For this purpose, the thesis will propose improvements to the current processes of new supplier search and supplier selection in order to make the

sourcing process more structured and transparent. These improvements will also bring best practice found from literature into consideration for the case organization.

The scope of this thesis is limited only to supplier search and selection due to the reason that, within the case company's sourcing organization, auditing and supplier quality management is highly developed, and it is executed within the current suppliers and supply base. Therefore, the scope of the thesis is to propose a more detailed process, better understanding and also to give the key stakeholders, in their daily work, a platform to continue developing work and sourcing categories inside the sourcing organization.

This thesis is written in seven sections. Section 1 is the Introduction. Section 2 introduces the methods and materials used in the thesis. Section 3 contains the results of the current state analysis. Section 4 discusses available knowledge and best practice in supplier search and selection for sourcing. Section 5 presents a proposal for the supplier search and selections in the improved sourcing process, based on the case company background and understanding of the case organization's challenges. Section 6 presents the results of the proposal validation. Section 7 includes the summary and evaluation of the thesis.

## 2 Research Approach

This section describes the research approach, research design, as well as presents the data sources and analyses methods used in this thesis. Finally, it presents the reliability and validity plan to ensure quality research work and results.

### 2.1 Research Approach

The research approach used in this thesis is quantitative research, and more specifically is case study. According to Yin (2003), case study should be used when a) the focus of the study is to answer "how" and "why questions"; b) one cannot manipulate the behavior of those involved in the study; c) one wants to cover contextual conditions because they are relevant for the study, or d) boundaries are not clear with the subject and the phenomena. Also, Noor (2008) states that case study can be strategic methodology where the investigations falls over contemporary phenomenon within its real life content using multiple sources of evidence.

To make the difference between case study and action research Huang (2010) has stated the following: "Action research represents a transformative orientation to knowledge creation in that action researchers seek to take knowledge production beyond the gate-keeping of professional knowledge makers.' In action research the researcher should separate the understanding and the action from each other and should argue through action legitimate understanding is possible and theory without practice is only speculation. (Huang 2010)

Accordingly, for this study, case study is a correct way to start tackling the earlier mentioned business challenges and utilize the qualitative approaches for data gathering. Reason for this is that sourcing processes and the current way of working were not at any stage measurable.

Next, the people who use the target process in their daily work somewhat affected the thesis scope, with their thoughts and opinions regarding the current processes, secondly the processes itself was the focuses of analysis. Scattered process practices around internal databases and different ways of working around the sourcing organization led to the fact that two different approaches needed to be explored in order to fully understand the underlying issues. Therefore, case study was chosen as a research approach for this thesis.

## 2.2 Research Design

The research design has been created as a simple chat in order to follow the logical order of the research process in the thesis.

The research design is presented in Figure 1 below. It is split into six steps. The first stage of the research design is the preliminary phase where the business challenge and business objective were defined. After that, the second stage is the current state analysis based on Data collection 1. This stage specifies the focus for improvement in the current sourcing process. This stage is based on the first data collection. Part of the first data collection is a survey with the key stakeholders, backed by with the investigation of the current process based on internal documents, participant observations, and discussions with the key stakeholders.

After that, the third stage is the search for available knowledge and best practice from trustful sources and academic literature. Based on this search, the conceptual framework is built as a logical frame for the proposal development in the thesis. Based on the merge of the results from the current state analysis, coupled with suggestions from literature and best practice, and most importantly, insights from Data collection 2, the first proposal is constructed. Data collection 2 draws from the discussion with the key stakeholder, the sourcing director.

After this, the next step is the review of the process inside sourcing organization and validated inside the sourcing organization by the sourcing director during the validation session. This data collection makes Data 3. As the purpose of the thesis is to serve the sourcing organization, the first review of the proposal cannot be the final form. Development ideas and wishes of the sourcing organization are taken into account when building the final proposal. After the validation and proposal feedback, the final proposal is built.

The research design is presented in Figure 1 below.

## Research Design

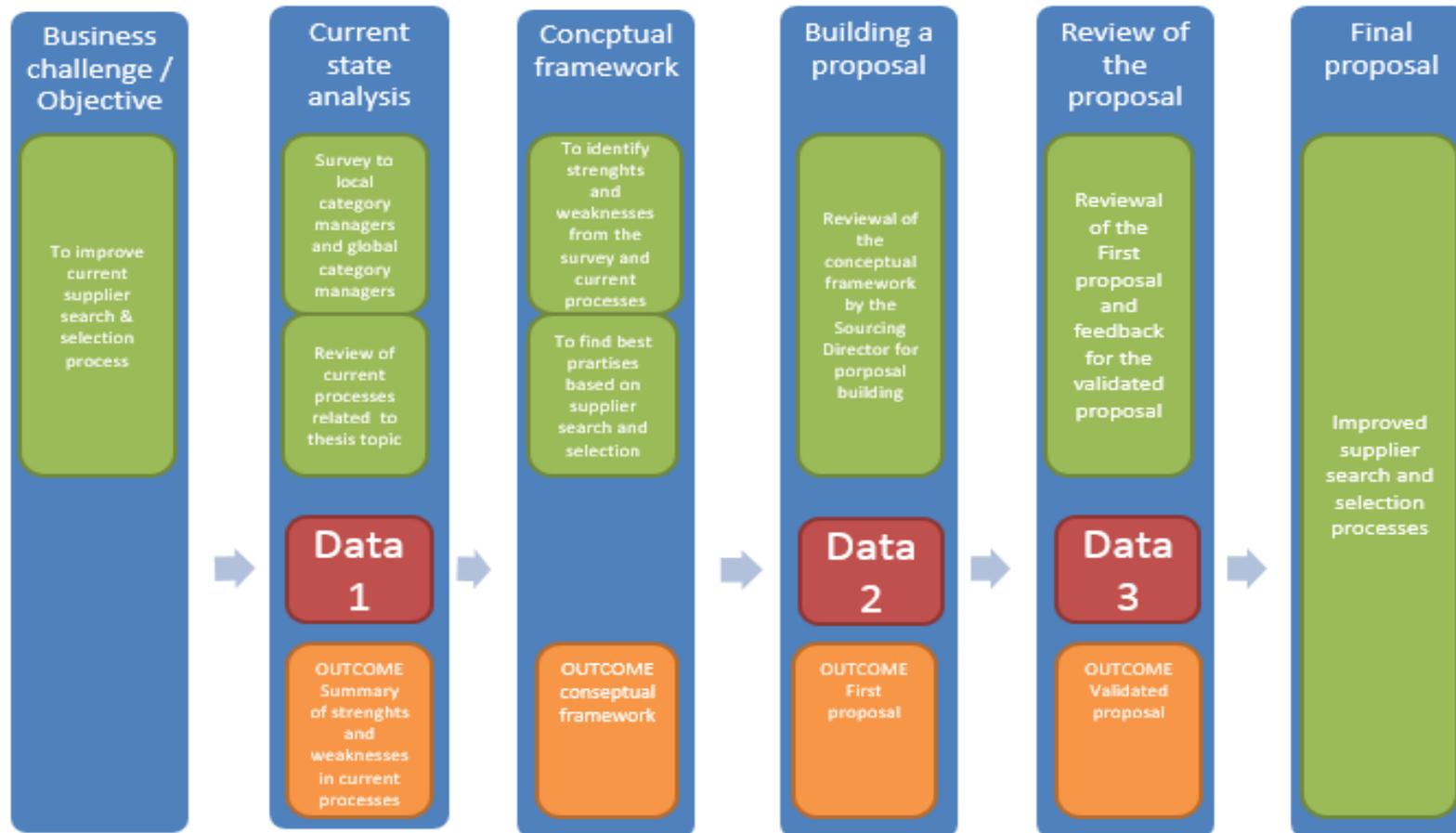


Figure 1. Research design for the thesis.

### 2.3 Data Collection and Analysis

In this thesis the data was collected in three rounds, using quantitative data analysis.

In quantitative research, the first step is to determine who are the key stakeholders that fulfil the listed requirements are: (1) the most knowledge inside the case organization, (2) the persons that the current process is being affected daily and used by. Based on this approach, the target group for the quantitative research design were the category managers from Purchasing and Sourcing organization. The main stakeholder among them was identified as the process owner, the sourcing director of the case organization.

Next step was to decide how the data gathering would be done in order to get best results for the study. In addition to participant observations and discussions with the category managers and the sourcing director, it soon became obvious that the only way to gather data was to conduct a survey. Reason for the survey was, because of time limitations and the fact that it was very hard to find schedule for individual interviews from each category manager.

Other approach to conduct the current state analysis was cover the whole subject for the case company by examining and analyzing the current processes in order to get better understanding and also to find the weaknesses and strengths that the current processes have regarding supplier search and selection based on existing theory.

These sources combined the data collection and helped the analysis and understanding of first, the correct state, then the proposal building, and finally validation, gathered from three rounds of data collection, and obtained within the time limitations and with the material from the case company available for this study. Table 1 below shows the three rounds of data collection.

Table 1. Data collection table.

Data	Content	Data sources	Data type	Date, suration
<b>Data 1</b> Current state analysis	<ul style="list-style-type: none"> <li>Identifying area's that are strong and those that are weak (S&amp;W analysis)</li> <li>User experience</li> </ul>	<ul style="list-style-type: none"> <li>Case organization internal documents</li> </ul>	<ul style="list-style-type: none"> <li>Process charts, guidelines and suggestions</li> <li>Fierled notes</li> </ul>	<ul style="list-style-type: none"> <li>November 2015, 2 weeks</li> </ul>

		<ul style="list-style-type: none"> <li>• Category managers (discussions)</li> <li>• Survey</li> </ul>	<ul style="list-style-type: none"> <li>• Survey answers</li> </ul>	
<b>Data 2</b> Proposal building	<ul style="list-style-type: none"> <li>• Improved process (suggestions for the initial proposal)</li> </ul>	<ul style="list-style-type: none"> <li>• Sourcing organization Director</li> </ul>	<ul style="list-style-type: none"> <li>• Field notes, written feedback</li> </ul>	<ul style="list-style-type: none"> <li>• December 2016, 1 hour</li> </ul>
<b>Data 3</b> Evaluation of the Final Proposal	<ul style="list-style-type: none"> <li>• Validation of the improved process (acceptance of the final proposal)</li> </ul>	<ul style="list-style-type: none"> <li>• Sourcing organization Director</li> </ul>	<ul style="list-style-type: none"> <li>• Field notes, written feedback</li> </ul>	<ul style="list-style-type: none"> <li>• December 2016, 1 hour</li> </ul>

## 2.4 Validity and Reliability Plan

During the study it is essential to take into account the validity and reliability of the study. To achieve the best results, as stated by Yin (2003:34-39), validity needs to be ensured with accurate data that is being collected and the analyzing of the data has to take into account the stakeholders that are participating in the study. To achieve valid outcome researcher has to take into account possible alternative explanations found in the literature and also given by the stakeholders to avoid researcher bias in the study.

The validity in this study was ensured by having different discussions with the key stakeholders and gathering information from the stakeholders themselves via study that was conducted. Also the analysis of the current processes was done in order to understand the requirements for the study and also to understand the business requirements. Lastly, the key stakeholder feedback throughout the study will be done in order to achieve validity.

In this thesis, reliability was planned to be ensured by conducting the study in a manner that another person conducting the research would end up in the same result in different time. To ensure reliability, it is essential according to Yin (2003) to use multiple sources of evidence to establish chain of evidence for the study and lastly to have the key informants review the study. Reliability requires that the study should use, in case it is a case study, the protocol defined for it alongside with a case study database for data collection. In order to ensure the reliability of the thesis the reliability can be improved by using

different data sources and data collection methods and documented research procedures. The collected data and literature review in this study will follow the reliability and validity requirements described in this chapter.

With these definitions, the validity and reliability plan for the study was constructed.

### 3 Current State Analysis

This section discusses the results of the current state analysis, based on data collection from interviews and survey results. Also, the current state analysis includes detailed current sourcing process and sub-processes descriptions in order to have a clear view of the processes as a whole. This section starts with introducing Global Sourcing also and the roles of Category Managers.

#### 3.1 Overview of the CSA Stage

First, the current state analysis starts with an overview to the background of the case organization. It is done based on the case company's internal document material, with the focus on how the organization is represented to other organizations inside the case company.

Second, the current state analysis continues with the analysis of the current elements related to new supplier search and selection. It is done based on the Sourcing organization documents that are used for the sourcing process inside the Helsinki Plant and also globally with some categories

Third, the current state analysis describes and analyzes the survey that was conducted to the Category managers who are part of the Sourcing organization and Helsinki plant.

Finally, the current state ends with the analysis of the current S&W strengths and weaknesses of the current steps related to (a) the new supplier search and (b) the supplier selection. It helps to get the processes evaluated and opened up, so that to get understanding what makes the challenges in the current sourcing process and its procedures.

#### 3.2 Background of Case Organization

The case organization where this study focuses on is part of Case Company's defined manufacturing division. The described business division mostly manufactures the uniquely engineered valve's and valve related equipment for the oil & gas industry for other process industries at Vantaa plant. The case organization is a Sourcing organization responsible for managing and finding new suppliers for the detailed business units products and parts. Sourcing organization also actively compares the existing 3rd party partners and subcontractors regarding their prices and expenses in order to be competitive

price and time wise. Sourcing is eventually the first and the most important part of its supply chain.

### 3.2.1 Global Sourcing Organization and Its Strategy

In the case company, Global Sourcing is responsible for developing suppliers to support operations network globally and managing key suppliers systematically. In order to achieve supplier excellence, cost advantage beyond China and implementing total cost model, Global Sourcing team integrates supplier delivery, quality, and category managers into one unified function. (The case company intranet, accessed 5.11.2015).

Figure 2 below shows the structure of the Global Sourcing organization in the business division.

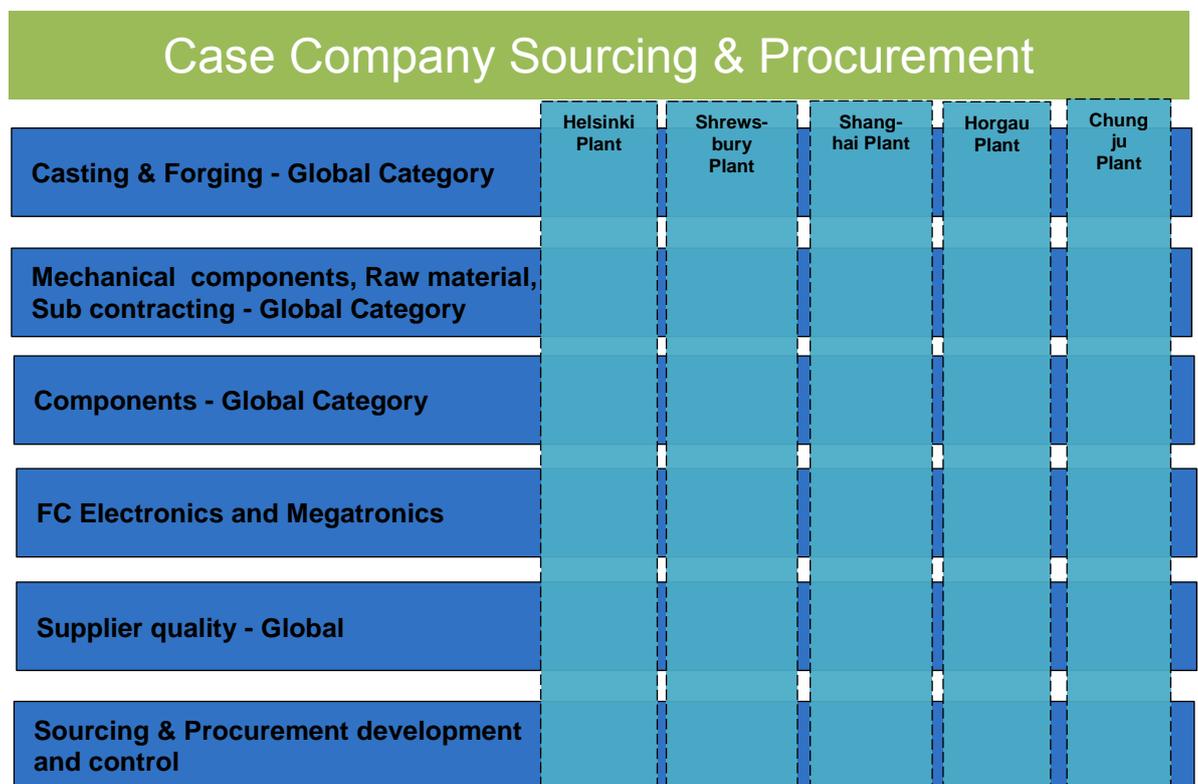


Figure 2. Sourcing Organization (The case company intranet accessed 8.11.2015).

As shown in Figure 2, on the left side, there are all the local sourcing offices and also the global category organizations. All of them work in a matrix with the different plants that the case company have in the business division.

The thesis focuses more on Helsinki plant where the Sourcing organization needs to fulfill their own and company strategy regarding sourcing purchasing, sourcing and other internally defined strategies. The focuses of the thesis is placed on improving the current process for new supplier search and supplier selection, since these two are parts of the sourcing process that is used in the case company in Global scale.

Helsinki plant sourcing, however, has different needs than in Global scale. In the Global scale, for other plants of the case company suppliers are mainly local, but in Helsinki plant uses both, local and international suppliers, more than in the other plants globally. The Sourcing process was created in 2012 and does not give very detailed information on how the sourcing process is done, in terms of guidelines for supplier search and selection, giving only general information on how the sourcing organizations work globally. Therefore, there is a need to specify and improve the current supplier search and supplier selection process and adjust it to the needs and practices of the case organization. Specifically, the processes for new supplier search and selection should take into account in the strategy of the case organization.

The latest strategy for Global Sourcing organization aims at achieving the following targets: (a) reducing the total cost of products by moving 32% to cost competitive countries, (b) improving networking capital by VMI and reduction of supplier lead time, (c) getting spend under management, (d) developing proactive strategies based on market indexes, (e) standardizing procurement process and controls, (f) developing further strategic global supplier relationship (Source: The case company Intranet). As stated in the strategy documents for the vision:

“Our supplier network will be most efficient network in industry in terms of Quality, Delivery & Cost.” (The case company intranet – Sourcing organization intranet page, accessed 8.11.2015)

“Our cost target is to reach 4% saving of our annual spending by category management approach, 5% of realized saving and 10% of identified saving annual base.” (The case company intranet – Sourcing organization intranet page, accessed 8.11.2015)

This strategy (2012-2013) is applied during this thesis work for improving the new supplier search and selection processes.

### 3.2.2 Roles in the Sourcing Organization: Category Managers

Category managers manage their own suppliers and are also responsible that the defined items that belong to their own suppliers are delivered on time and with the agreed quality for the production use in such manner that the supply chain works as defined and agreed in the plant level.

Category managers can either belong to purchasing or sourcing organization. In the Helsinki plant, there is a category manager for each category group. Category groups are the following: (a) Casting and Forging, (b) Mechanical Components, Raw Material, Sub contracting, (c) Components, (d) Electronics & Megatronics.

Each category group manager has to be aware of the suppliers that are being used by the buyers by their category. Category manager also updates prices and has price negotiations with supplier that have contract with the case company. The price negotiations are done based on the contract agreements. Category managers also search and investigate if suppliers globally can provide same products or parts with a cheaper price. Category managers also are responsible of searching new suppliers and selecting them based on the current case company processes that are now in place. Also, category managers are responsible for savings and potential savings for their category group. These tasks are in line with the current strategy (Section 3.2.1) where the case company defines the crucial areas of Sourcing objects and the Sourcing process.

### 3.3 Current Processes in Sourcing Organization in Helsinki Plant

The existing processes and documents related to the sourcing process are shown as one table where the process flow is divided into six different phases. Inside these phases there are supporting documents or processes related to that specific phase. This table summarizes all the processes and supporting documents for the 6-step process from the project until the Supplier is in a day-to-day action with the business units purchasing. In the last phase, the supplier is evaluated annually. Figure 3 below represents the flow of the sourcing process as described in the case company intranet.

