

Saimaa University of Applied Sciences
Business Administration, Lappeenranta
International Business

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Supplier Management Tool in a Global Logistics Company: Case x

Thesis 2015

Abstract

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Supplier Management Tool in a Global Logistics Company: Case x, 34 pages

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The purpose of the thesis was to create a comprehensive report about the supplier management tool for a global logistics company. The report is used to clarify the supplier management tool's usage and processes for the case company's employees.

The data for this thesis were collected both from literature and the company's data. The company's data was formed from the handbooks and guidelines of the supplier management tool and the relevant processes. Both the theoretical and empirical parts were written at the same time to be able to combine theory and practice together.

The thesis will present the supplier management tool and its processes as part of the supplier management in a logistics company. The main focus in the theoretical part was on the processes and the focus in the empirical part was on the supplier management tool. This thesis shows the relevance of the supplier management for the companies and how its processes connect together.

Keywords: supplier management, supplier management tool, logistics

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1 Introduction

1.1 Background

This thesis will be about making a case project of a supplier management tool (SMT) in a global logistics company. The case project is a process description about the usage of the newly implemented SMT and the company's supplier selection process producing new information about the operations related to the SMT. The idea for the thesis came from a case company and it was based on their need to create a process description about the usage of the SMT. The SMT is created to ensure effective supplier management throughout the supplier selection and later usage of the information.

The SMT is an information system, lately described as a supply management system. The supply management systems have different architecture depending on the company's needs and usage. Simply it means that the supply management system can be connected to the company's Enterprise Resource Planning (ERP) system or an independent system. It is constructed for the purpose of handling the supplier management process including supplier evaluation and selection, as well as risk assessment and documentation.

The thesis will include two parts. The empirical part focuses on the processes of the SMT, which will enhance the users' ability to understand the whole supplier selection process in the case company. The project will also contain the risk assessment of the processes ran by the SMT.

The theoretical part is aimed to be a base for the empirical part and help with creation of the project. In this part the aim is to find the answers for the research questions, so the project would generate new perspectives and serve the case company's purposes as well as possible. In the theoretical part the main aim is to focus on the new researches and scholarly journals from the 21st century. Few exceptions are made since those researches and articles were used as a reference in many of the newer researches and articles. One of the main books about purchasing is also used in purpose of defining the operational connection between the supplier management and the purchasing. Based on that fact those references can be said to be still relevant for the topic.

The purpose of the research is to build a general view about how the SMT effects as a part of the supplier management, and to find out the relevant linkages between supplier management processes in the case company's business area. Supplier management has increased its importance in all the business areas as it is nowadays seen as a way to achieve global competitiveness. (Shin-Chan & Cho 2008, p.116.)

To be able to discover the supplier management and its processes more closely, the connection between supplier relationship management and supplier management needs to be understood. The connection is presented in the figure 1. on page 10. Supplier management and its processes are conceived as part of the supplier relationship management. Supplier relationship management itself is a wider concept combining several sub-operations.

Supplier selection has been researched for half a century, but only recently the researchers have begun to link the corporate social responsibility (CSR) with supplier management processes. Supplier's sustainability actions affect straight a buyer company's total CSR results. (Thornton, Autry, Gligor & Brik 2013, pp.66-67). CSR activities can be considered as a part of quality management. Supplier selection process together with the quality management can provide a competitive advantage for the buyer company.

Supplier selection is one of the classic topics to be researched among supply chain management; due to the fact there is a strong variety of approaches in supplier selection methodology and criteria (Kar & Pani 2014, pp.89-90). Considering the variety of approaches and criteria the importance to form the comprehensive understanding of the criteria and requirements for the supplier evaluation and selection is needed.

1.2 Objectives

The main objective of the thesis is to clarify and deepen the understanding of the SMT and supplier management process for the case company's employees. Another objective is to focus on the SMT in practice and how the usage of the SMT affects the duration of the supplier approval process. The research questions are modified according to the objectives.