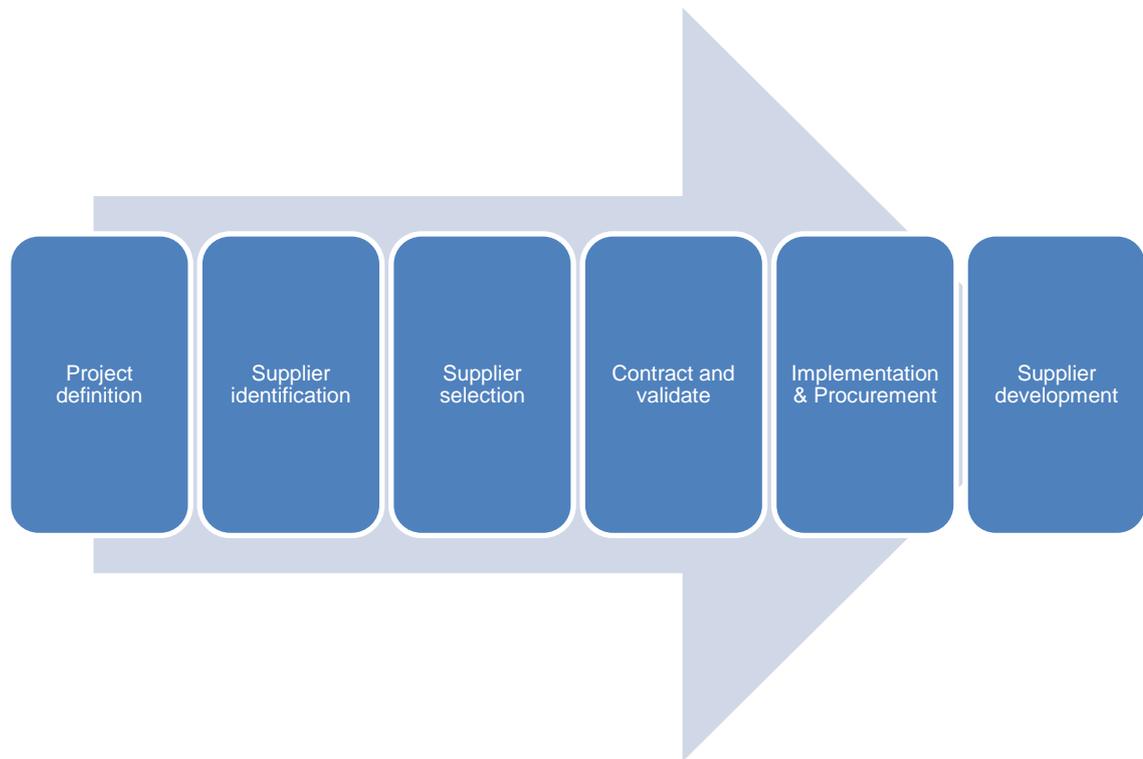


Figure 3. Sourcing process flow. Intranet modified by author (accessed 5.11.2015).

The current Sourcing process that is being used as the most recent one is described in the Supplier quality manual, where it is placed on the sourcing process in Phase 1, Project definition and in procedures. The supplier quality manual has six sections. First section is the case company's Code of conduct and Sustainability Criteria for Suppliers which is general guideline how suppliers should operate in order to be in business with the case company. Second section is Expectations, Responsibilities and Communication. Third one is Business division and Sourcing Process. Fourth one relates to agreements. Fifth one is Delivery, and the sixth one is Claims.

In the Supplier quality manual, only the first, second and third sections cover information that describes the processes and procedures that relate to supplier search and selection. As the descriptions do not flow in a linear order, the materials from the manual will be discussed in relation to the new supplier search and supplier selection processes.

### 3.3.1 Business Divisions Sourcing Processes

The current processes are part of the case company business divisions sourcing organizations guidelines for the new supplier search and selection. Figure 4 shows the current sourcing process as it is described in the Supplier quality manual. However, the Sourcing process in the manual differs from the other that are listed in the case company's intranet

and also in Notes database where this exact procedure is listed. Figure 4 shows the process as it is described in the manual.

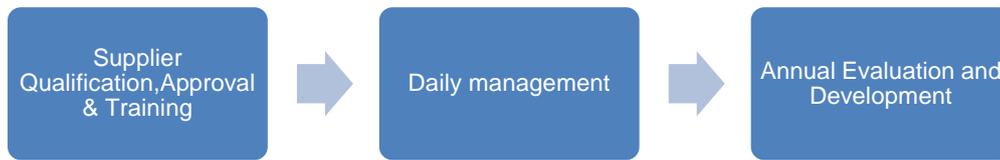


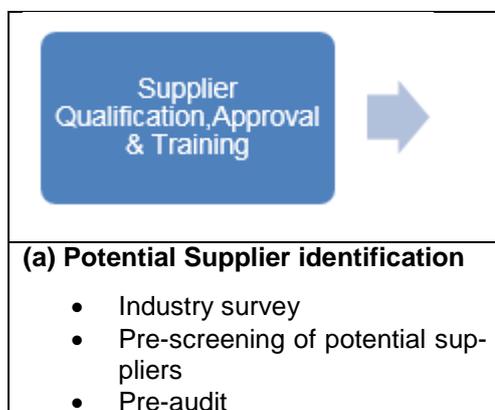
Figure 4. Sourcing Process. Internal document: Supplier Quality manual QSP-0037.

*Supplier Qualification Approval and Training* consists of three subsections. These are (a) Potential Supplier identification, (b) Supplier selection and (c) Contract Making and Validation. Process wise they are in the same box, as shown in Figure 5 below.



Figure 5. Sourcing Process, Phase 1 (Internal document: Supplier Quality manual QSP-0037).

*Potential Supplier Identification* is where new supplier development is done. Potential supplier identification consists of five elements, as shown in Figure 5 below.



- Capability self-assessment made by the potential supplier
- Risk assessment

Figure 6. Sourcing Process, Phase 1. Potential supplier identification (Internal document: Supplier Quality manual QSP-0037).

Presently, Potential supplier identification is only described as a list of points and does not have any further information as for what they are, or if there are any procedures, or where, or how they can be found.

Next, Supplier Selection consist of stages which be seen in Figure 7 where (a) the commercially feasible potential suppliers are audited and (b) their quality assurance level is established, as well as (c) technical capability is evaluated. Based on the audit results and overall evaluation, Sourcing can determine if the supplier is approved or not approved.

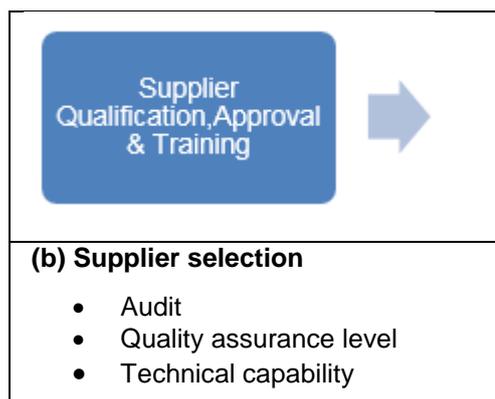


Figure 7. Sourcing process, Phase 1 Supplier selection (Internal document: Supplier Quality Manual QSP-0037).

As shown in Figure 7, the steps include the following: (a) the commercially feasible potential suppliers are audited and (b) their quality assurance level is established, as well as (c) technical capability is evaluated. Based on the audit results and overall evaluation, Sourcing can determine if the supplier is approved or not approved

Finally, as seen from Figure 8 below, the last phase is Contract making and validation, at which the supplier will be created into the case company ERP system.

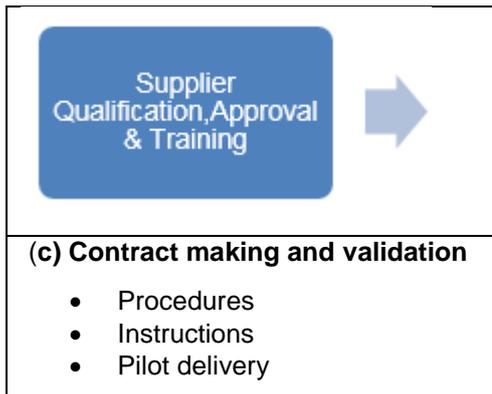
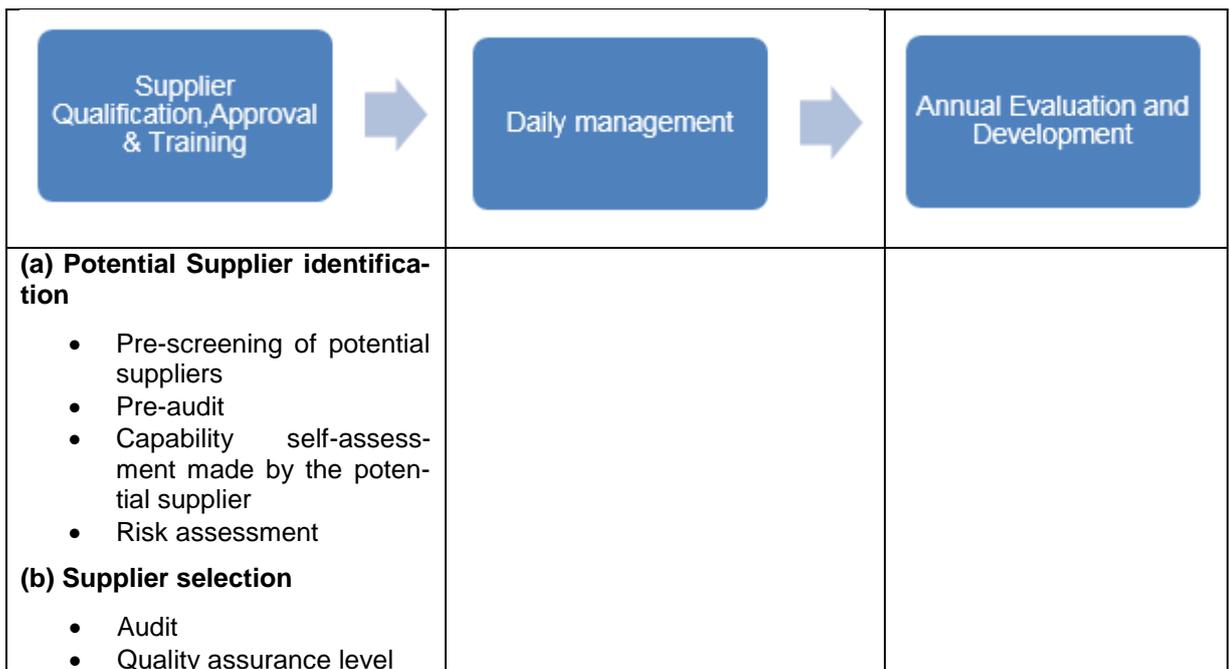


Figure 8. Sourcing process, Phase 1 Contract making and validation (Internal document: Supplier Quality Manual QSP-0037).

After the supplier has been entered into the ERP system, the Global sourcing team will introduce the case company procedures, instruction and specifications to the supplier in order to prepare the pilot order/delivery. The pilot order/delivery must be approved and is also mandatory in order to be approved as the case company supplier. This specific phase does not give information what make the procedures, instructions or specifications are that are supposed to be introduced to the new supplier.

Lastly, the last two boxes of the current Sourcing process are Daily management and Annual evaluation and development. They show the steps for the supplier that has earlier been providing services to the case company, or is in a situation that they have been qualified, approved and trained. These two phases after supplier Qualification, Approval & training, are the phases that are out of the thesis scope.



<ul style="list-style-type: none"> <li>• Technical capability</li> </ul> <p><b>(c) Contract Making and Validation.</b></p> <ul style="list-style-type: none"> <li>• Procedures</li> <li>• Instructions</li> <li>• Pilot delivery</li> </ul>		
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Figure 9. Sourcing Process with Phase 1 descriptions (Internal document: Supplier Quality manual QSP-0037).

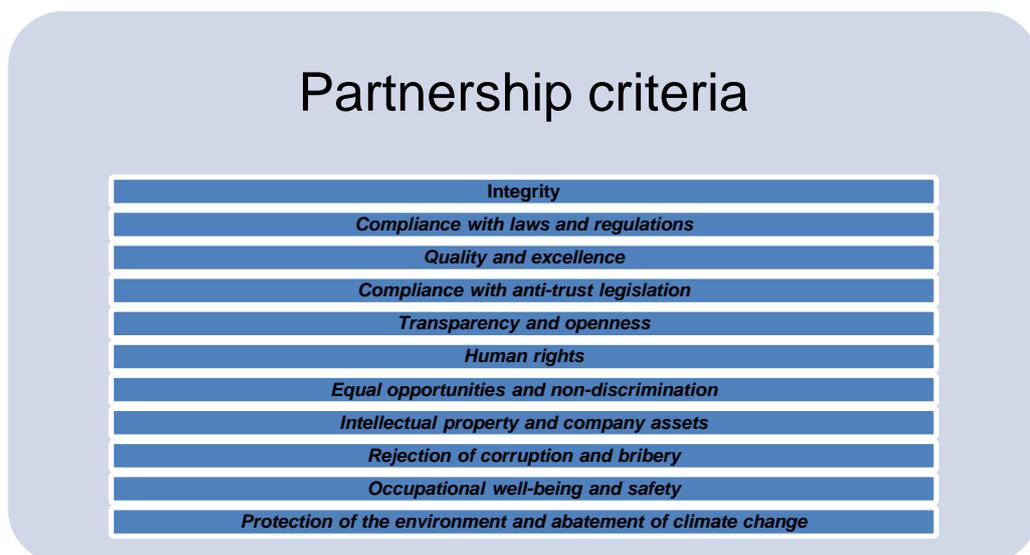
In Figure 9, Phase 1 includes information regarding the supplier search and selection. Next, the study analyzes procedures that are part of the Intranets 6 step sourcing process presented in Figure 9.

### 3.3.2 Case Company Code of Conduct and Sustainability Criteria for Suppliers

The case company’s code of conduct and sustainability procedures purpose is to provide stakeholders accepted guidelines and perspectives for future decisions. The code of conduct creates a foundation for business transactions and work assignments. The code of conduct sets standards for supplier and contractor to demonstrate ethical standards and criteria when establishing or continuing business relationship. This document can also be found on the phase two of the main process under supplier.

The partnership criteria have 11 pre-defined sections that the supplier has to take into account when considering partnership with the case company. These criteria are shown in Table 2 below.

Table 2. Partnership criteria in the case company’s code of Conduct and Sustainability Criteria for Suppliers procedure.



The first pre-defined section is integrity. According to the Partnership criteria, integrity is a fundamental characteristic for all dealing and statements and is also essential aspect of sustainability in Case Company.

The second pre-defined section is *Compliance with laws and regulations*. This means that the supplier have to comply with national and international laws, regulations and generally accepted practices.

The third one is *Quality and excellence*. This essentially states that the supplier have to allocate adequate resources and required competence for reaching the level of quality that is expected by Case Company. Also, to ensure cost-efficiency and continuous improvement in quality.

The fourth one is the *Compliance with anti-trust legislation*. This means in the countries the supplier operates in.

The fifth one is *Transparency and openness*. This means that the case company is allowed to ask information from the supplier concerning the criteria for sustainable development and their business with Case Company. Also the supplier is obligated to report any deviancies that may appear in the information they provide.

The sixth one is *Human rights*. The case company states that child labor is prohibited and the supplier must comply with the principles of the UN Declaration of Human Rights and accept the basic labor rights which are defined by the International Labor Organization.

The seventh one is ensuring equal *Opportunities and non-discrimination*. This means that the case company does not allow discrimination based on race, caste, national origin, religion, disability, gender, sexual orientation, union membership, political affiliation or other comparable reasons. Discrimination that is mentioned on the seventh section can be in hiring, compensation, training opportunities, promotions, termination of employment or retirement.

The eight section is *Intellectual property and company assets*. This states that the supplier has to safeguard the case company's intellectual property and confidential information and has to deny access to these mentioned assets from outsiders.

The ninth criteria is *Rejection of corruption and bribery*. Here, the case company defined that the supplier must not become involved in a business relationships that may lead to

conflicts of interest. The case company states that the supplier must not pay bribes or other illegal payments to obtain or retain business, or to facilitate favourable decisions or services from authorities. Also, money laundering is prohibited.

Section ten is *Occupational well-being and safety*. The case company has four steps in this section that determine the safe and working environments that the supplier shall provide. First is a risk management plan that determines and recognizes the work related risks and hazards. Second one is related to personnel's right for a clean and safe working environment. Also, that the personnel have safety equipment provided and safe way of working introduced.

Finally, section eleven is the *Protection of the environment and abatement of climate change*. This section describes how environmental impacts should be taken into account and how to reduce waste. Also, how to safely and appropriately manage the waste that the supplier produces. This section also states that the supplier must comply with environmental legislation and official regulations and, also, the supplier must have the necessary environmental permits that are needed to produce products or services.

As seen from this description, *the Code of conduct* contains generic information package to evaluate new suppliers. The document itself does not give many detailed descriptions on how to perform, but gives a direction that the case company expects from its suppliers. Most of the predefined sections that have been introduced are concepts that are common with companies that take sustainability seriously and without a question are basic requirements that companies in Finland follow. The Code of conduct essentially secures the case company if its supplier causes legal activities to itself or environmental problems or any of the predefined steps that are defined in the partnership criteria. The code of conduct itself does not work as a supplier selection procedure.

### 3.3.3 Pre-Audit Form

A Pre-Audit form consist of five different phases that describe the activities that are expected from the potential Supplier. The phases and activities can be seen from Figure 8 below.

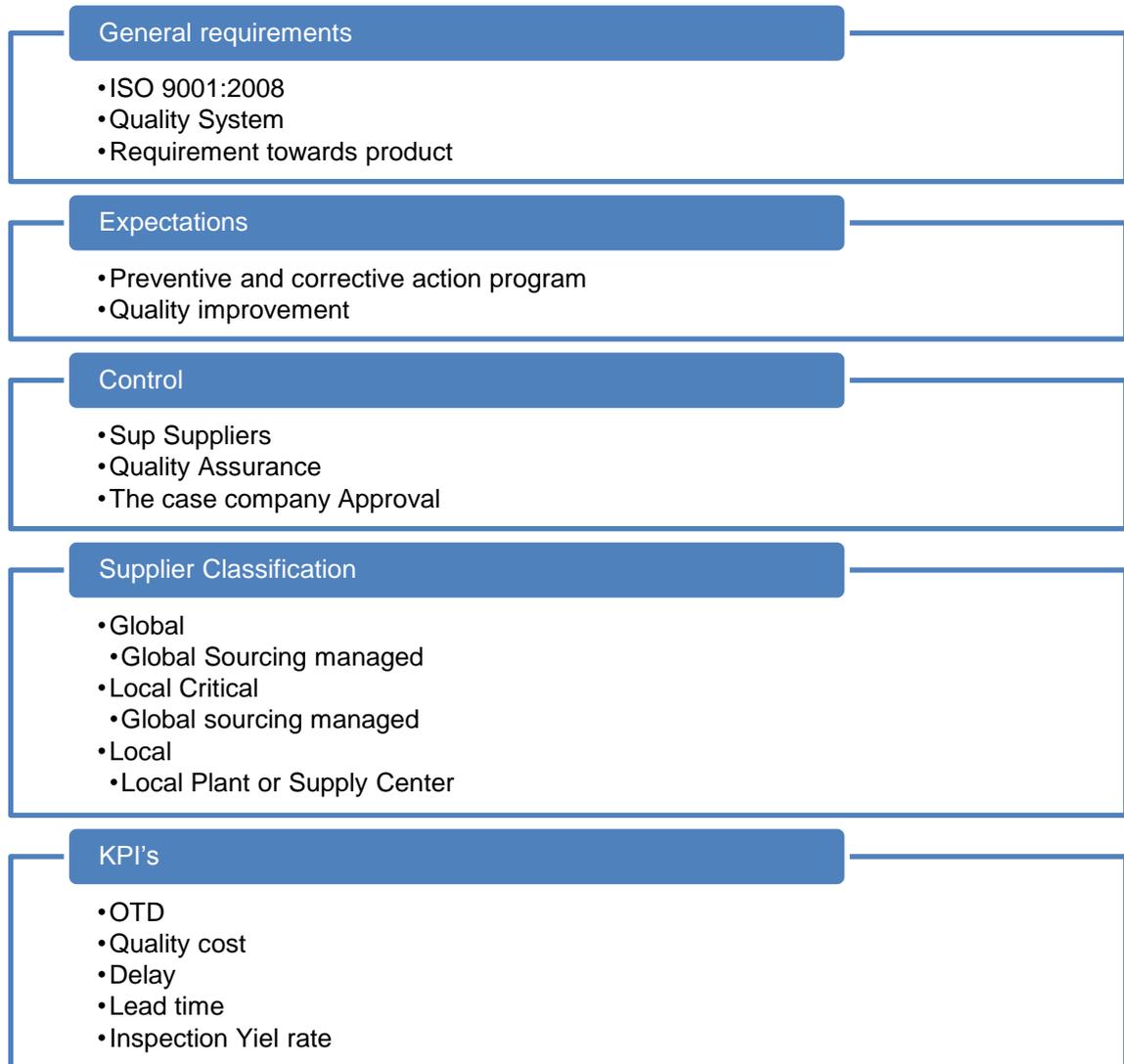


Figure 10. Pre-Audit form phases, internal procedure Pre-audit form.

The first mentioned requirement in the first phase which is titled as General requirements towards suppliers is an ISO 9001:2008 management system. Also, this phase states that the case company requires a 3rd party certified previously mentioned quality system from a foundry and forging suppliers. Also, if the supplier is providing pressure bearing materials the quality system shall comply Pressure Equipment directive 97/23/EC, Annex I, section 4.3. These general requirements do not specify what the quality systems in practical are or what they consist of. The general supplier quality requirements also specify that the supplier shall demonstrate the capability to attain the requirements and qualifications of any product or process related standard as defined by the case company procedures.

In addition, as part of expectations, the case company defines in this section that the supplier must be committed to applying preventive and corrective action programs utilizing basic tools and concepts. These can be Pareto chart, fishbone diagram, FMEA, design of experiments and PDCA. Also, it is stated that the supplier is expected to continuously look for areas of quality improvements with systematic approach.

The case company has requirements for supplier controlling their suppliers, which are referred as sub-suppliers. The requirements are that the supplier is responsible for managing their tier two supplier quality assurance and conformance to any the case company procedures and specifications. This may require quality audits and quality targets. It is stated in manual that sub-supplier that are involved with machining of materials that are being used in pressure bearing must be approved by the case company Global Sourcing.

The case company has also defined supplier classification in this section. The suppliers are divided into three classes based on their role and criticality. The classes are following: (a) Global supplier, (b) Local critical supplier, and (c) Local suppliers. *Global supplier* delivers products or services to one or more Business Division's plants or supply centers. This type of the supplier is managed by Global Sourcing. Performance is monitored in global scale. *Local critical supplier* delivers their products or services to some of the Business Divisions locations and these suppliers are considered critical due to high spend or high quality requirements. Also with local critical supplier the Global Sourcing has ownership. Finally, *Local suppliers* are suppliers that are not listed in the first two classes. Local suppliers are managed by local plants or supply centers.

As a part of supplier classification, the case company also have specified item categorization for the suppliers. These categories have own teams that manage the sourcing. Category list is shown in Table 3 below.

Table 3. Item categorization for the suppliers.

Helsinki	Plant	item
Categorisation		
Automation & Electronics		
Castings & Forgings		
Hydraulics & Pneumatics		

Machines & Other devices
Mechanical components
Non-operational procurement
Raw materials
Subcontracting
Transportation and forwarding

According to the process T-2439GB procedure these categories have requirements that are set by each category specifically and the category teams are responsible for developing and updating the procedures. The category specified procedures were not available in the Sourcing Process table or the database itself.

The case company's *Expectations towards the suppliers* in the procedure is to maintain business relationship with the suppliers that strengthens the case company's competitiveness and benefits both parties. The case company monitors suppliers by certain KPI's. Such as OTD, Quality cost, length of delay, lead time and incoming inspection yield rate.

The Pre-Audit form works as an assurance and agreement for the case company that the supplier will comply the requirements and also give some information about the company and the described phases.

#### 3.3.4 Approval of New Suppliers (Document T-2439GB)

The case company has procedure for the approval of new suppliers. The procedure is meant for the following group of employees: Purchasing Director, Sourcing Manager, Category Manager, Supplier register clerk and Quality manager. The procedure has defined steps for purpose, scope, responsibilities, pre-audit, contractual issues, process and QA assessment, Pilot delivery, Decision and accepting the new supplier and Special cases which can be seen from Figure 11 below.

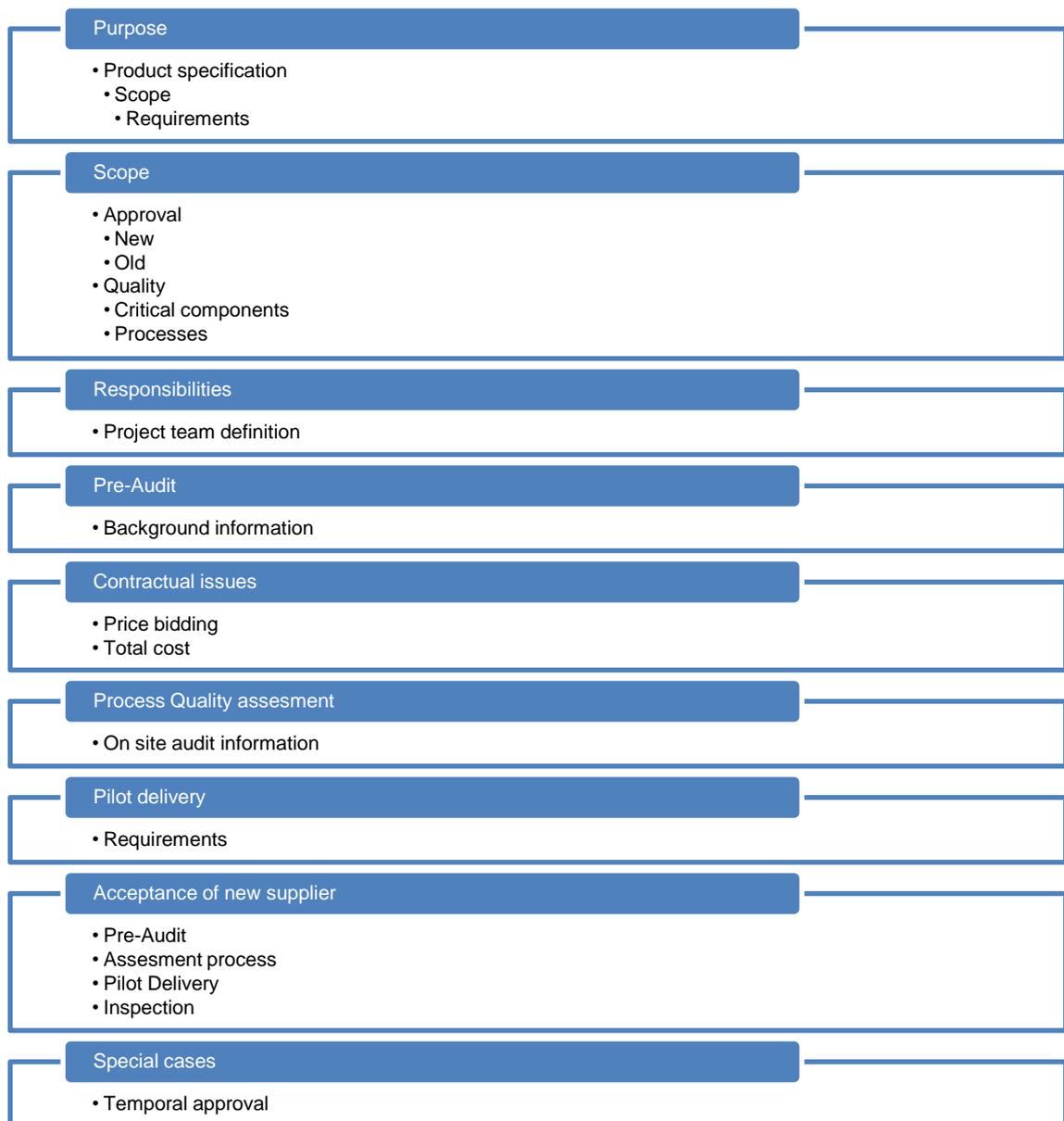


Figure 11. Approval of New Suppliers phases (Document T-2439GB).

As seen from Figure 11, the first step in the approval of a new supplier is the Purpose. The purpose of the procedure is to make sure that suppliers to production partners are able to act according to the product/service specifications agreed upon and deliver the products within the scope and agreed requirements.

The second step is the scope. Scope defines that the whole approval of new supplier document is valid for new supplier and also for the existing suppliers. The procedure has to be taken account when selecting supplier that affect the quality of delivered products or who are manufacturing products as marketed as the case company products. Also,

special attention has to be taken into account the supplier is supplying critical components or processes such as components affecting product safety, components critical for production safety and final sub-assemblies.

The third step is the responsibilities which describes the roles of the employees taking part of this process. Meaning of the third step is to define the project team and responsibilities.

The fourth step is the pre-audit. Pre-audit can be done when acquiring background information about the supplier candidate. The procedure prefers on-site visits. Pre-audit step defines certain basic information that has to be included when checking supplier candidates. These are turnover of the company, number of employees, machinery and equipment, financial background, ownership and references of their work. Also, Pre-audit has main areas and so called aiding questions for the person who is making the audit. Auditor has to find out and think if the candidate has a) quality and environment management system, b) is the candidate certified c) what is the management's commitment d) what are their responsibilities and efficiency e) do they have development programs and finally if they make corrective actions and systematical continual improvements. The pre audit phase also reminds that when dealing with candidate abroad the risks as well as quality assurance actions shall be evaluated. Purpose of this step is to give enough information that the pre-audit result can give a good understanding of the supplier and also a hunch if the supplier is capable of being an accepted supplier for the case company.

The fifth phase is the contractual issues. The document defines that if there are no previous price examples or existing suppliers at least two different bids shall be conducted. The price evaluation shall be based on the total cost which needs to take into account the following element: purchasing price, delivery costs, tooling costs, customs and fees, packing costs, redundant storage costs, claim costs. Also, additional issues can be taken into account such as: terms of delivery, terms of payment, technical specification, inspection / quality assurance and claim handling procedures.

The sixth stage is Process and QA assessment. Purpose of this phase is to give instructions briefly on how to make and audit in suppliers' premises. The audit should be done in the production plant while it is in action to give accurate and normal description of the working environment. The process audits purpose is to evaluate the capability to supply the required product/service and the technical risk the supplier could cause. Following

items and observations should be conducted during the audit: level of effectiveness of the quality and environment system, level of target and development projects, practical co-operations skills, level of product/service requirements, packing, delivery terms, delivery time, production processes, management processes, information processes and quality assurance. Also, environments assessment should be part of the process audit. Environmental assessment should be conducted if the supplier does not have certification given by classification society.

The seventh step is the pilot delivery. Pilot delivery can be done after the supplier is approved and passed the requirements from previous steps. There is a separate procedure how to perform a pilot delivery and what are the requirements for a pilot delivery.

The eighth step is the acceptance of the new supplier. Acceptance of the new supplier is done based on the pre-audit, assessment process, pilot delivery and inspection of the pilot delivery. General acceptance criteria is that the supplier has a third party quality system certification, supplier has been audited and considered capable to provide products or services that are fit for purpose, supplier has been assessed and been found to have all relevant documentation.

The ninth step is for special cases. In special cases, the purchaser can approve temporarily new supplier to produce products/services. Quality manager shall be notified and inspection for the incoming items must be done in cases like these.

This procedure is described in a document in the Phase 1 in FC Sourcing process. The document defines and makes sure that the suppliers to production and production partners are able to act according to the product/service specifications agreed upon. Process chart T-2439 describes this procedure that has been analyzed and it is an appendix in document T-2439GB, as shown in Figure 12 below.

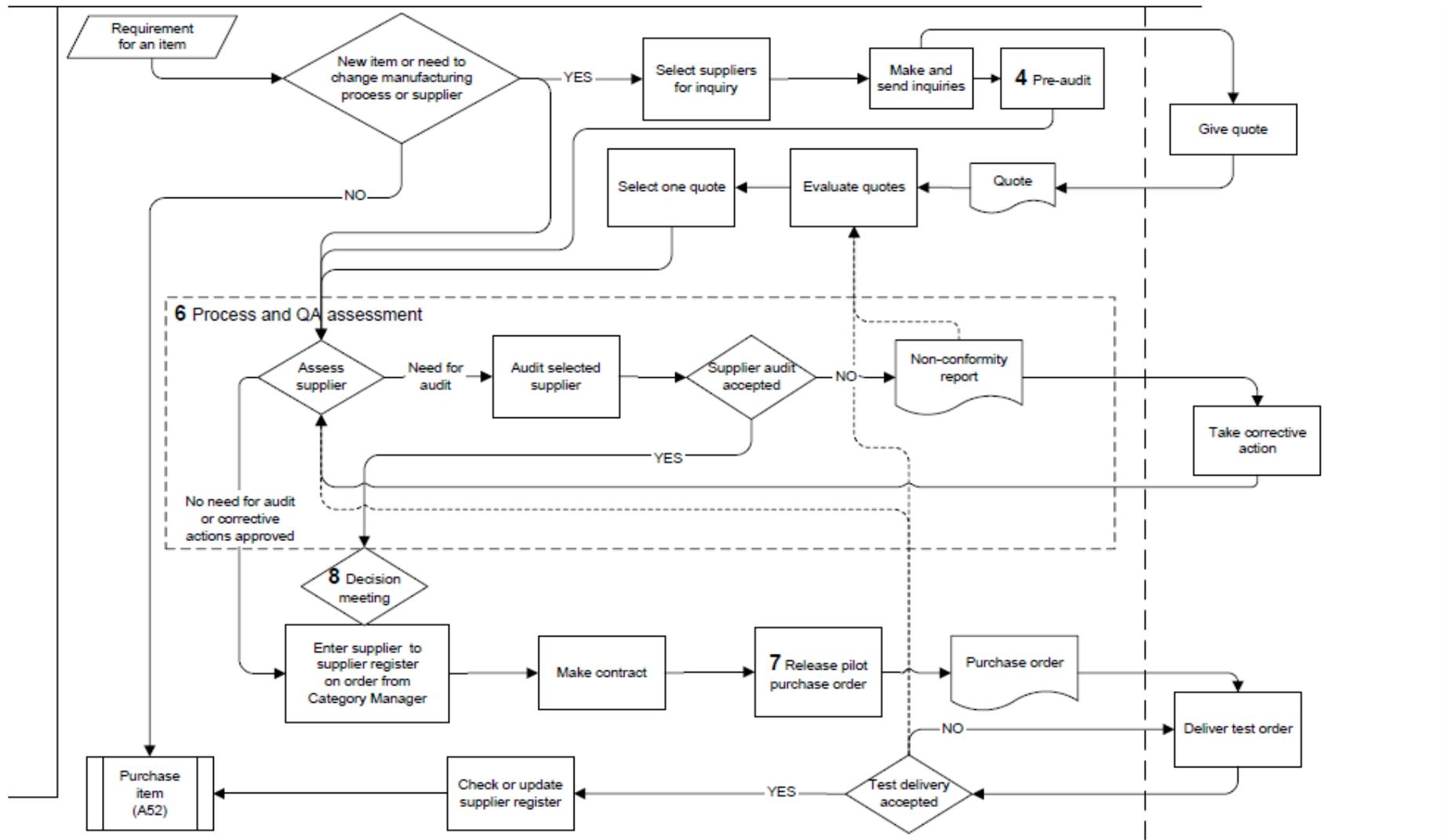


Figure 12. Current item workflow process (T-2439, internal document), appendix of Approval of New Suppliers (Document T-2439GB).

The process chart shows how the current Sourcing process flows and what the key steps are. When investigating the process chart and previously analyzed processes and procedures we can see that the middle section Process and QA assessment has quite a huge role, if the item is in a new supplier path. The process chart is actually missing supplier search and the process for it. The chart does not comply with the main sourcing process defined by the Global sourcing.

Another appendix in the T-2439GB document is a Supplier Pre-Audit form. The form is simple and the purpose of the form is to gather basic information regarding the potential supplier. The form can be divided into three sections which are:

a) *Basic information* regarding the company, such as contact persons, turnover, machinery list, production type, financial background and references.

b) *Quality plan*. Purpose of this sections is to see if the potential supplier company has as a quality plan for products they produce. Also, the form asks if they have a quality plan for main functions.

c) *Quality system and management commitment*. This section gathers information more deeply about the quality matters inside the company. For example, who is responsible for quality matters and who is responsible for environmental matters. The form also asks if the potential supplier company has written quality system and if it meets the international standards, for example ISO 9001-2000. Also, it asks if they have any certifications. Third section also closely inspects the policies the company have towards quality and environment.

As can be seen from the internal process document T-2439, the case company is interested and cares about the environmental aspects, based on the pre-audit form. Lastly, the third sections inspects if the company has continuous improvement system and also employee training and development system.

The Pre-Audit process can be also found as a separate process as described in section 3.3.4 that does not comply with the T-2439G Supplier Pre-form.

### 3.3.5 Request for Information (RFI)

Request for information procedure is mainly written only for Castings and Forgings category. Although it would be beneficial to have a general RFI document, or specifically designed form for every category.

The RFI form is general announcement towards suppliers that the case company is interested in possible partnership. The form gives basic information what the case company does, where and how. Also, the basic numerical data is mentioned such as number of employees, sales amount and locations etc.

As an attachment of the RFI form there is a special excel sheet designed for the potential suppliers. In this sheet the suppliers give their basic information regarding the company itself, such as communication information, specified employee amount, references, main customers, vision, quality, health and safety plan, environment, workshop and other appendices such as certificates, quality manuals, organization charts and list of equipment.

The RFI excel gathers information that is required in the case company's code of conduct, so in that matter is in line and complies the code of conduct.

The purpose of the form is to give the case company sourcing enough information to make the needed decision regarding the supplier's capabilities and fit to deliver, manufacture or provide services for the case company business division. The form is, in the end, a decision making tool in the supplier selection process step and actually gives the supplier responsibility to give the needed information for Case Company.

### 3.3.6 Periodical Supplier Audit QSP-0036

The audit procedure QSP-0036 is for the use of quality managers. This procedure is used to check if the existing and new supplier fulfill the requirements that Sourcing has determined for the suppliers. The audit consists of the case company code of conduct, HSE assessment, Risk assessment and general ISO 9001 questionnaire. Most of these documents are more foundry specific and can be hard to adapt into other categories.

The structure of the Periodical supplier audit QSP-0036 is represented in Figure 13 below.

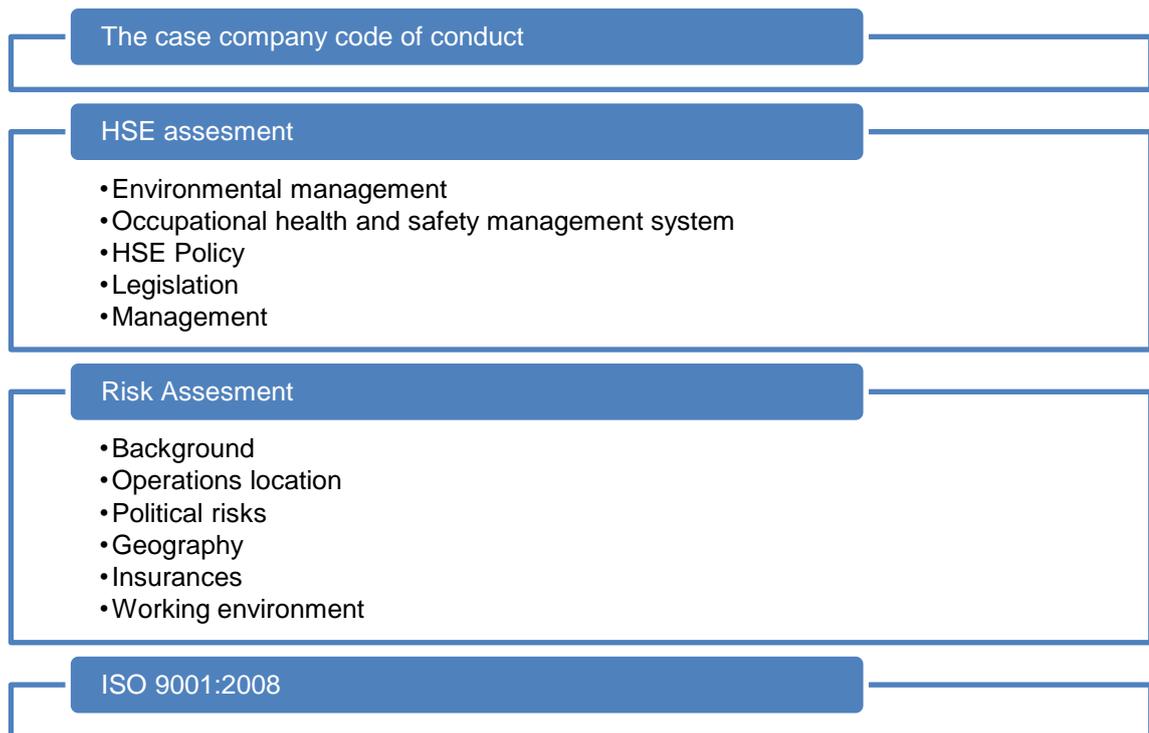


Figure 13. Periodical Supplier Audit QSP-0036.

HSE questionnaires purpose is to find out if the company has defined capabilities to perform as the case company's partner. These are environmental management system, occupational health and safety management system, HSE Policy, legislation related questions and management related questions.

Risk assessment evaluates the information regarding supplier's background. The risk evaluation takes into consideration operations location and possible political risks and natural catastrophes and also how well the supplier is prepared if an event earlier mentioned occurs. Also, the Risk assessment takes into consideration the suppliers insurances and overall condition of working environment, such as fire alarm and extinguishing systems, electrical apparatus, emergency exits and fire load. The risk evaluation is very precise and gives good overall picture of the supplier's premises and geographical and political threats.

### 3.3.7 Summary of the Current Sourcing Process; Its Strengths and Weaknesses

The main sourcing process for the Global sourcing has six steps that are below in Table 4. Each step has procedures, supporting templates and deliverables.