Literature about supplier management and the processes included is used to achieve the objectives of the research. The supplier management and other processes in the SMT are linked together even though the literature mostly handles them separately. Other objectives are to find out the linkages between the supplier management processes and risk management to be able to conclude the effects of the SMT for the case company. Another objective is to connect the CSR objectives into the supplier selection.

1.3 Delimitations

As the thesis is based on the case company, it will set up delimitations. One limitation of the thesis is that the focus is on how the supplier management tool is affecting the supplier management in global logistics companies. In this context global logistics company means the companies providing logistics solutions and transportation for their customers. The logistics companies are providing logistics services including transportation, warehousing, and distribution facilities for different industries: retail, road, freight, maritime or airfreight transportation.

Supplier relationship management (SRM) includes various aspects of handling short- and long-term relationships with the suppliers. This thesis will be limited to focus on only the supplier management and its processes as part of SRM. This limitation is due to the SMT and its purposes and functionalities.

Considering the supplier evaluation and selection, which are crucial parts of the thesis as being the key operations of the SMT, one limitation needs to be set. As the SMT is already a developed IT system, the thesis does not focus on how the overall project of the supplier evaluation and selection should be developed. Instead, the thesis will focus on how the data collection and evaluation could be constructed in the most efficient way to meet the requirements of the case company.

The supplier evaluation includes basically three different steps: creating an evaluation strategy and defining the criteria, data collection, and evaluation. In a context of the empirical work, limitations need to be set considering these steps. The actual evaluation can be done in various ways. In literature the evaluation

is mainly presented in mathematical procedures and IT systems. Due to a lack of knowledge about the IT system and information, the thesis will only focus on the different types of measurements.

1.4 Research questions

Main research question is:

- How to use a supplier management tool as part of supplier management?

Sub-questions are:

- What is supplier management?
- What is supplier evaluation and how is it performed?
- How the current suppliers' performance is evaluated by the supplier management tool?
- What is supplier selection and how is it performed?
- How does supplier selection affect supplier management?
- What kind of risk assessment is needed to ensure supplier management?
- How does the supplier management tool affect the duration of the supplier approval process?

1.5 Research method

The research is done as a qualitative case study. The case study was selected because the empirical part includes creation of the project about the supplier management tool for the case company. Qualitative method is suitable as being descriptive and focusing on maintaining the deep understanding of a certain research topic. (Gillham 2010, p.10.) At first the research is defined by deduction to create a theoretical framework for solving the practical problems. After that the research will maintain its inductive nature, as the created process description needs to be contrasted and defined with theories.

The purpose of the case study is to use the empirical data to discover the evidences to answer the defined research questions (Gillham 2010, p.10).

Another purpose of this case study is to create new knowledge about supplier management for the usage of the case company. To maintain those aspects the theory and empirical case need to be performed hand in hand in purpose of discovering the most relevant literature. (Gillham 2010, p.15.)

The case will be about creating the process description in practice of the supplier management tool (SMT) including the risk assessment. The aim is to achieve a proper understanding and interpretation of SMT and its practical usage and effects for the case company. The empirical data will consist of the documents and the SMT instructions acquired from the case company. A report about the usage of the SMT and the processes connected to that tool is written in the case project. The theory is applied in inductive and deductive way into practice, to be able to construct practical work and to justify the effects, linkages and conclusions of the SMT and supplier management.

Key concepts of the study are supplier relationship management, supplier management, supplier evaluation, supplier selection, and risk assessment. The key concepts are relevant in a case project, which will be the base of the empirical data. The case project is related to supplier relationship management (SRM), as supplier management including its processes is a sub-operation of the SRM. All these relevant key concepts are widely presented in the literature and there are several scholarly journals, which are used as a base for many researches. Considering the literature the key concepts have started to occur mainly in the newer researches in the 21st century. Some older literature is used also as part of this thesis, because those are used as a base for many researches even today.

2 Supplier relationship management and supplier management

Based on the literature, supplier relationship management and supplier management are mainly researched as separate processes. To be able to understand the relevance of the concepts to this thesis, figure 1 on page 10 is presented.