	PROJECT DEFINITION	SUPPLIER IDENTIFICATION	SUPPLIER SELECTION	CONTRACT & VALIDATE	IMPLEMENTATION & PROCUREMENT	SUPPLIER DEVELOPMENT
PROCEDURES	SUPPLIER QUALITY MANUAL QSP-0037  APPROVAL OF NEW SUPPLIER T-2439	METSO SUPPLIER SUSTAINABILITY CRITERIA	PERIODICAL SUPPLIER AUDIT QSP-0036	JAMESBURY PROCEDURES  PILOT PROCEDURE  PILOT PRODUCT QUALITY PLANNING  MATERIAL TESTING  REQUIREMENTS FOR IRON CASTING		SUPPLIER CHANGE PROCESS
SUPPORTING TEMPLATES		REQUEST FOR INFORMATION (RFI)  SUPPLIER SELF ASSESSMENT  FOUNDRY GENERAL QUESTIONNAIRE  REQUEST FOR QUOTATION  RFQ TEMPLATE	AUDIT CHECK LISTS AND QUESTIONNAIRE	PILOT PRODUCT QUALITY PLANNING (PPQP)  CHECK LIST  CORRECTIVE & PREVENTIVE ACTION REQUEST		
DELIVERABLES	SOURCING PROJECT TEMPLATE  PROJECT CHARACTER TEMPLATE FOR STAKEHOLDERS COMMUNICATION	POTENTIAL SUPPLIER LIST  QUOTATION ANALYSIS AND COMPARISON  SOURCING VOLUME ANALYSIS  PRE-AUDIT  PREFERRED SUPPLIER LIST  CONFIDENTIALLY AGREEMENT	AUDIT REPORT SUPPLIER EVALUATION TABLE  SUPPLIER APPROVAL SHEET	PPQP DELIVERABLES  FRAME AGREEMENT		ANNUAL EVALUATION TEMPLATE

Table 4. Sourcing organization processes table.

As shown in Table 4, the boxes that have red text are the procedures, templates and deliverables that has been reviewed in the current state analysis. The mentioned documents can contain written text, boxes, processes and lists. Reason why these elements have been inspected is because they contain information regarding the supplier search and selection processes, which make the focus of the thesis. All of the elements in red contain some information related supplier search and selection. The information can be process, process description or general procedure information.

### 3.4 Sourcing Process Survey

A survey was conducted to a named group of Category managers in the spring of 2015. The group consisted all the local category managers in Helsinki plant and also one global Sourcing manager and Sourcing director. The number of respondents was five people in total. Purpose of the survey was to measure and investigate how well the category managers and global sourcing personnel are aware of the current processes, and what are their opinions about the processes, that are being used at the moment. The survey also gives us information how data and information is spread globally. Also the survey gave possibility to see the differences within the respondent's opinions regarding the current processes and ways of working.

The survey had eighteen questions and the survey can be examined from Appendix 1 in more detailed. Sixteen of the questions had an option to answer no or yes. Two of the questions in the survey had free text cells where the person who was answering the question could give an open answer and opinion on the subject that was asked.

The survey structure is illustrated in Figure 14 below.

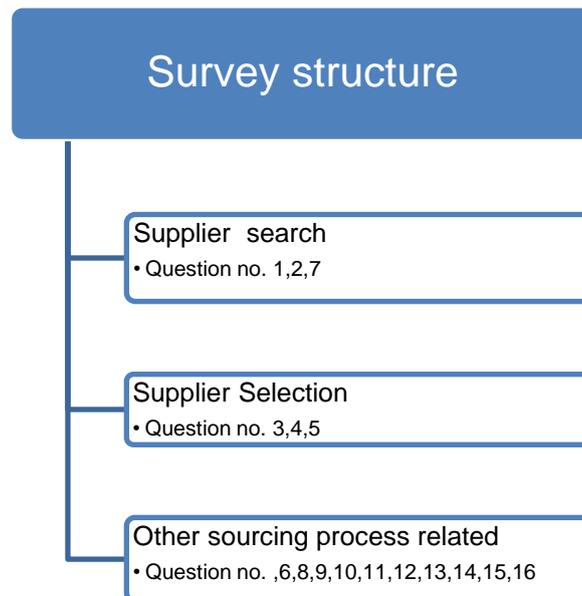


Figure 14. Survey structure.

As shown in Figure 14, the structure of the survey had three different areas that were defined (a) Supplier search related questions, (b) Supplier selection related questions, and (c) Sourcing process related questions. Reason why the survey is only eighteen questions and only sent to five people is explainable. The survey was sent only to five people was, because in the case company Helsinki plant there are only three category managers. The rest two, global sourcing manager and Sourcing director were selected because, sourcing manager has a bit different role in the purchasing and sourcing organization than the category managers in Helsinki plant. Sourcing director was selected to take part in the survey because he is charge of the processes in Global scale and also in charge of overall development of the sourcing organization when it comes to supplier search and selection. Global sourcing director is also the person who approves new suppliers.

The survey asked if there is a process how to select new supplier. Based on the answers given the responders are aware of the processes that the case company already has regarding supplier selection process.

The other questions related to supplier selection asked if the supplier selection process gives enough information to make the decision and if supplier is good enough to become the case company supplier. The answers given indicates that process is sufficient, but maybe not in all cases and can cause some hesitation.

The final question related to supplier selection was to see if the persons working with the supplier search and selection are aware where the processes can be found. The responses indicate that people working with the supplier search and selection know where the processes and procedures can be found and also gives us reliability towards the answers asked before the fifth question.

#### *A. Supplier selection related questions*

One of the questions asked in the survey asked the survey group if there is a defined process on how to search new supplier and based on the answers the indication that the knowledge is not available for the key stakeholders that took part of the survey. This indicates that the sourcing processes are not easy to find

Other Supplier selection related question asked if there is a process and does it describe where to find new suppliers. Based on the answers given the results tells us that there is no process or procedure that gives information to the people responsible for new supplier search and selection on where to actually find new suppliers.

Final question related to Supplier selection asked if there is a defined process on when to start searching new supplier. From the given answers, it is clear that there is uncertainty when a new supplier search should happen and what the driving forces behind it are.

#### *B. Sourcing process related questions*

Sourcing process related question asked if the persons who answered the survey knew how to proceed with the current processes and procedures on supplier search and selection. The answers given indicate that there is lack of training or that the persons working with this subject already have extensive background with the supplier search and selection. The group divided into two based on the previous sentence.

Purpose of one the questions was to see if the persons working with different categories and in sourcing general have an opinion about category based supplier search and selection. The question asked if there are category based processes that takes into account the special features that needs to take into account when searching and selecting new suppliers. Based on the answers, it is clear that there is uncertainty if the special features are present in each category and in the procedures when new suppliers are being searched and selected.

Purpose of one of the question was to determine if the people who answered the survey felt that there would be need for more defined processes regarding the supplier search and selection processes. Based on the answers it indicated that there is a need for more precise process for supplier search and selection processes in the case company business division sourcing process.

The question related to global working habits asked if the people working in sourcing and procurement and especially with supplier search and selection has the same way of working globally. Based on the answers analyzed the working methods are not the same. This also indicates that the processes are not entirely understandable, because the methods using the processes are different.

Survey had also had question related to knowledge sharing and asked the people who attended the survey if they share knowledge and experience with each other globally. The answer indicates that info is shared, but still the way of working differs.

Other questions related to knowledge sharing asked if the person who answered the survey knows if some other person working in sourcing or procurement has been in contact with a same supplier candidate when making an initial contact. Based on the answers this can indicate that potential suppliers are not being listed anywhere and the information does not reach all of the persons who are working in the sourcing and procurement with new supplier search and selection.

The Sourcing process related question asked the people who participated in the survey if they feel it would be beneficial to have a supplier database where potential, existing and candidates that have been rejected would be beneficial. Based on the answers this would be a beneficial element to have in the global scale for Case Company.

Survey also had a question asked if the e-procurement type of bidding system would be beneficial in Case Company. Based on the answers it cannot give any recommendations from the key stakeholders if this would be beneficial. Question was asked because e-procurement is very common nowadays. At the moment, there is no bidding system for open competition among the current suppliers. Answers also indicate that this kind of system is not familiar for the category managers.

Second question related to e-procurement asked if the previous question type of bidding system would reduce the workload of the persons working in sourcing and procurement. Based on the answers this indicates that this sort of system can be beneficial, but does not shorten the workload.

Surveys one key questions asked if the case company's current sourcing and procurement is efficient enough for the time being. The answers given indicate that the overall satisfactory is at good level among the majority of the personnel working in sourcing and procurement, but as the result was not hundred percent satisfactory there could be room for improvement. Also to take into consideration is that the people working with the thesis subject only can use available processes and procedures and do their work with the tools given.

### *C. Other Sourcing process related questions*

Two of the last questions had free text cells. The questions asked how new supplier are being searched and selected, when and how does it happen and what is the driving force behind the event. The answers were very similar. Price and performance was one of the issues and also need for eliminating single sourcing. Also it was mentioned that searching and selecting new suppliers is good way to create competition among current suppliers. Only one person mentioned sources where to find new suppliers and the sources were quite general and does not really reflect the best practices, but rather own experiences

### 3.5 Current State Results from the Existing Processes and Survey

To achieve full understanding and to get a clear picture of the process as a whole, it was necessary to inspect all elements and evaluate each element that has information regarding supplier search and selection.

Findings related to the processes which were analyzed in Section 3 are shown as the current state analysis weaknesses and strengths in Table 5 below.

Table 5. Strengths and weaknesses of the Processes (CSA table).

	Weaknesses	Strenghts
<b><i>Sourcing process from the procedures</i></b>		
1	Two locations for Sourcing process and both are different than each other	Supplier Quality manual Q-0037 extensive procedure that could be used as a main sourcing process information source.
2	Sourcing procedure table that defines processes, deliverables and templates have empty fields for some phases	
3	No category needs taken into account	
4	Does not support the current Sourcing strategy	
<b><i>New supplier search related processes</i></b>		
5	Procedures in Phase 1 in the Supplier Quality manual Q-0037 describes the whole sourcing process even though it is just a first step of the sourcing process	
6	No detailed information on supplier search in Supplier manual QSP-0037 or the intranet sourcing process	
<b><i>Supplier selection related processes</i></b>		
7	Code of conduct not designed to be used to define criteria for supplier selection	Environmental and legal aspects are taken well into account
8		Selection process in the RFI and Audit stage is comprehensive and gives valuable information
9		Supplier selection audit report is extensive and gives good information that has been described in the process
10		Code of conduct is extensive gives legal stability to Case Company

As seen from Table 5, in the first step of sourcing process described in the case company intranet, the first phase is project definition where the Supplier quality manual QSP-0037 is placed. This procedure should contain the elements of a project definition, but actually consists an entire sourcing process which differs from the sourcing process shown in Table 4.

The approval of new supplier T-2439 contains information that are introduced in both documents, as in same topics and general information regarding it. Also, the approval of new supplier document T-2439 contain information about the case company Supplier sustainability criteria, which itself can be seen as its own procedure in Phase 2 in the Supplier quality manual QSP-0037.

The processes in Phase 1 in the Supplier Quality manual QSP-0037 contains information about the whole process instead of being dedicated process for phase 1 only. It is obvious that the Phase 1 processes are more general documents that describes the whole process from Phase 1 to Phase 6.

Regarding the strengths and weaknesses of the current Sourcing process (in relation to new supplier search and supplier evaluation), the following points were identifier after the current state analysis was done. First, there are no instructions how new supplier search should be conducted. Only documents that are for the supplier selection are in both Phase 2 and Phase 3.

The process and its procedures needs very close inspection in order to understand roles of different procedures, templates and deliverable's role in their specified phase. There is also two different sourcing processes. First one is described in the Supplier quality manual QSP-0037 and other one is the main sourcing process described in the sourcing intranet page. The supplier quality manual QSP-0037 is actually part of the main sourcing process, but still the procedure describes an entire sourcing process that does not match the sourcing organization current sourcing process. Overall the main process is missing transparency and lacking logical process flow when comparing the processes and procedures. Also worth mentioning is the strategy that has been introduced in the beginning of current state analysis.

There are two points that does not support the current supplier search and selection processes: first, the aim to move items to a low cost country; second, to standardize the processes and controls. These two matters mentioned in the strategy can be hard to achieve with current processes.

The current stage analysis includes the current processes that were examined in section 3.3 and also the survey that was conducted to define group of stakeholders. The findings are shown below in Table 6, where the strengths and weaknesses identified from the survey has been presented.

As for the results from the survey, along with the analyzing the current processes and identifying the strengths and weaknesses from those, it was crucial to get an opinion from the key stakeholders who actually uses these processes and procedures in their daily work. The Survey was conducted in a way that three different sections can be formed that relate to the same form as described in the Sourcing process current state analysis.

Table 6. Results from the survey.

	<b>Weaknesses</b>	<b>Strenghts</b>
<b><i>Sourcing process related answers from the survey</i></b>		
1	Uncertainty of process usage	Process locations are known
2	Category based processes are not available	Knowledge shared globally
3	No category needs taken into account	
<b><i>New supplier search related answers from the survey</i></b>		
5	Uncertainty on the supplier search when it should be done	
6	Uncertainty where the processes are located	
<b><i>Supplier selection related answers from the survey</i></b>		
7	Supplier selection process is not sufficient enough	Supplier selection process exists
8	No database globally for potential supplier information	

9		Supplier selection audit report is extensive and gives good information that has been described in the process
10		Code of conduct is extensive gives legal stability to Case Company

As seen from Table 6, Question one, two and seven were related to the supplier search. Based on the survey results, the key stakeholders are not fully aware of the location where the procedure is or if it even exists. Also, the key stakeholders defined that there is uncertainty when new supplier search should take place

Question three, four and five are related to supplier selection. The results show that the respondents are aware that there is a supplier selection process, but in some cases the process is not sufficient enough to give information to make the decision and also there is no general database where the screening of potential suppliers is done. It might be that in Global scale different persons might contact same supplier. The rest of the questions are related to other sourcing related matters, but still close to the thesis scope.

In summary, the survey results show that there is knowledge where the supplier search and selection related processes are located, but there is uncertainty how to use them; also, there is no category-based supplier search and selection process defined. At the moment, there is no common database where potential supplier information is stored, but based on the responses it would be beneficial to have. Regarding the identified strengths and weaknesses, the key stakeholders who responded to the survey feel that the current way of working is working for now, but improvements are welcome, especially regarding more precise processes for the supplier search and selection. Positive indication was that knowledge is shared globally.

Combining the results from both the current state weaknesses and strengths, the focus areas for the sourcing process improvement were chosen. Table 7 below show the focus areas (marked as red) and will act as a focus when building the proposal with Data 2. The priorities are chosen in order to comply with the thesis scope.

Table 7. Summary of the current state analysis.

	Weaknesses	Strenghts
<b><i>Sourcing process from the procedures</i></b>		
1	Two locations for Sourcing process and both are different than each other	Supplier Quality manual Q-0037 extensive procedure that could be used as a main sourcing process information source.
2	Uncertainty of process usage	Process locations are known
3	No category needs taken into account	Knowledge shared globally
4	Does not support the current Sourcing strategy	
<b><i>New supplier search related processes</i></b>		
5	Procedures in Phase 1 in the Supplier Quality manual Q-0037 describes the whole sourcing process even though it is just a first step of the sourcing process	
6	No detailed information on supplier search in Supplier manual	
<b><i>Supplier selection related processes</i></b>		
7	Code of conduct not designed to be used to define criteria for supplier selection	Environmental and legal aspects are taken well into account.
8	No database globally for potential supplier information	Selection process in the RFI and Audit stage is comprehensive and gives valuable information
9	Supplier selection process is not yet complete in all sub-processes	Supplier selection process exists
10		Code of conduct is extensive and gives legal stability to Case Company

As seen from Table 7, in the current state analysis indicated the following focus areas that will be concern five different identified issues highlighted in red color above.

In summary, both the current state of sourcing process, as revealed from discussions with category managers and investigation of the process stages, as well as the results from the sourcing related survey, indicate similarities in the strengths and weaknesses in the current sourcing process. Weaknesses in the current process related mostly to the supplier search and selection sub-processes, which needs to be tacked in order to make the process complete. The results also indicate that, although both these processes are existent, there is uncertainty in the use of the processes and lack of more detailed information, especially on supplier search and selection activities.

Thus, the results point to the need for further development of the two sourcing processes, which will be done in the next sections, and will start from search for available knowledge and best practice for supplier search and selection, in Section 4.

## 4 Existing Knowledge of Sourcing Process, Supplier Search and Selection

This section discusses available knowledge and best practice related to supplier search and selection as parts of the sourcing/purchasing process.

### 4.1 Procurement

According to Schary et al. (2001: 177), procurement has become an essential part of companies supply chain. According to Christopher (2011), it has also become an essential part of company's corporate strategy as companies emphasize sourcing of materials, components and production around the world. Schary et al. (2001: 177) states that procurement itself has changed quite a lot in recent years. The traditional role of procurement was to achieve cheapest price and ensure sufficient flow of materials to production. Also the conventional way has been spreading purchases around large vast of supplier and keeping large supplier base (Schary et al. 2001).

The new perspective to procurement is that the supply chain is defined by its links to processes and suppliers. Schary et al. (2001: 177) state that the focus is changing from product focus to a supplier capabilities. Procurement is becoming proactive, designing and managing capabilities.

Dynamic capabilities that define the supply-chains capability to perform, if they are in order, it could be seen that sourcing process could be part of it when creating operational capabilities. Dynamic capabilities are the capacity to create, extend or modify operational capabilities which in the end create sustainable competitive advantage and in the can create cost savings and increased customer value (Sandberg et al. 2011)

### 4.2 Supplier Management

In supplier management, the company needs to have a clear answer to three different question regarding their own way of dealing supplier management according to Weele (2005: 161). Three basic questions are: a) For which commodities should the number of suppliers be reduced, b) For which commodities should the number of supplier be maintained at the same level and c) For which commodities should the number of suppliers be increased.

As the first step, Weele (2005: 161) states that to get an answer for these questions the company should perform a purchasing portfolio analysis. In the past few years many

companies have focused their strategy on the supplier reduction. Weele (2005: 161) states that this trend cannot continue forever and that the supplier reduction should not be the goal itself ever. Supplier reduction can be seen as a way to reduce costs or the complexity of the supplier management portfolio. To further analyze the need of supplier reduction, increase or maintenance the company should define the supplier strategy in a way that it can define per commodity what kind of supplier relationships they are looking for or what kind of relationships should be pursued.

Weele (2005: 161) defined three different sourcing types as a main elements of supplier management which can be seen from Figure 15 below:

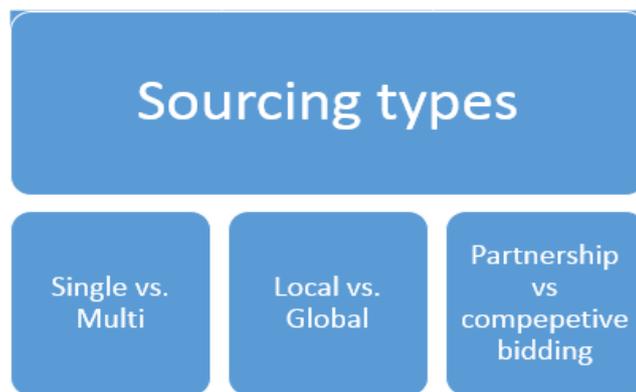


Figure 15. Sourcing types, from Weele (2005).

Three different sourcing types include, first, the global versus local sourcing. The company must decide if the supplier has to be international and global or if the suppliers orientation to be local, national orientation to be sufficient enough. According to Weele (2005:161), the decision rely on the product itself. Factors for the product to be sourced from local suppliers are if the product specification changes often, when high flexibility and precision is needed in terms of delivery and as a last when intensive communication is needed with the supplier. The factors for going for a global supplier is when the product is bulk or standardized. In this case the price difference may vary between suppliers also. Also in product types like these large quantity orders may give an opportunity to get cheaper price and save in the logistics costs. Weele (2005:161) states that in the end the decision should be done based on the total cost of ownership.

Second in three different sourcing types is the single versus multiple sourcing. According to Weele (2005:161) companies should decide if they want to buy the product or service from one supplier, if so the company will become dependent on this one supplier only and will increase the supply risk.

Third in three different sourcing types is the partnership or competitive bidding. Company needs to decide according to Weele (2005: 131) that if it wants to have a partnership with the supplier or if they wish to keep the supplier in a distance and have a minimal relationship with the supplier. Having a partner relationship has far reaching consequences for the ways of working of the companies involved. Partnership creates openness and willingness to share the sensitive information and expertise. The competitive bidding other hand means that there will be a group of pre-screened suppliers grouped together which are constantly bidding each other. The tendering face always favors the supplier that is willing to produce the highest quantities with the lowest price. The competitive bidding also means that the volumes vary for the suppliers throughout the year. The competitive bidding is commonly used when buying larger quantities or volumes.

#### 4.3 Sourcing process

According to Amy Z. Zeng, (2003:376) Global sourcing process falls into the area of outsourcing and can be seen as a special type of outsourcing. The process itself can be broken into five different stages that describes the process entirely.

Below is the generalized process illustrated in Figure 16 below (Zeng 2003: 378).

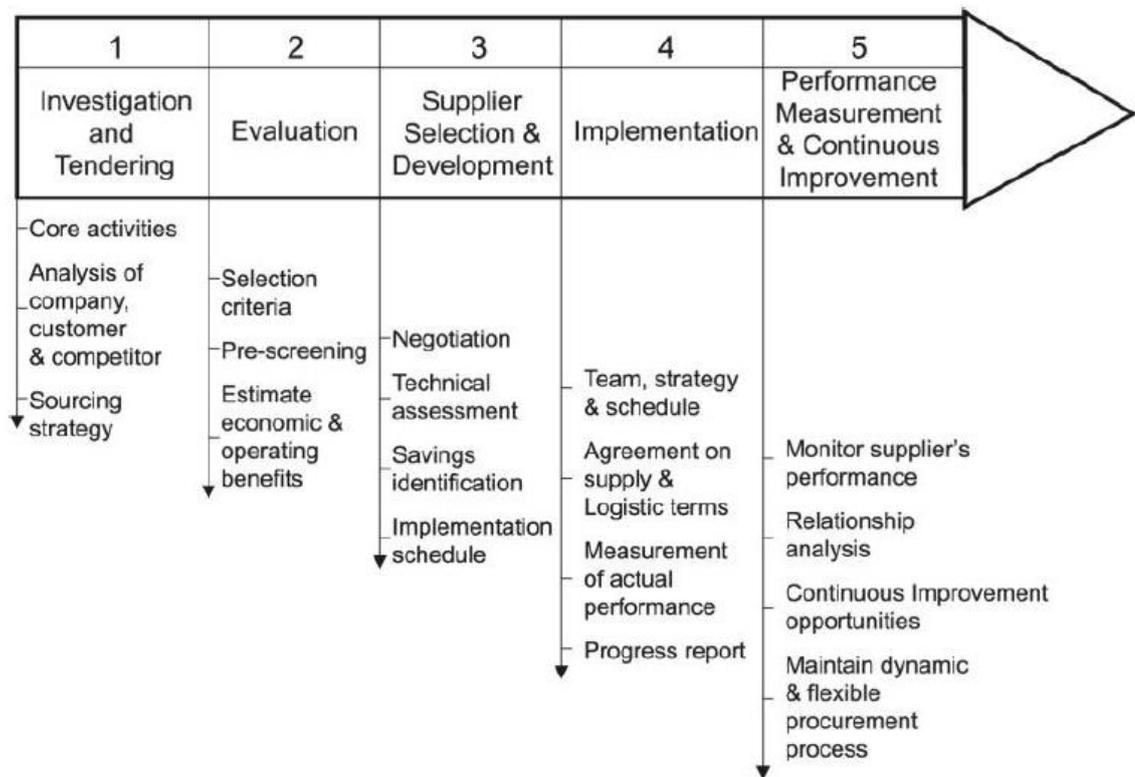


Figure 16. Sourcing process (from Zeng 2003).

The first stage is investigation and tendering. In this stage the company should identify the activities that can be seen as core- and the non-core activities before the global sourcing strategy is adopted. Another thing to take into consideration is the analyzing the market which will be discussed more in detail in section 4.6 and customer requirements while taking into account the competitors at the same time. This way the positioning can be determined (Zeng 2003). The scope of the strategic sourcing plan should be outlined in a business plan with the upper management, and the work plan and the baseline criteria should be defined and documented in a process plan when measuring the improvements. Lastly the data collection is performed in order to refine and update the initial stakeholder requirements and lastly to confirm the baseline case scenario.

The second stage is evaluation. In this stage specific supplier selection criteria is formed and are used to identify short list of potential or appropriate suppliers. In this stage, according to Zeng (2003), the sourcing strategy is refined and the cost models are finalized. Also at this stage the operating benefits and project completion are estimated.

The third stage is the supplier selection and development. In this stage the final suppliers are selected and the negotiation of the possible agreement with the chosen suppliers is conducted. Also the implementation schedule and other timelines for these suppliers are then developed.

The fourth stage is the implementation. Zeng (2003) states that performance analysis program should be put in place at this stage of the process. Zeng (2003) states that this stage includes the following series of different activities. The implementation team has been formed and placed. Implementation strategy and schedule have been formed and published. Agreements on resources, shared ones and other have been deployed. Supply and logistics terms are developed also. The expected results are documented internally and also with the selected suppliers. As a last activity the measurement of the actual performance results is conducted and the progress is reported with agreed periodically time frame.

The fifth and last stage is the performance measurement and continuous improvement. The selected supplier's performance is monitored within agreed scope. This means independent and in conjunction with the defined process and resources used by the potential partners. Assessment regarding the effectiveness of the collaboration with the suppliers is obtained. From here the possible partners included can identify problems and seek for possible improvement opportunities. According to Zeng (2003) the goal of

this stage is to maintain the procurement process that is dynamic and flexible in order to meet the changing market conditions and changes in the market.

Zeng (2003) states that out of these 5 stages in the outsourcing process the last two stages gives the most challenges.

#### 4.3.1 Strategic Sourcing

According to Schary et al. (2001: 177), the strategic issue comes down to two issues. First one is the amount of supplier and second one is the supplier organizations. The number of suppliers defines if multiple or single sourcing is needed as also defined in Section 4.1.

*Multiple sourcing* is the traditional way of sourcing. In multiple sourcing it is common to deal with suppliers through market transactions. When equivalent products are available, quality, price and delivery are the main points when making decision (Schary et al. 2001:177).

*Single sourcing* or dual sourcing usually involves more long term relationship and development with the suppliers. (Schary et al. 2001)

According to Schary et al. (2001:177), outsourcing creates external supply-chains. This leads to a situation where single organization has no way to manage the supply-chain internally, but are performed by other organizations with less direct control over. Schary et al. (2001) also argues that outsourcing is now an internal organizational necessity which means that only one organization cannot be efficient and maintain competitiveness in all areas. This leads to the stage where organizations have to seek new solutions due to competition between supply chains.

These problems used to be intra organizational, but the changes in the market are rapid, which cause organizations to have capabilities that do not match the market demands anymore and force them to require new capabilities in a short time.

#### 4.3.2 Strategic Role of Procurement

As stated by Takeishi (2001), outsourcing has become an important strategy for many firms, but companies must take into account that they are competing against competitors who most likely are using same suppliers and also outsource. Product development is one way to tackle the competitive issue, but streamlined and well-designed sourcing can also give cost advantage.

According to Schary et al (2001: 178), there is underlying assumptions to be made when it comes to the relationships. Meaning that there is no one-size-fits-all type of relationship, but however there may be best fit type of relationship, depending on the purchasing situation.

Schary et al. (2001) has identified three decision areas in the strategic procurement which are identified originally by Gadde et al. (1994) that can be seen in Figure 17 below.

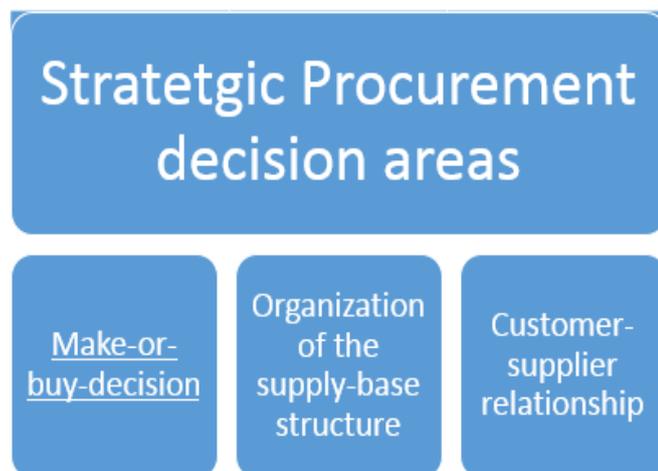


Figure 17. Strategic Procurement decision areas adapted from Schary et al. (2001).

Schary et al. (2001:179) point out that the more recent emphasis on outsourcing has changed managements mind set towards external supply and production, especially in cases where the justification of the decision can be pointed out by cost or capacity.

According to Schary et al. (2001), supply-base structure involves two strategical issues. First one is the number or amount of suppliers. The second one is the organization dealing with suppliers. The number of suppliers has to do with the decision on single vs multi sourcing. Multi-sourcing is known more traditional where the interaction is dealt with at arm's length trough the market transactions. This means that when the equivalent products are available, the price, quality and delivery becomes paramount when making the decision. Single sourcing and perhaps in some cases dual sourcing might involve more permanent ties and also the development of closer cooperative ties.

Organizations have multiple ways to organize and deal with the suppliers. Types of relationships can be for example open market relationships, networks with ties, keiretsu, with supplier associations or other forms of organizations. According to Schary et al. (2001), the customer-supplier relationship has become strategic issue for two reasons. The first reason is the cost rationalization and the other one is benefit from utilizing the resources and competencies of the suppliers In the second reason it is also important to develop

new skills and innovations when utilizing the resources and competencies. (Jiao et al 2008).

Schary et al. (2001) also argue that there are two trends that emphasize the differences between market and network relations. The first one is the development of e-commerce and the second one is the development of relationships. In the first one e-commerce allows rapid comparison for the supplier offering. The development of relationships has been by the need to collaborate with supplier and capturing their expertise and at the same time trying to reduce company enrolment on a tasks or areas where there is no competitive advantage.

According to Schary et al. (2001), the three earlier mentioned areas mark a break from the past practices in procurement, where squeezing profit margins supplier for short term cost-reductions. There are several factors that have influenced this development. Schary et al. (2001) has identified the five most important factors which are a) increased outsourcing, b) Global sourcing, c) JIT Purchasing, d) Green supply management, e) information technology (Simpson et al. 2005).

Increased outsourcing has seen a strong tendency to buying from supplier outside. Companies might want to retain only design, prototyping and marketing in-house and outsourcing production and distribution. This has changed the role of procurement from largely reactive to proactive activity, where searching and evaluating potential suppliers and also establishing contract alongside with long term relationships more common.

As a result, global sourcing demands new skills in purchasing. In the past purchasing manager only needed good skills in negotiating, good knowledge of supplier market and good knowledge of internal purchasing activities. These requirements are still present today, but also what is needed is cross-cultural knowledge, language proficiency, and knowledge of international finance, international logistics and deep knowledge of technological capabilities in information technology. These skills are needed to establish, manage and develop long term relationships with suppliers. (Trent et al. 1999)

Next, Just-in-time purchasing have also changed the purchasing process from product oriented purchasing to production capacity. JIT purchasing provides materials to production just as they are required in the production. The aim is to have the materials as close as possible to the production for continuous process. Just-in-time purchasing can be distinct as a small supplier base of long-term partners with the buying company. The relationships have been built on high mutual respect and trust and also closeness of the

buyer's plant. Many Just-in-time purchasing relationships usually need specific information system requirements. For just-in-time purchasing to work in a production environment the demand must be quite stable for long term to cover investments. Also worth noting is that suppliers must be able to anticipate demands through forecasts or leveling of production orders.

Green supply management focuses on environmental issues, such as origin of materials, production processes used by supplier, labor force conditions, recycling and dismantling for example. Companies and customers are aware of environmental effects of the products they buy. This means that purchasing organizations should be aware of environmental effects and not only focusing on price, quality and technical specifications.

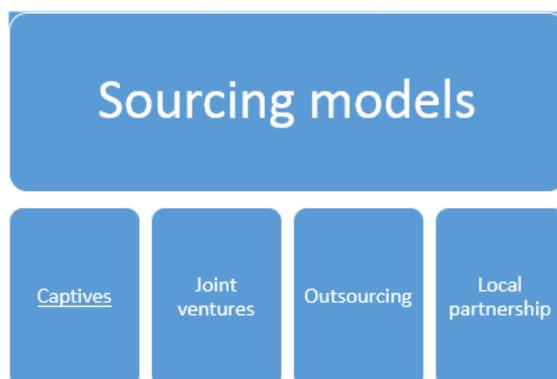
Summing up, the last decade the development of information and communication technologies have increased and enabled companies to make their procurement much more efficient. Internet has also enabled companies to enter more international supplier market. E-procurement is projected to increase in the future.

#### 4.3.3 Sourcing Models

According to Vagadia (2012), there are numerous options for organizations to source. There are examples of organizations to use Joint Ventures to manage operations and get more depth local knowledge in order to create additional value from the sourcing activities. Some organizations remove the risk of sourcing to local outsourcers who bare the risk of offshore sourcing.

According to Vagadia (2010) recently organizations are directly starting to use pure outsourcing where the organization directly make the contracts with service providers. Vagadia (2012) lists four different sourcing models that can be used and that can be seen from Table 8 below.

Table 8. Sourcing models (adapted from Vagadia 2012).



From the sourcing models (adapted from Vagadia 2012) in Figure 8, the first one is *captives*. This is a model where firm uses its own resources to own, create and manage an organization in an offshore destination. These are called captive centers. This model is offshoring but not seen as outsourcing.

The second model is *Joint ventures*. Typical for joint ventures is a local company partner offshoring an entity for shared control of detailed offshore operation.

The third one is *pure outsourcing*. In this model firms outsource directly to a third party service provider, usually located offshore. Working arrangement is controlled strictly by the contract terms agreed with the third party service provided. This makes a typical offshore outsourcing.

Finally, *Local partnership* characteristics are typically a contract with domestic outsourcing service provider. The third party service provider then outsources all the work to an offshore company. In this model the domestic outsourcing service provider bears some of the risks involved with the offshoring.

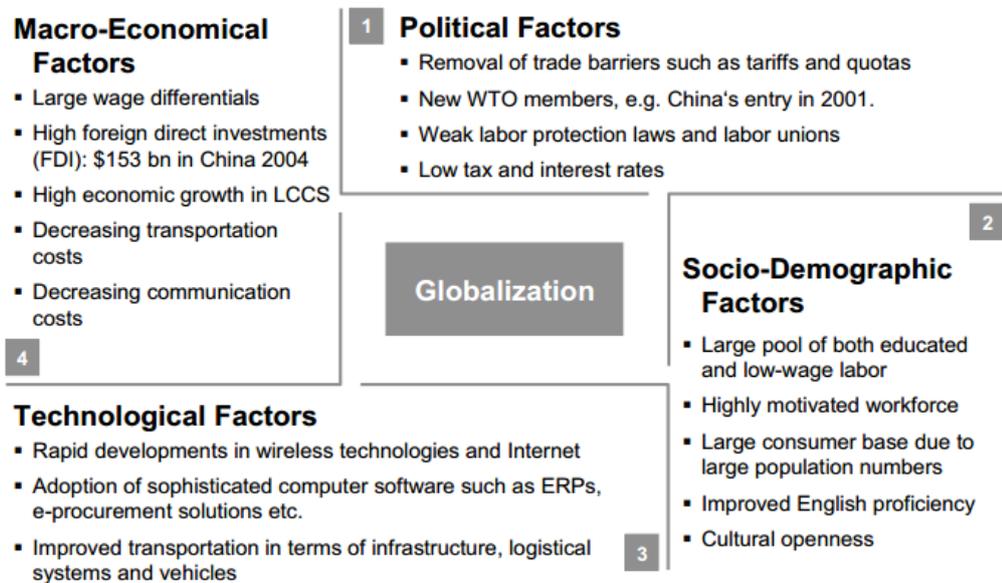
#### 4.3.4 Low Cost Country Sourcing

The term low-cost country sourcing is quite new, but the roots are in the concept of international trade are as old as the trade itself. Industries have experienced changes over the last decades, which can be considered dramatic. Companies nowadays tend to relocate the value chains world-wide, instead of focusing into operating in geographically concentrated area and selling to certain markets. Point of this is to optimize value chains. Relocating certain parts of the value chain can ultimately give higher return on investment. Communication and removal of trade barriers have also helped aiding this which means that goods, communication and capital can flow more or less freely through borders.

Forces behind globalization are divided into four groups according to Lockström (2007:101). These are: a) Political factors, b) Technological factors, c) Socio-economic factors, d) Macro-economic factors. Among them, *Political factors* refer to regulations and policies applied by local and national governments. For example these are taxes, labor laws and possible trade barriers. *Technological factors* are innovation, information technology and transportation related topics. *Socio-economic factors* are, for example, characteristics of the country's population. This includes educational level, language pro-

efficiency and cultural factors. Finally, *Macro-economic factors* can refer to general productivity. Other factors can be wages in the country, tax and interest rates, market growth and foreign investments. Table 9 shows four different groups defined by Lockström (2007) that represent the forces behind globalization.

Table 9. Forces behind globalization. Lockström (2007).



#### 4.4 Sourcing Potential Suppliers

According to Branch (2001: 29), there are various ways to identify new and suitable suppliers. First that is mentioned are tradeshows. In tradeshows the buyer has opportunity to meet multiple suppliers and evaluate their products/services and make valid comparisons. In tradeshows it is possible to gauge the level of price, competition, technology and also offers the buyer an opportunity to meet the staff in the stand.

In sales conference or a similar event, the buyer can do networking and also possibly listen to the speakers on areas of current interest and development.

Trade directory is also a common way to find new suppliers. There directories can be found from trade associations, government, international agencies, professional institutes, importer organizations, professional institutes, chambers of commerce and private companies. Branch (2001:25) also mentions that most of these sources are available through internet.

According to Branch (2001), journals, newspapers and magazines are good sources for new suppliers. These also provide latest trends and development on specific industry.

Next, the government and their chambers of commerce or trade associations arrange from time to time inward trade missions. These events include potential buyers to visit certain country where they meet exporters. Also these sort of event happens outwards, where potential suppliers visit certain countries with the aid of government to meet potential buyers. Branch (2001:25)

For example, trade ministers usually promotes their country's products when doing visits to other countries. These visits usually gives the buyers information how to reach potential suppliers Branch (2001:25). Business clubs also promotes and offers networking opportunities in seminars and such Branch (2001:25). The last source that is mentioned by Branch (2001:25) are major suppliers that sends bullets and magazines to their customers. Usually also major suppliers attend to sales conferences and hospitality events where buyers can receive promotional material.

According to Benton (2010:159), the search for suitable supplier for specific material or product has become a strategic issue itself, the companies must know where to look from these items. Benton (2010:159) also states that the buyers must be experts in their own industry and have the knowhow on a specific materials or components.

According to Benton (2010: 159), the most traditional source of finding suppliers is Thomas Register platform. The register categorizes potential supplier for manufacturers, distributors, representatives of manufacturers and service providers. Also according to Benton (2010), trade journals are valuable source for information when searching for new potential suppliers. Benton mentions few journals that are 'Purchasing World' and 'Purchasing'. Benton (2010) also states that sales persons can be valuable source for free consulting. The rest are libraries, yellow pages and local chambers of commerce and trade shows.

#### 4.5 Supplier Intelligence

Every entity along the supply chain in in different market sectors and economical markets and there are different external influences in the operating environment. Other factors that can influence are geographical, legal, social, cultural, political, economic and technological. All of these factors have a chance to affect the entities mentioned in the supply chain (Jeeva 2008) Internal factors also affect production processes and operations. Internal factors can be human resources, skill, technology, expertise, capability, capacity, finances (Jeeva 2008). Due these reasons, external and internal factors should be part of Supplier intelligence database, not to mention also possible future trends. Thus, supplier intelligence could be defined as the up to date knowledge within supporting the

supplier's market intelligence, business intelligence, capability, financial stability also including their own supplier's intelligence areas in long haul. (Jeeva 2008).

Procurement department must know where to source a product or service in emergencies. Supplier intelligence is good to have in order to know the suppliers can provide the support when needed for continued operations of the organization (Jeeva 2008). In this logic, selecting the right supplier who can provide or supply the required materials, items, services or products in a timely and effective manner is not a competitive advantage anymore, but it is seen more as a necessity.

Purpose of the Supplier intelligence is to know and be aware the supplier's capability to offer required parts and services in critical cases and also make sure they have the capacity to continuously to support the needed products in the future (Jeeva 2008). Also, the financial data of the supplier should be part of the Supplier intelligence. Data such as capital investments, dept., shares, market performance, financial report methods, auditing, corporate governance, accounts receivable- and payable details, and so on. This data will provide the supplier financial intelligence and can tell the purchasing company whether the supplier can survive the next few years in financial capacity. The financial stability and in this subject, intelligence must be transparent whether the supplier is a publicly listed or privately owned company (Jeeva 2008). Also the supplier's relationships criteria are important. As stated by Jeeva (2008), this can cause a domino effect. This is an extension of supplier selection attributes.

Next, the buyer or purchaser must be aware of the supplier's environment to ensure that the supply chain won't get threatened. This information should include the suppliers industry and economical knowledge on these aspects. Also the supplier's ability to recognize the old and new trends. Some other factors are understanding of technological advances within the supplier operating environment, and also whether the supplier is aligned and aware of the technological advances in its field.

All this information can provide the buying company knowledge to make short term and long term decisions on a supplier. This info can aid on long term or short term contracts, term and conditions in the contracts.

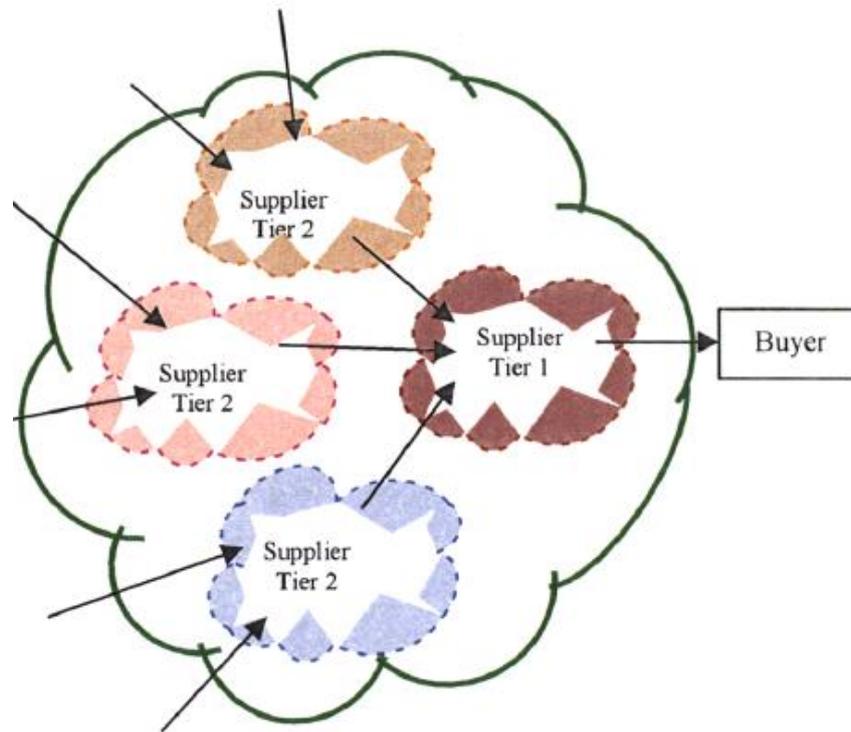


Figure 18. Purchasing environment. Jeeva (2008).