Supplier relationship management has become as a focus of the companies in order to control the purchasing and outsourcing costs as a great portion of the total costs. The increased focus is based on the globalisation, differentiated customer needs, and the complexity of products, which affect SRM in order to increase company's competitiveness. (Park, Shin, Tai-Woo & Park 2010, p. 496.) The company's competitiveness by SRM relies on the fact that SRM's aim is to connect the company to its external supplier network and to take advantage of the cooperation of shared business activities. (Lintukangas & Kahkonen 2010, pp.107-108.) In general SRM is defined as a process for cooperating with suppliers within a supply chain to maximize value. SRM includes different processes by which the companies can maximize the supply chain's value. (Brusco 2014.)

SRM's another aim is to provide the framework for developing and maintaining the relationships with suppliers. The key action of the SRM is the integration with the suppliers by sharing information, driving performance by key metrics and adjusting perceptions. Previously SRM was thought only as a software tool, but if done right, it can enhance a performance of all partners in a supply chain. (Hughes & Wadd 2012, p.22.) Overall SRM consists of all the actions, which are made internally and externally between the company and its suppliers with the purpose of enhancing performance for all partners within the supply chain.

SRM can also be seen as a macro business process including sub-operations, which can be defined as micro-level operations. Those sub-operations are: "**review** corporate, marketing, manufacturing and sourcing strategies; **identify criteria** for categorizing suppliers; **provide guidelines** for the degree of customization in the product/service agreement; **develop framework of metrics**; and **develop guidelines for sharing** process improvement benefits with suppliers" (Lambert & Schwieterman 2012, pp.338-347). Due to SRM's nature of the macro business process it requires analyzing the companies' strategy to meet the requirements of all the other business functions, e.g. marketing, production and purchasing, for the purposes of the supplier segmentation. The supplier segmentation is critical considering the companies' success both currently and in the future.

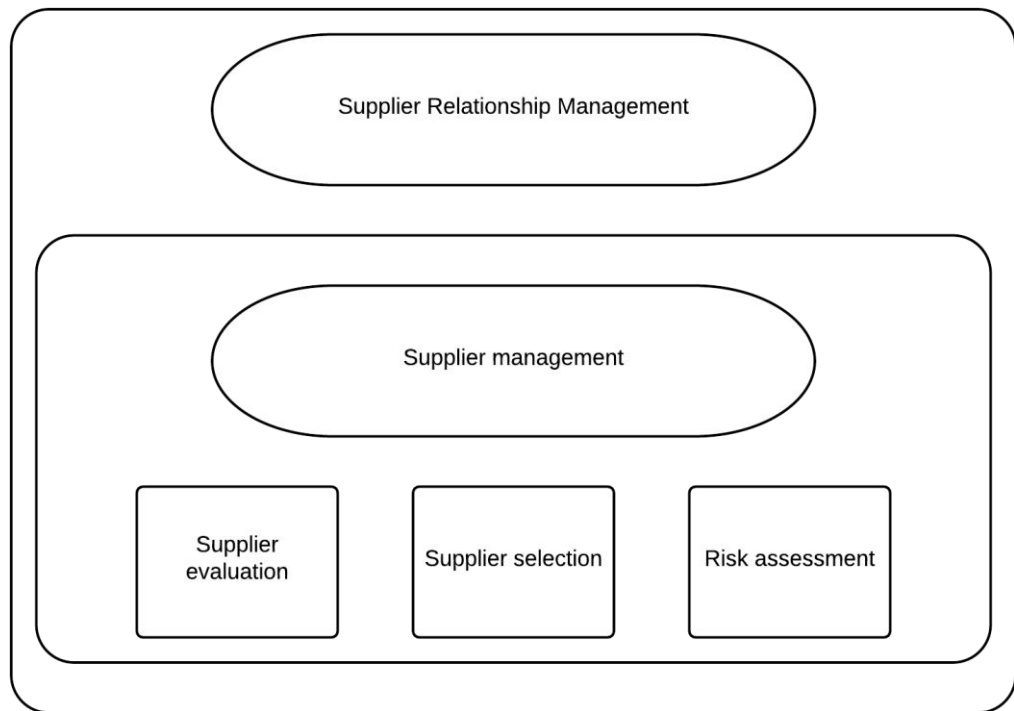


Figure 1. The concept of the supplier relationship management

In figure 1 the relations of the SRM and the supplier management are described. In general the SRM includes the supplier management process, which includes the supplier evaluation and selection, and the risk assessment. The figure also reflects the theory, as the SRM can be seen as a macro business process and the supplier management as SRM's micro-level operations.