Benton (2010) states that each firm and organization should have clear understanding of the strategy of the whole company and also have an own specific strategy for the organizations that fulfill the company strategy. Purchasing, logistics, inventory management and production control are all linked together under material management. All of these units should work as a one strategic unit where each complements the other. From this point the supplier selection should be made according to Benton. Supplier selection should not be based on the performance in the past, but more with the anticipated capabilities in the future the supplier may have. In order to have a good relationship/communication with the suppliers there should be common ground in the management styles, control systems, quality philosophies and supporting technological capabilities. These can be engineering, design, RFI, EDI. Outsourcing can be seen as a delegation of responsibilities.

#### 4.6 Evaluation of the Market Environment

According to Branch (2001), when buyer is examining the overseas market, the following aspects should be taken into consideration: (a) who are the main players in the global market and what kind of profiles they have. Buyers should consider their market share, position in the market, financial resources, whether they are leading players or not, what are their future plans and the nature of the business they operate in.

The next question is (b) how well is the market accessible. In this question, political and legal environments are also key factors. These also embrace the market stability and infrastructure serving the market, and includes the question if the market is technologically capable to serve the company's needs product wise. Computer and logistic literacy and the supplier flexibility and adaptability needs to be met regarding the company that is seeking for services

Next, (c) the product cost and specification are one of the key areas in the market environment. This can embrace the exchange rates and how stable they are. Next, (d) the product availability needs to be considered. This embraces the national and international standards which can be linked to the added value. Overall this also embraces product quality.

When the above questions are addressed, the sourcing department should look more carefully into the characteristics of the market: (e) if the market is developed or underdeveloped. Developed markets are usually technologically ahead and capital intensive. Underdeveloped markets are usually agriculturally driven and often commodity focused. But this also means lower labor costs. This examination should include the questions if the market enables joint ventures, mergers or even acquisitions. This question is relevant since companies tend to switch production and assembly plants from country to country based on a specific strategic criteria such as cost, infrastructure, labor, market access, logistics, technology and competitiveness; also government and local financial environment can have a big effect. In addition Location of the market and possible geological bloc can have an effect.

Last, the sourcing department should consider an important question of a possible perceived benefit from the market: what can the market offer and if the utilization of its potential pays off for the company. (Branch 2001)

These elements mentioned by Branch (2001) should take into account when searching for a suitable suppliers from markets that are not domestic.

#### 4.6.1 Culture

Branch (2001) points out thirteen different aspects in market environment and market research which are culture related. These aspects should be taken into account in order to understand the business environment where the potential prospect is doing its business. These aspects are listed in Table 10 below.

Table 10. Cultural aspects (from Branch 2001).

	<b>Cultural aspects</b>
1	Cultural differences
2	Material Culture
3	Education
4	Religion
5	Social Organization
6	Language
7	Aesthetics
8	Ethics and Mores
9	Political systems
10	Protocol
11	Economic systems
12	Legal systems
13	Management culture

Among the cultural aspects listed above, the first one is culture in general. Such as music, art and language. The second factor is material culture. This includes physical objects that are typically made in the defined culture, such as paintings, houses, roads, dams and airports. Knowledge of material culture is good way to understand society's standard of living. Branch (2001) mentions that one must not be confused with standard of living and quality of life in this case.

The third factor is education. Highly educated population is easier to communicate with and educated populations are more likely to have more developed workforce. Also high literacy standards apply. Market re-search data will be more reliable and more extensive.

The fourth factor is religion. This aspect embraces philosophical systems, beliefs and norms, which essentially affect business practices. Fifth one is social Organization. This aspect includes customs and roles. Social organization represents how the society is socially organized. Western countries are leaning more towards to career and consumption based society unlike in less developed countries, where agriculture and family values are still more important. Sixth one is language. English is becoming and in many ways is the international business language in the world, there are still approximately 2700 other languages that cover 75% of spoken languages around the world. Regarding in business and marketing different languages and lingual backgrounds can be a pitfall or good opportunity. Common 1st language or 2nd language makes doing business and

communicating easier between buyer and seller. Seventh aspect is aesthetics. In this case the word can be used to define products, product support and design that may appeal local culture.

The eighth aspect is ethics and mores. The cultural way of thinking and how the people see the world and their way of following learn ethics. The ninth factor is Political systems, how the country's political system is run and what the political status in the defined country is. The tenth factor is Protocol, including how government works with the bureaucracy and how it works with the people not involved with governmental activities. The eleventh one is Economic systems, what kind of economy is the driving factor in the country and what are its elements to do business in the driven economic system. The twelfth one is Legal systems, and if the legal system and the atmosphere towards written laws are implemented as written and how businesses complies with these laws. The thirteen aspect is management cultures, how the culture has affected the way of managing and does it comply with the western way of thinking towards management systems.

This classification is arguable but it provides some initial structure to the cultural factors the importance of which is recognized by all participants of the procurement process.

#### 4.7 Supplier Selection Overseas

Global markets has gone through massive reconstruction and change towards products / goods sector. Industrial products are no longer produced and assembled in one country, but there is tendency that product may be designed in one country and assembled in another, and getting components from various countries. Branch (2001) lists eleven advantages of buying overseas which can be seen on Table 11 below.

Table 11. Overseas advantages attributes (Branch 2001).

<b>OVERSEAS ADVANTAGES</b>	
1	Lower prices
2	Product availability
3	Competitiveness
4	Wider choice of supplier's products
5	Emerging from previous item
6	Outsourcing
7	Cyberspace resources
8	Invested capital

9	Flexibility
10	Logistics
11	Labor costs
12	Subcontracting

Using sources defined earlier the next phase is to establish a list of potential supplier or sources for the needed product or service. Next stage is to issue an inquiry for the potential suppliers which clearly states what is required from them. Risk management and identifying the risk related to overseas selection is also other than trying to get rid of uncertainties in the sub-optimized operational performance, but it is also according to Giunipero et al (2004) an efficient way to identify the possible potential losses that uncertain supplier can cause. Jansson et al (2004)

Branch (2001) also makes a list of areas which needs evaluation to determine risks, costs, logistical consideration and acceptability. Risk attributes are listed in table 12 below.

Table 12. Risk attributes (Branch 2001).

	<b>Risk attributes</b>
1	Prospects credit rating, checked by independent company
2	National and international standards, such as if the prospect has an ISO 9001
3	Prospect position in the market. Is the company leader in its market or small player
4	Major existing importers
5	Qualification of its management, workforce and quality management.
6	Prospects possible litigation with existing customers.
7	Rewarded awards.
8	Prospects focus on logistics and IT.
9	Prospects part of trade professional association.
10	Prospects experience on manufacturing or providing the service that is being quoted. Possible references.
11	Can the prospect add value with the partnership? This can be quality, high tech, warranty, design, spare parts, servicing, and training.
12	Prospects product availability and delivery times.

Branch (2001) also suggests that one crucial part in supplier selection is evaluation of the production and manufacturing systems. Along with these it would be good to investigate organization structure, evaluate planning and documentation that is available. Documentation inspection can also include company procedures/instructions, inspection procedures/instructions, process parameters, sampling instructions, quality and inspection status, final inspections, product testing, training of the workforce and corrective measures. All of these can be viewed if a visit to prospects manufacturing plant is possible.

Branch (2001) also lists vital other areas that should be taken into consideration when selecting a supplier. First one mentioned is meeting the directors, managers and workforce. Next step is to determine the company culture and management overview. Then the next phase is to conduct a product audit in the company. Point of this is to determine the degree of product failure possibility, also known as zero failure rate along with the production lines in accordance with the standards specified. Another audit would be process audit. Point of the process audit is to measure the extent of the technical processes are capable of meeting the required standards. Also systems audit is worth to conduct, because it can reveal the comparison of the quality systems weaknesses compared to the external standards.

Branch (2001) further lists activities that should be taken into consideration when selecting a new supplier, such as: (a) When doing a quotation, if possible it would be good to further improve the specification of the product and if possible a sample product from the prospect would be good. (b) Jointly develop the product with the prospect to reflect buyer's environment. This demands several visits to the prospect premises and also maybe some development and innovation which can then affect the final price. (c) Buyer should be aware of degree of the subcontracting and quality control and availability. (d) Existing customers and buyers is information that would be good to know on the buyers behalf. (e) Buyer can arrange or invite suppliers to give presentations or demonstration of their products.(f) Buyer should take currency into consideration. What currency to use? Buyer's currency ensures no risk to the buyer with all the risk transferred to the sellers. This scenario also works vice versa. Branch (2001) suggests the Euro currency to be used. (g) Buyer should be aware of the geographical location of the supplier. This means the place of supply, which can differ from the buyers address. This affects heavily in freight cost and possibly in import duty costs and tariffs. It is also worth to consider the strategic focus when determining geographical location of the supplier.

Branch (2001) states that in the developed market, such as G7 members, there is good infrastructure, developed workforce in technical aspect, but the workforce costs are high. Although the currencies are stable and politically governments are more likely stable. Also other downsides can be regulated economy and deregulated economy. Less developed countries may have less stable currency which usually trades through US dollar. Also other aspects along with currency and workforce knowhow are limitations in infrastructure and limited technical skills.

As a summary, Branch (2001) states that the final choice is determined by the criteria of the buyer and its circumstances. Most common factors are price and delivery time, but other aspects should be taken into consideration also. Currency can have huge impact, political aspect, product availability, language, value added benefit, supplier location, management culture and possible brand image. A visit to prospect gives a good insight whether a good relationship can be developed.

#### 4.7.1 RFI/RFP Process

RFI process is a way to gather small amount of information from large number of potential suppliers. The RFP process is a way to gather large amount of information from small number of potential suppliers. In the RFP process the information is highly detailed and the potential supplier are considered qualified from the first step which is RFI process.

RFI/RFP process is seen as the basic repertoire of the purchasers who gather information regarding potential suppliers. The RFI process should be simple and concise. According to Schuch et al. (2008:139) the process includes three steps. A) Cover letter from the inquiring company to show interest towards the potential supplier. B) General questionnaire where the inquiring company asks for small amount of information, such as customer references, amount of workforce, sales etc. C) Separate section related to the category that is being sourced. The questions usually inquires information to determine if the potential supplier can meet the specification of the inquiring company's demands. Also to see if the potential supplier is interested being a supplier for the inquiring company.

According to Schuch et al. (2008:139), the point of RFI is to achieve highest response rate possible. The questions should be available to be answered by checking off. One mistake that companies tend to do is making the RFI too technical and they might show off as and commercial or technical audit.

The RFI data that has been gathered sets up basis for selecting next round candidates for the RFP. The RFI also has a communication function. When sending the RFI to large numbers of potential suppliers it can cause a broader audience that new supplier are being searched. This can wake up the competition at the early stage of the defined sourcing process. Also the RFI process can produce interest within the current suppliers and can lead to price and position negotiations.

According to Schuch et al (2008:140-141), the RFP should be made supplier friendly. Suppliers do not have unlimited resources, such as engineer and cost accountant at their disposal and usually have to prioritize their workload and deployment. The RFP process should be clearly structured proposal sheet that lists the required parts or services that the inquiring company is seeking for. The proposal sheet or inquiry sheet should include all the technical information that is required to build or manufacture the asked item or service. Unclear inquiries are the most common reasons why supplier candidates discontinue the preparation of an offer and rather turn their attention to another inquiry if possible.

In addition, it is essential to give feedback as soon as the offer has been received. The new offer can be evaluated and compares to the existing suppliers terms. This immediate feedback can give the potential supplier opportunity to improve their offer right at the start. Feedback also gives a chance for the inquiring company to see if the supplier candidate has understood all the requirement.

Also, finally, the company who is inquiring and having multiple supplier prospects in the RFP process, needs to give feedback to those companies who were not invited to negotiate. According to Schuch et al (2008:140-141), the offer making takes time and to ensure that excluded supplier candidates bid in the future, it is crucial to know why they were not selected or why the offer was rejected.

#### 4.7.2 Risk Scoring

A risk scoring matrix may and can be used to score supply of critical or purchased parts. Table 13 represents the risk management table attributes that has been define by Jeeves (2008)

Table 13. Risk management attributes (Jeeves 2008).

	<b>Risk scoring</b>
1	Continued supply capability
2	Quality & Quantity
3	Technology competence & leader ship
4	Financial situation
5	Price competitiveness
6	Location risk & Shipping mode
7	Competitive factors
8	External factors influencing suppliers
9	Internal factors influencing supplier
10	Long term capacity and capability utilization
11	Long term pricing factors
12	Total cost of commodity
13	Technology breakthroughs
14	Lean manufacturing opportunities
15	data to synthesize production costs
16	Product initiatives
17	Product life cycle

As seen from Table 13, the matrix includes two risk score matrixes. One for the supplier and one for the product or product category. It is possible to further categorize the category into sub categories, and also the potential supplier or old suppliers into main supplier or minor suppliers. Supplier grouping can be done through the matrix and by their

capability and capacity attributes. Finally, the scoring matrix must be updated every so often. (Jeeves 2008).

#### 4.7.3 Issues with Supplier Selection

According to Pidduck (2006) partner selection and choice is complex decision where many factors are part of the decision. Pidduck (2006) suggests that personal relationship and previous knowledge of the potential supplier may affect the decision. Also reputation of the supplier plays a role that can affect the decision. Pidduck (2006) have identified six dominant issues in supplier selection which can be seen in Table 14 below.

Table 14. Supplier selection issues. Pidduck (2006).

<b>Supplier selection issues</b>	
1	skills or constraints and specific requirements
2	resource availability
3	social network
4	politics
5	ambiguity
6	reputation

According to Pidduck (2006), the new supplier has to meet the specified requirements and skills. Once the partners or suppliers have been identified and taken into partnership other not so restricted partners or supplier can be negotiated. At this early stage, depending on the requirements initial negotiation process may be required.

Pidduck (2006) states that potential supplier supply and demand will have great effect on the final chosen partners. If there are numerous partner or supplier candidates with needed skills and qualities, then the chosen supplier or partner will be most likely the one with exact match of the requirements for the needed partnership. If there are numerous potential partners or supplier there may be prioritization of requirements and the decision may be done based on the defined specific constraints.

According to Pidduck (2006), partners or supplier are usually selected based on known contacts and possible previous experience with a person or organization. Reason for this is that it's easier, faster and more efficient to deal with someone that you know, or with someone that has been recommended by someone you know or dealt with. Pidduck (2006) states that social networks and social capital provide faster and more efficient way for partner or supplier selection process.

Pidduck (2006) also mentions that politics may have a role in partner selection. For example favors may be received or even owed. Many partnerships are built on financial constraints. Pidduck (2006) states that organization with financial power may choose partner or supplier based on particular geographical area or based on certain industry. These elements may be unrelated to partnership needs, but can fulfil the financial constraints needed. Often partnership does not matter in these type of cases, only thing that matter is that the defined group gets funding. The so called partnership does not necessarily exist, but the appearance of partnership may exist.

Pidduck (2006) defines that partnership can be classified to ambiguous or structured partnership. In structured partnership typical characteristics are specific goals, procedures, rules, defined partners and defined results. In ambiguous partnership the goals are general, rules not so strict and so on. The more ambiguous the partnership or goal is the more loose the partnership selection is. In ambiguous partnership allows more problems though.

#### 4.8 Reverse Auction

Firms place orders on regular basis with suppliers online and real time. According to Benton (2010), a reverse auction has been the most significant change in the purchasing.

Purpose of the traditional auction is to set up competition between bidders. Benton (2010) states that businesses that use reverse auction or e-auction has managed to save up to fifty 50% in purchasing. Seller offers service or goods in the auction and bidders bid and the highest bid will win. Reverse auction has same logic, but different conditions. First the buying firm sets up an auction where they describe what service or product they are looking for. Next suppliers or service providers start to bid on that particular item or service. The bids for the service or items go down instead of up like in normal type of auction. At the end of the auction buyer can choose which bidder has won the auction. Usually price is quite important factor, but not usually the most important factor. (Benton 2010)

Benton (2010) has listed several factors that can be taken into account when choosing the winning bidder and also steps that should take into account when starting a reverse auction. Below the process is described in Figure 19.

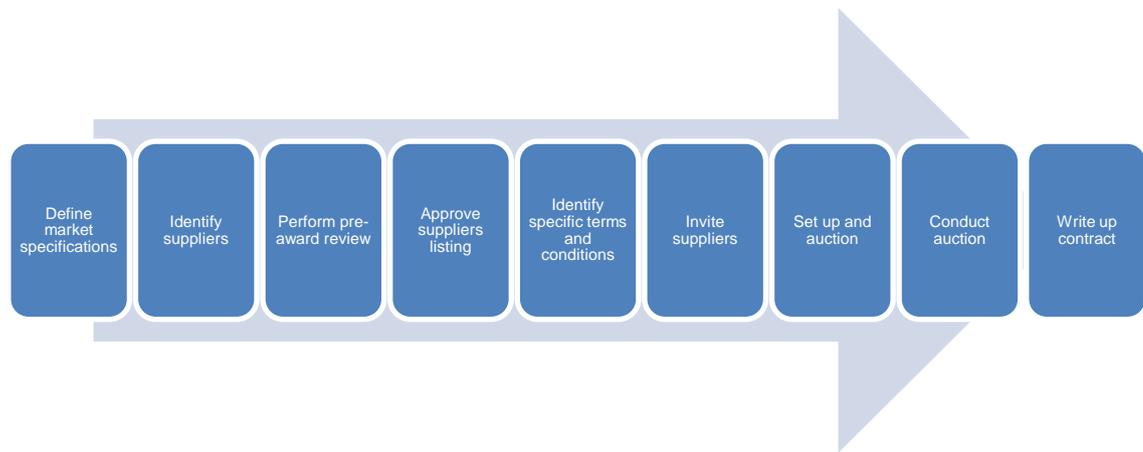


Figure 19. Reverse auction process (Benton 2010).

Benton (2010) also states that reverse auction may not work with all items or services, especially with those where the competition is low. By definition the reverse auction will decrease prices when competition is high. Reverse auction also may hurt the supplier relationship where the seller runs the risk of alienating both current and potential sources of the items or services.

Reverse auction is also a good way to gain market information. Information that can be achieved is supplier information, price information and new methods. Reverse auction should be used carefully and, according to Benton (2010), traditional request for quotation can be more secure and less traumatic and also to keep the relationship healthy between the buying and selling companies.

#### 4.9 Conceptual Framework of the Thesis

The key elements discussed in the existing knowledge and theory are further merged into a conceptual framework for building the proposal in next Section 5.

The conceptual framework is built based on the findings from the literature and theory covered in this Section 4 keeping in mind that the theory would be most suitable for scope and objective for the case company context. The conceptual framework is shown below in Figure 20.

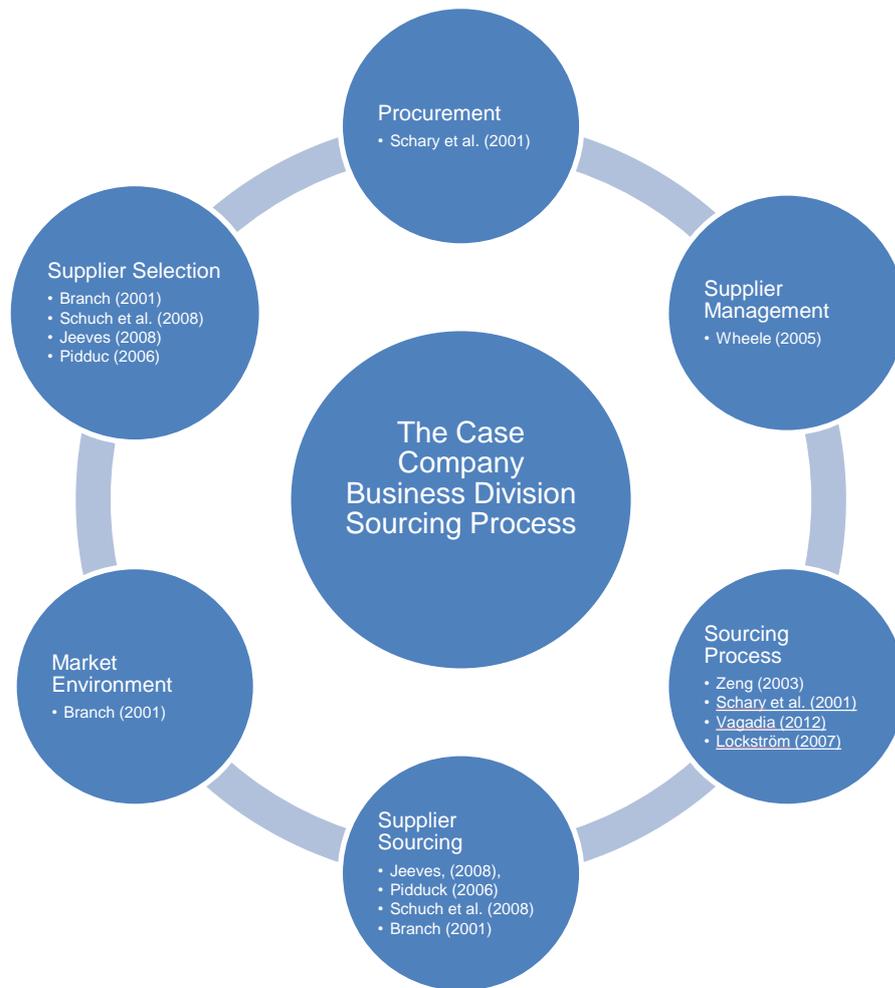


Figure 20. Conceptual framework.

In the conceptual framework, there are six different elements that are considered to be important for improving the current sourcing processes in the case organization. These six elements are: (a) Sourcing process, (b) Supplier Sourcing, (c) Market Environment, (d) Supplier Selection, (e) Procurement, (f) Supplier Management, (g) Sourcing process.

Importantly, the selection of the six elements for improving the sourcing process was chosen to target the needs of the case organization. The conceptual framework is built around the case company's business divisions sourcing organizations involved in the sourcing process. Based on the survey and process analysis (done in Section 2, CSA) it was obvious that there are two ways to approach the business challenge in this thesis. First, to focus on the issues found from the current processes and actual feedback from the key stakeholders from the CSA. As the objective of the thesis is to propose an improved process for the supplier search and selection in the sourcing process, it was also clear that the current processes have certain good elements which need to be retained when proposing the improvement, since they are crucial for building the conceptual framework.

Therefore, the conceptual framework was built focusing on the issues relevant to the case company sourcing organizations involved in the sourcing processes. The main reason for this is that the sourcing process in the case company organization is built up around several different internal documents that might be either processes, templates or general information documents.

Next section applies the conceptual framework for building the improvement proposal for the sourcing process of the case organization.

## 5 Building Proposal for the Case Company

This section presents the proposal for supplier search and supplier selection process for the case company organization.

### 5.1 Overview of the Proposal Building Stage and Findings of Data Collection 2

The proposal building starts with overview of the results from the current state analysis and matches them to the best practice identified in Section 4. Based on this background, the proposal draft is created based on findings from the current state analysis (data 1, Section 3), findings from the best practice (Section 4), and proposal building discussion (data 2) with the key stakeholder, the sourcing director.

In the proposal building discussion, the sourcing director stated that, currently, the sourcing organization is responsible globally for all sourcing related activities for the business division and other Business Division's factories. The sourcing offices role is not remarkable anymore, because the categories itself are now the driving force behind the sourcing activities.

It was also stated by the Sourcing Director that there is not anymore defined percentage on how much cost reductions there should achieved, but rather risk eliminating factors and cost reductions without any defined percentage or sums.

Process wise, there were comments regarding the Supplier Quality Manual QSP-0037 which states that in the Sourcing process phase 1 and (c) Contract making and validation in Figure 8, the procedure, instruction and specifications to the supplier are shown after the Supplier has been entered to the ERP, which is not true in real life. The Sourcing director suggests that the supplier is given all the specifications and processes or procedures before the Pilot delivery is done. It was also stressed that the current basic technical pictures are not enough to produce a pilot delivery.

Other comment stated was that Global sourcing is only participating to phase 1 and the other phases are handled by some other organizations. This is done in Figure 8 and phase 2, Daily management.

When reflecting the comments given by the Sourcing director the following table was created show the connection between CSA, CF and the comments to build the proposal. Data analysis shown in Table 15 below.

Table 15. Proposal building (Data 1 and 2).

	<b>Current state analysis finding (Data 1, Section 3)</b>	<b>Conceptual framework (Section 4)</b>	<b>Proposal building: suggestions/comments from the key stakeholder (Data 2)</b>
1	<ul style="list-style-type: none"> <li>Two locations for Sourcing process and both are different from each other</li> </ul>	<ul style="list-style-type: none"> <li>Procurement</li> <li>Sourcing process</li> </ul>	Confirmed. Flaws found from the Supplier Quality manual QSP-0037 where sourcing process is located. In real environment, the sourcing is done not according to the procedure described in that process.
2	<ul style="list-style-type: none"> <li>Uncertainty of process usage</li> </ul>	<ul style="list-style-type: none"> <li>Sourcing process</li> </ul>	Processes are being used for global supplier search and selection.
3	<ul style="list-style-type: none"> <li>No category needs taken into account</li> </ul>	<ul style="list-style-type: none"> <li>Supplier management</li> <li>Supplier selection</li> </ul>	Local sourcing offices role is very small at this stage and the categories are responsible for global sourcing activities.
4	<ul style="list-style-type: none"> <li>No detailed information on supplier search in Supplier manual</li> </ul>	<ul style="list-style-type: none"> <li>Supplier selection</li> <li>Supplier sourcing</li> <li>Sourcing process</li> </ul>	Processes not entirely reflecting what is done in real situations
6	<ul style="list-style-type: none"> <li>Supplier selection process is not sufficient enough</li> </ul>	<ul style="list-style-type: none"> <li>Supplier selection</li> <li>Supplier sourcing</li> <li>Market Environment</li> </ul>	No comments

In addition, Sourcing Director also suggests that the first step, before sending the case company Code of conduct and sustainability criteria, both parties should sign a non-disclosure agreement. This will protect both parties regardless of the result of the process.

There was no comment regarding the processes sufficiency for daily work, which means that the survey results can be trusted and the proposal continues from this point.

## 5.2 Proposal Draft

The procurement has become an essential part of companies supply chain and part of company's strategy. Traditional role of procurement has changed quite a lot in the recent years and the goal to achieve the cheapest price and material flow to the production are not the seen as most important thing anymore. In The case company's current strategy the price reduction is one key focus.

In addition to this strategic company direction, based on best practice and available knowledge, research and business publications suggest that the focus should not be placed solely on the product side but rather on the supplier capabilities. When the new strategy is released for the case company in the future, it should take into consideration the importance of its suppliers in the supply chain.

Based on the results of this study, the proposed steps for the sourcing process could include the following main elements:

1. *Category needs*

Supplier management wise, the company needs to define for which commodities or categories the number of suppliers should be increased. As stated in best practice, the company should start by defining the supplier strategy. In this case, the supplier strategy can be defined first on the category level, since the categories that this thesis has introduced in are not yet taken into consideration fully when currently doing the supplier search and selection. It was also stated in Data collection 2 that categories are now mainly involved in the Global sourcing rather than local, as shown in Figure 2.

2. *Sourcing type*

Depending on the item and its special characteristics, the next step would be to define the sourcing type. Possible sourcing types depend on the item type which also defines if the sourcing should be done locally or globally. If the product or item is complex and might have frequent revisions, single sourcing might not be ideal, but the sourcing should be done locally. Bulk products are prone to be sourced globally and/or as multi sourcing. In that case, the company has the ability to create competition and reduce the price of the product or item. Also the nature of the item can help to define the relationship for the supplier, which also should be decided when starting to select a new supplier.

When the product is complex, it would be preferred to create a partnership with the supplier to share knowledge and mutually develop the product. In the case organization, the category needs should influence the sourcing type, but in the end, the product characteristics should define the sourcing type. Figure 21 below to describe the process structure.

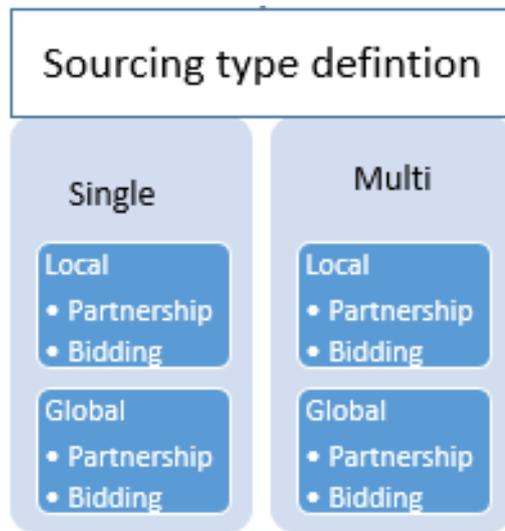


Figure 21. Sourcing type definition.

### 3. *Supplier search*

Depending on an industry, supplier search make take considerable efforts, with information located in various sources. In the industry where the case company operates, tradeshows are used as quite common sources for supplier search, where suppliers tend to be present quite often. In tradeshows, one can also see examples of products and discuss pricing, technology used and also have an opportunity to meet company representatives face to face. Other good sources are, for example trade, directories. These are not so commonly known sources, but can give valuable information. Possible places to obtain trade directories are trade associations, government, international agencies and professional institutes. Most of the information related to these sources are also easily to be found from internet. It is also worth mentioning that professional magazines and journals usually have information regarding suppliers working in their relevant areas.

These mentioned sources of supplier information should be added to the supplier search procedure and also looked into more carefully. Figure 22 below shows information sources for supplier search.



Figure 22. Supplier search.

#### 4. *Supplier selection*

In the Supplier selection phase, Supplier selection and intelligence make the crucial elements where the selection should be done. As the decision making is getting more complicated, there should be also supplier intelligence taken into account as defined in Section 4.3.

Another critical step is Risk scoring. The Risk scoring process is already used in The case company for selection purposes. However, the risk scoring should include two different matrixes that are listed below.

- a) Product or product category
- b) Supplier.

The risk management matrix should be built for both cases and should be updated as often as possible. Risk scoring matrix can be seen in Section 4.7.2 where there are examples of attributes that could be used when defining the matrix attributes. The case company is already using risk scoring, and the method should stay, but the attributes should be revised. The supplier selection elements, including the risk scoring and intelligence, are shown in Figure 23 below.

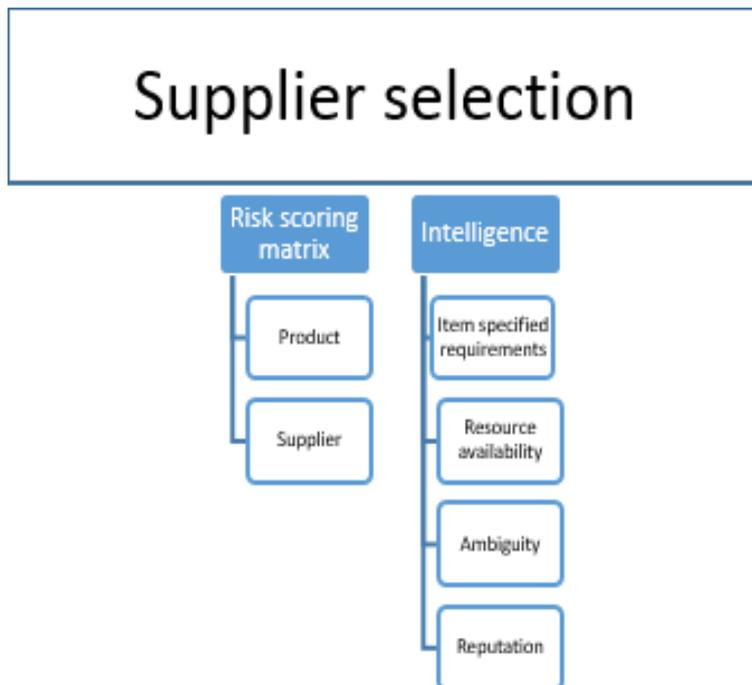


Figure 23. Supplier selection.

### 5. RFI / RFP

Purpose of the RFI process is to gather a small amount of information from a large number of suppliers, and the purpose of the RFP process is to gather a large amount of information from a small pool of potential suppliers.

Both processes should be made very simple and concise. The process itself could contain 3 different stages that should be done in the process.

- A) Cover Letter to show interest
- B) General questionnaire to gather information
- C) Category information to see if the supplier is capable to supply the goods for that specified category.

The RFI form should be very easy to fill to get the highest response rate possible. If possible, the form should be done by checking boxes. What should be taken into account is that the RFI/RFP should not be too technical, because there is a danger that the company responding to the RFI/RFP might think that it is commercial or technical audit.

Thus, RFI serves as pre-screening for the next round, RFP. Moreover, RFI can also be seen as a communication channel. When sending RFI to a large number of suppliers, it can cause broader audience's attention that new suppliers are being searched. This can cause competition already in the early stage of the category based supplier search and selection process. It can also cause uncertainty within the existing supplier who might be

interested to check their pricing or other agreed attributes that can have effect on the total cost of the product.

In the next stage, RFP should be done and kept supplier friendly. The process should also take into consideration the supplier when they are not chosen. The gesture to tell them why they did not win in the RFP phase will spirit them to improve the element that was not sufficient enough and have good image on the company that has sent the RFP. RFI/RFP process is described in Figure 24 below.

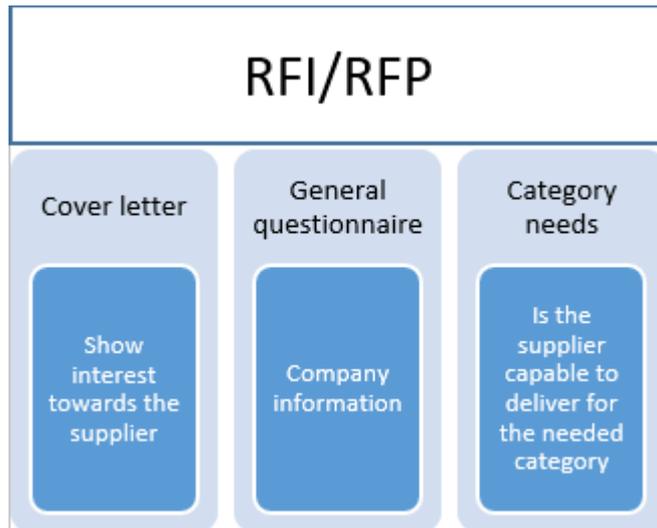


Figure 24. RFI/RFP.

## 6. Market research

When starting to do market research it is essential to know how well the market is accessible. Legal and political environments can be one of the influential factors. These two factors can answer the question how stable the market might be or if the market is technologically capable to serve The Case Company's needs regarding the products special features. As always, the information regarding the product cost and specification are part of the key areas in the market environment. This can have effect on the exchange rates, for example. In addition, it is also vital to know if the market capable of producing products that meet the national and international standards, and especially standards defined by Case Company. This will give an indication of the product quality.

When these parts have been taken into consideration, the focus shifts to the general characteristics of the market. It needs to be evaluated if it is a developed, technologically ahead and capital intensive, or it is the market underdeveloped and commodity focused. This should also be reflected to the product for which the supplier is searched for and its specifications.

Culture can also give good indication about the nature of the market. For example, highly western types of business cultures are usually easier to communicate with and usually have more accessible workforce. In this case, the case company should define in its strategy if it is worth to start investigating unknown markets. If yes, then this step should be implemented and the markets and culture attributes represented here are a good way to start building the process.

Based on the findings from the current state analysis, best practice and Data 2, Figure 25 below was created to fulfill the requirements for the improved market research process as suggested in Data 2.



Figure 25. Market research.

Based on the findings from the current state analysis, best practice and Data 2, Figure 26 below shows the Sourcing model that fulfills the requirements suggested for the sourcing process in Data Collection 2. The five phases below describe the proposed/improved Sourcing process.

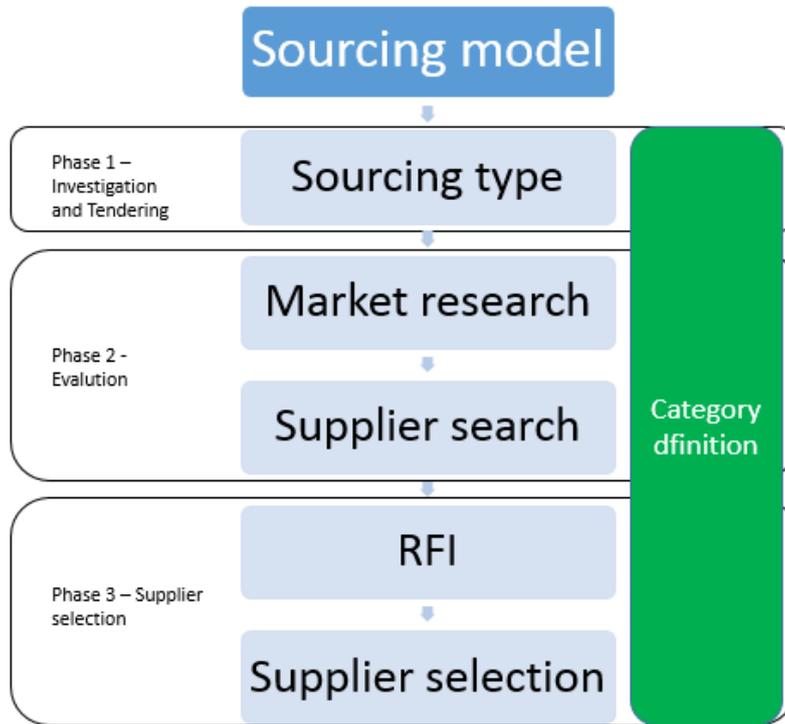


Figure 26. Proposed supplier search and selection process/model (based on a general category).

### 5.3 Detailed Proposal Draft

The detailed proposal combines the elements described in Section 5.2 above into an overview of the detailed process to accommodate all the steps and element into one general sourcing process, as shown in Figure 27 below.

The General Category based supplier search and selection process proposal draft shows the process flow and the sections behind the process. As seen from Figure 27, it starts with *the Category based sourcing model* and continues into *Sourcing type definition; Market research, Supplier search; RFI/RFP, and Supplier selection*.

This proposal suggests a streamlined, logical flow for the sourcing process for the case organization. However, it does not yet fully describe how the process would sit in the current sourcing process that the Global Sourcing is using, due to the reason that it is unclear which of the sourcing processes analyzed in the current state analysis, are the official ones that should be used currently.

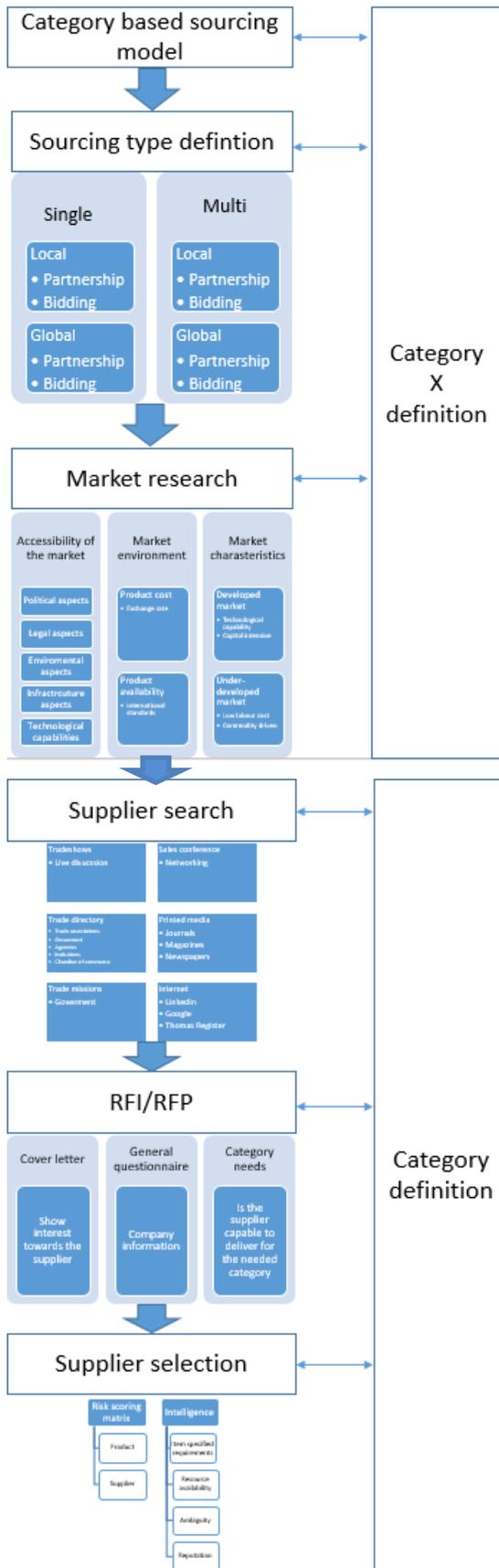


Figure 27. Detailed Category BASED Supplier search and selection process proposal (draft).

## 6 Validation of the Proposal

This section discusses the validation of the proposal that has been conducted on the identified weaknesses in the current sourcing process and the proposal for the improved sourcing process. Validation includes the feedback and validation discussion received from the key stakeholder of the thesis work in the case company.

### 6.1 Overview of the Validation Stage and Findings from Data Collection 3

For conducting the validation, the proposal was introduced to the Sourcing Director of the Global Sourcing in the business division. The initial proposal was sent for feedback and comments regarding the process by the Sourcing Director beforehand for validation purposes.

The validation (data collection 3) stage consisted of presenting the proposal draft, with a detailed description of each process stage and possible attributes to use in the defined stages. The proposal also included direct suggestions for each stage from the Sourcing director of global sourcing. Purpose of the feedback was to define and analyze the proposal, and its weaknesses and strengths identified by the case company key stakeholder. The feedback and comments given by the Sourcing director were used to refine the Proposal to its final form.

Table 16 below shows the comments that are affecting the final proposal and the stages which they affect to.

Table 16. Feedback to the Proposal.

	Draft proposal area	Comment
1	Sourcing type: "If the product or item is complex and might have often revisions, single sourcing might not be ideal, but the sourcing should be done locally"	Global sourcing is not ideal due to different understanding and distance and time zone that is why it should be done locally
2	Sourcing type "The product's characteristics should define the sourcing type"	Dual sourcing is ideal for all the volume nests. Aim is to have two different supplier and preferably from different countries to eliminate risk.
3	Supplier Search	Sourcing organization visits trade shows.
4	Supplier search	From far east there are quite a lot of contacts from potential suppliers

The comments received from the Sourcing director mainly related to the Sourcing type definition and the Supplier search definition. The comments did not affect the process type proposed for the Supplier search definition, but the comments and suggestions for the Sourcing type will have a small effect on the process.

The comment on single sourcing refers to the issues there might occur when the product is complex or there are changes for the product design regularly. Time zones, for example, can cause issues and communication delays, and can thus complicate communication. Also the distance will cause delays for availability of the product if urgency is needed and therefore Local sourcing type fits it better. Communication can also be challenging when the communication language is not the spoken language for both parties and might cause misunderstanding with messages or in spoken language.

To reduce risk, single sourcing is not ideal for the business the case company business division operates in. For reducing the risk, it is seen that there should be two supplier for each product and these preferably the suppliers should be in different countries. This way unexpected events can be handled in a more efficient manner.

As for market research, it was commented that case company business division organization visits tradeshow often and uses that source of information for potential supplier search and selection. Finally, it was also mentioned that supplier search can be also complemented by using other ways of supplier search. It is known from experience that companies from the Far East quite often contact the case company to offer their services and products.

## 6.2 Final Proposal

The final proposal takes into account the validation results with the Sourcing director regarding the Proposal draft. These areas are changed to accommodate the comments that were introduced in Section 6.1 above.

One most noticeable change relates to single sourcing. As stated earlier, single sourcing is not ideal for the industry where the case company works in and therefore the Single Sourcing will be deleted from the sourcing type definition, as seen from Figure 28 below.

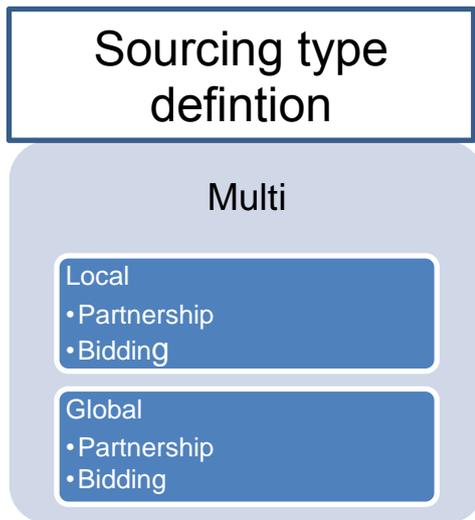


Figure 28. Validated sourcing type process.

After the sourcing type definition process has been altered, as shown in Figure 28 above, the final process figures are presented as the final proposal. The final proposal process figures have been merged from two parts: (a) Figure 26. General Category based Supplier search and selection process; (b) Figure 28. Detailed Category based Supplier search and selection process

General category based Supplier search and selection process (Figure 28) did not change from the proposal and can be used as the final proposal. They can be seen in Section 5.3. The Detailed Category based supplier search and selection process (Figure 28) had a small modification and therefore changed in a way that it affects the whole process flow.

The final proposal for the sourcing process can be seen in Figure 28 below.

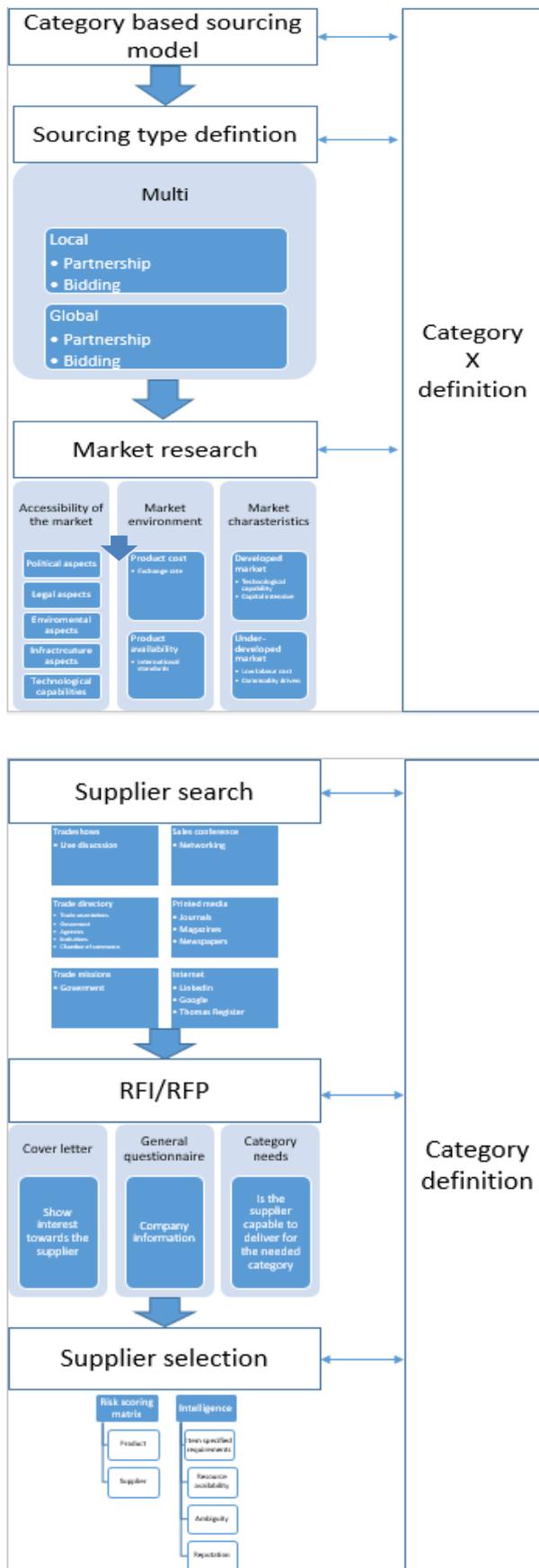


Figure 29. Detailed Category based Supplier search and selection process (final).

### 6.3 Recommendations

This proposed process for supplier search and selection was built based on the findings from the current state analysis, conceptual framework, and in co-operation of the key stakeholders.

The proposed process has many elements that resemble the current process, but is more straightforward and simple. The current processes in the sourcing organization are somewhat scattered and often overlap with the processes which were identified in the current state analysis. Based on the survey results, it was possible to identify some uncertainty with the usage of the processes and the scope of the processes.

As a future suggestion, it would be beneficial to go through the processes internally and define how the processes are used in real work environment. From the analysis of Data 2, it was identified that the categories are the driving force and are significantly influencing the sourcing of new suppliers and selecting them, and therefore a category definition was added as key part of the proposal.

It would also be beneficial to define the processes in a way that they would be used as defined. As a last recommendation it would be beneficial to have possible attributes listed in a procedure or a process of its own, so this knowledge would be available easily and usable when for the key stakeholders.

## 7 Discussion and Conclusions

This section summarizes the study and gives managerial implications for implementing the proposed supplier selection and search process into practice.

### 7.1 Summary

Presently, procurement has become an essential part of companies' supply chains and part of companies' strategy. In recent years, traditional role of procurement has changed quite a lot, with the goal to achieve the cheapest price and material flow to the production not seen as the most important thing anymore. In the case company of this study, as for many global companies which are able to utilize the scale advantage, the current strategy stresses the important of price reduction as one of its key focus. Accordingly, this study focused on streamlining the sourcing process so that to make sure the case organization can achieve this strategic goal.

The study focused on building an improved process for supplier search and selection for the sourcing organization. Currently, the case company's organization is responsible for all sourcing related activities locally and also globally. As the organization does the supplier search and selection for the Helsinki plant and other plants globally, it is essential that the processes supporting their work are up to date and defined carefully, which is what this study aims for.

Based on the review of the current processes, the results of the internal survey, as well as studying available knowledge and best practice, this thesis identified the issues in daily work of the case organization regarding the current processes that need to be improved. First of all, the current practices have certain strengths, such as quite logical sourcing process description, which is not used as main process. Also the knowledge is shared, which was identified from the survey. Legal and environmental aspects are also taken into account. However, the current practices also have some weaknesses. The main weaknesses include two different sourcing procedures that differ from each other, missing processes that are mentioned in procedures and also the ad-hoc style of working where the given processes are not being used or implemented as described in daily work. These weaknesses were identified and the proposal was built based on the current state analysis, best practice, and key stakeholder suggestions, the Sourcing Director, to propose the outline for the sourcing process for the case company's organization.

The proposed sourcing process includes five main steps. The five main steps include sections that give streamlined information what the step is and what attributes should be taken into consideration when proceeding with the process.

In the category based sourcing type model, the first step is the sourcing type definition. In this step the person responsible for the process has to decide if he or she is looking for a Local or Global Supplier. This depends what kind of products or items are being sourced. After the product or item definition has been identified and where the item or product would be used assembly wise the key stakeholder needs to make a decision if partnership is wanted with the supplier based on the characteristics of the sourced item or product or could the negotiations be done through bidding.

The second step is the market research where the key stakeholder needs to evaluate different markets and environments where to search for the supplier and what are the attributes that needs to be taken into account. These can be split into three different sections which are A) Accessibility, B) Environment and C) Characteristics. After these has been evaluated and defined the decision for where to go search can be done.

Third one is the actual supplier each. Searching for supplier can be done multiple different ways. In the proposal process the search has been split into six different attributes that describe what sources there are to find new suppliers. These can be different media channels, internet, tradeshow, Government funded trade events and so on.

Fourth step is the request for proposal or request for information where the case company contacts the potential supplier for more information about themselves or related to the item or product which they are sourcing. This step will define if the supplier is suitable technically and also if the supplier will meet the required demands defined by the case company to act as a supplier for them.

Final step in the process is the supplier selection where the case company will define if the supplier can be selected or not. In this phase it has been also taken into consideration that risk scoring will be performed so that the possible risks will be eliminated in the future also.

The findings identified in this study revealed that the refining of the current sourcing process would be beneficial for the case company and the key stakeholders who use the sourcing process in their daily work in order to get rid of the *ad-hoc* way of working and achieving the goals defined in the current strategy. Also, streamlined processes that

would be used globally would generate globally standard way of working and increase the knowledge sharing inside the organization

## 7.2 Practical/ Managerial Implications

There are three practical implications that can be identified as the next focus of attention: firstly, better linking between the process, procedure and template; secondly, further refinement of the processes, and thirdly, better taking into account the sourcing organization strategy.

First, the case organization will benefit from further refining the current processes. If the processes included in sourcing are more refined, it would give a better overview of the process steps and elements, will better specify the roles and responsibilities of the sourcing organization, and it will also give the key stakeholders a better view of the processes that are available. Logical, detailed workflow of the processes, giving information what and how to do in each step and, ideally, a unified location would make this visibility even better.

Second, the current state analysis indicates that the process elements are not fully aligned. The sourcing process would benefit from further aligning and better linking between the process, procedure and templates. Importantly, refining the processes with detailed procedures and process attributes would work as a tool and lead the direction for the tasks related to sourcing.

Finally, updating the processes and procedures to comply with the organization's strategy is a matter of key concern. Currently, categories are the driving force behind the sourcing activities globally, and the local sourcing offices have quite a small role in the current sourcing strategy. Based on the organization's strategy, their role should grow and, thus, the category special needs and opportunities could be more taken into use in the sourcing process.

## 7.3 Evaluation of the Thesis

The study focused on building an improved process for supplier search and selection for the sourcing organization. The proposal was built based on the results of data analysis (data 1collections 2) and search for best practice from available knowledge. The proposed sourcing process in this thesis develops from the current sourcing process that the case company has, but suggests critical improvements related to streamlining the steps and elements of the current practices into one common, logical flow. The proposed

process has aims to give a more straight forward process option and more detailed process attributes as identified from the current state analysis and the survey, and as suggested by the key stakeholders. Pointing out these ideas on how to improve supplier search and selection process will hopefully help the practical actions focused on improving the current sourcing process in the case company.

### 7.3.1 Outcome vs. Objective

Objective of the thesis was to create a proposal for supplier search and selection process plan that can be used by the case company business division sourcing organization. In the study, the available literature and best practice regarding sourcing process, supplier search, and supplier selection was used to define the steps and elements in the supplier search and selection process. The areas for improvement were identified based on the current state analysis that gave the study defined direction.

Outcome of the study is a process for the supplier search and selection which was created. Due to time constraints, the proposed process has not been implement or tested in the case company, but validated with the key stakeholder discussion.

### 7.3.2 Reliability and Validity

In Section 2.3, the validity and reliability plan was suggested for the study to be conducted in a valid matter and with reliable results. It was stated that Validity for the study comes from utilizing multiple sources of evidence that can establish a chain of evidence and strengthen the logic of the study. According to this plan, the current state analysis of the internal processes with the stakeholders and a survey conducted with a pre-defined group of key stakeholders were done in order to get the most reliable data and analysis of the current processes. The proposal was based on the current state analysis and backed with suggestions from available knowledge and best practice, as well as the key stakeholder. Later, feedback for the proposed process in the scope of this study was also the reviewed and commented by the sourcing director of the case company's organization which made an essential phase of the research process.

Ensuring Reliability of the study was planned in such a way that the study should use case study as a method and the defined protocol for it was maintained alongside with database for data collection. The study used a case study approach and data was collected in three different phases so that the reliability of the study could better fulfill the requirements for reliability of qualitative research.

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## Sourcing Survey

12/1/2018

Sourcing survey

### Sourcing survey

Yes/no questions with an option to give comments in the end regarding the questions.

1. Is there a defined process on how to search new supplier candidates?

Valitse kaikki sopivat vaihtoehdot.

Yes

No

2. If there is a process, does it describe the sources where to search new suppliers?

Valitse kaikki sopivat vaihtoehdot.

Yes

No

3. Is there a process how to select suppliers?

Valitse kaikki sopivat vaihtoehdot.

Yes

No

4. Do you think the process gives enough information on how to make a selection?

Valitse kaikki sopivat vaihtoehdot.

Yes

No

5. Can you point out the location where the possible process descriptions are found (if asked)?

Valitse kaikki sopivat vaihtoehdot.

Yes

No

6. Have you had clear instructions on how to proceed with supplier search and selection by using Metsos own processes?

Valitse kaikki sopivat vaihtoehdot.

Yes

No

7. Is there a defined process when a new supplier search should happen?

Valitse kaikki sopivat vaihtoehdot.

Yes

No

8. **Does different categories have defined supplier search and selection processes based on the category special features?**

*Valitse kaikki sopivat vaihtoehdot.*

- Yes  
 No

9. **Do you feel that there's a need for more detailed processes?**

*Valitse kaikki sopivat vaihtoehdot.*

- Yes  
 No

10. **Do you think people working with sourcing activities in Metso Automation have same way of working globally and following the current processes?**

*Valitse kaikki sopivat vaihtoehdot.*

- Yes  
 No

11. **Do you share knowledge and experiences on among people who work with supplier search and selection?**

*Valitse kaikki sopivat vaihtoehdot.*

- Yes  
 No

12. **Do you know if other person working with Sourcing in FC Automation has been in contact with possible new supplier when you have made an initial contact towards a potential new supplier?**

*For example contacting a potential supplier that has been contacted and screened before by someone else in the past*

*Valitse kaikki sopivat vaihtoehdot.*

- Yes  
 No

13. **Do you think it would be beneficial to have a supplier database where potential, existing and "out of the game" suppliers would be listed ?**

*Valitse kaikki sopivat vaihtoehdot.*

- Yes  
 No

14. **Do you think an open bidding system for suppliers to bid against each other in auction type site be useful?**

*Valitse kaikki sopivat vaihtoehdot.*

- Yes  
 No

15. **Would open bidding system reduce your workload if it existed?**

*Valitse kaikki sopivat vaihtoehdot.*

- Yes  
 No

15. Do you think that sourcing and procurement is efficient enough in Metso Automation?

*Valitse jalkiki sopivat vaihtoehdot.*

Yes

No

17. Briefly describe how new supplier is being searched and selected? When and how does this happen? What is the driving force behind this event?

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18. If you have comments regarding the questions or anything related to these topics please add free text below.

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## Sourcing survey answers

Is there a defined process on how to search new supplier candidates?



If there is a process, does it describe the sources where to search new suppliers?



Is there a process how to select suppliers?



Do you think the process gives enough information on how to make a selection?



Can you point out the location where the possible process descriptions are found (If asked)?



Have you had clear instructions on how to proceed with supplier search and selection by using Metsos own processes?



Is there a defined process when a new supplier search should happen?



Does different categories have defined supplier search and selection processes based on the category special features?



Do you feel that there's a need for more detailed processes?



Do you think people working with sourcing activities in Metso Automation have same way of working globally and following the current processes?



Do you share knowledge and experiences on among people who work with supplier search and selection?



Do you know if other person working with Sourcing in FC Automation has been in contact with possible new supplier when you have made an initial contact towards a potential new supplier?





Do you think it would be beneficial to have a supplier database where potential, existing and "out of the game" suppliers would be listed ?



Do you think an open bidding system for suppliers to bid against each other in auction type site be useful?



Would open bidding system reduce your workload if it existed?



Do you think that sourcing and procurement is efficient enough in Metso Automation?



Briefly describe how new supplier is being searched and selected? When and how does this happen? What is the driving force behind this event?

The need for new suppliers is typically due to cost reduction efforts or to remediate performance or capacity issues with the existing suppliers

- typically cost reducing based reasons - single source eliminating - creating more competition in supplier network - bad performance of current suppliers causes sourcing projects

Metso requirements and vendor's status

From Gookie, from fair, from asking colleagues, asking from supplier, keeping eyes and ears open. Driving force might be bad quality or performance from current supplier. Trying to make savings by competition.

check more details in the process, during last few years, mainly driving is from cost point of view

**If you have comments regarding the questions or anything related to these topics please add free text below.**

- need to manage common projects with current supplier for reducing costs together (also engineering involved)

**Notes for Data 2 gathering****Subject: Thesis progress****Case organization stakeholder: Sourcing Director**

No.	Date	Section	Comment
1	3.12.2016	3.2 – Background of Case Organization	Now days the sourcing organization is responsible for the sourcing activities for all plants and also for the Pumps which is now part of The case company business organization
2	3.12.2016	3.2.1 – Global Sourcing Organization	Sourcing offices meaning is not that important anymore and should be deleted from the organization chart. The categories are responsible for the sourcing activities globally.
3	3.12.2016	3.2.1 - Global Sourcing Organization	The defined percentage that was defined in the strategy is not the driving force anymore. Anything which is reasonable to deal with price increase, delivery time or risk management will be moved sourcing wise to cheaper locations.
4	3.12.2016	3.3.1. Business organization Sourcing Processes	Processes are shared and used to the potential suppliers when pricing discussion is on-going. We have to do it because otherwise we would not get prices and expenses Technical pictures are not enough to get the pricing.
5	3.12.2016	3.3.1 – Business organization Sourcing Process	Specifications needs to be shared with the suppliers. This includes processes, procedures and templates. Mutual understanding needs to be there before any products can be delivered.
6	3.12.2016	3.3.1 Business organization Sourcing Process	Sourcing organization will hand over the supplier when the first batch of products have been delivered and accepted there.
7	3.12.2016	3.3.2 – The case company Code of Conduct	Non-disclosure agreement is always done with the suppliers before the process goes forward

**Notes for Data 3 gathering****Subject: Preliminary proposal review****Case organization stakeholder: Sourcing Director**

No	Date	Section	Comment
3	5.12.2016	5.3 – Proposal draft, sourcing type	In complex items global sourcing aspect is not smart. The sourcing should be done locally, but in a way that the sourcing is not done as a single sourcing, but as a dual sourcing.  Issue with complex items and global sourcing usually lies in the communication, time difference and general understanding each other.
3	5.12.2016	3.2.1 – Proposal draft, sourcing type.	Dual sourcing should be done to all volume baskets. Intention and goal is to have two different suppliers. Ideally the suppliers should locate in different countries, which will reduce the supply risk.
3	5.12.2016	5.3 – Proposal draft, supplier search	Many companies know the case company beforehand and reach out to the case company in a hope to become supplier. The supplier search can also work opposite way. Most of these suppliers are from Far-East.