The defined micro-level operations can be categorized under the term of supply management. This fact makes SRM and the supplier management closely related and supportive actions in the companies' supply chain management. **"Supplier management** is an interorganisational activity carried out by employees of the buying company, aimed at assuring the performance of the supplier meets the multidimensional expectations of the buyer." Supplier management as a term is also used to describe completeness of actions to interfere with the suppliers. Supplier management can also be considered as a part of supply chain management, purchasing management and quality management. (Batson 2008, p. 667). Kannan & Tan (2002) have divided the

supplier management into three dimensions: supplier selection, innovative supplier development strategies, and meaningful supplier performance assessment mechanisms. This thesis will mainly focus on the dimension of the supplier selection, and partly on the meaningful supplier performance assessment mechanism by the view of the supplier evaluation.

The multidimensional supplier management has been seen constructed by the supporting activities of logistics, operations, marketing and service due to the Porter's value chain model. Currently it has been defined as a strategic factor of companies' competitiveness due to the fact that external supplier relations are meeting the companies' internal operations and resources, which relates the supplier management to the SRM. The benefits and effects of the supplier management and SRM have been emphasized in many researches and articles in the recent years. (Lintukangas & Kahkonen 2010, pp.107-109.)

Narashimhan, Schoenherr & Sandor (2013) explain the supplier management to be a complex operation including several factors. Supplier management in a global operating environment involves the factors: product or service facilities, as well as possible costs considering supply interruptions, capacity risk of the supply networks, natural disasters, compliance, operational and logistics risk, political uncertainty and SRM. They also emphasize that if one wants to manage the complexity of the supplier management all of these previously listed aspects need attention and continuous improvement. (Narashimhan et al. 2013, pp.10-11.)

Supplier management is directly related to the purchasing operations of the company. Lambert & Stock (1993) defined that the supplier evaluation and selection are possibly the most important activities considering the purchasing process. They have linked supplier evaluation and selection with decision-making units and defined the important steps. They also emphasized that all the defined steps may not be necessary to perform in supplier evaluation and selection. These steps are as follows: need identification, specification establishment, searching of the alternatives, establishing contact, purchasing and usage of criteria, evaluation of the alternatives, negotiations with the suppliers, buy, use, post-purchase evaluation. This connection still remains and

all of the steps can be considered in the supplier evaluation and selection operations depending on the buyer company's products/services and the stage of the supplier relationship.

3 Supplier evaluation

"Supplier evaluation is a quantification process designed to stimulate the decision process inside the evaluating buying company or through the incentives it invokes, to stimulate a change in behaviour in the evaluated supplying company" (Sundtoft Hald & Ellegaard 2011, p.890). Supplier evaluation can be divided into three different phases needed for the actual operation. Those phases are data collecting, creating criteria and setting requirements, and evaluation. The aim of the data collection is to select how the needed data is collected from the suppliers. Criteria and requirements are needed for defining how the collected data needs to be analysed and evaluated. The last phase, evaluation, is based on the two previous phases as they are producing the data needed for the evaluation process. The data needed are the requirements the supplier needs to meet and the criteria for the supplier.

The supplier evaluation is an important part of the supplier management, as it needs to be performed and the needed information collected before the suppliers can be selected. Supplier evaluation is the procedure performed and the selection itself is the actual decision-making phase based on the evaluation and risk assessment. Due to the nature of the supplier evaluation it should be performed both for the new suppliers and the current ones. The connection between the presented supplier evaluation phases and the supplier selection is described in figure 2 below.

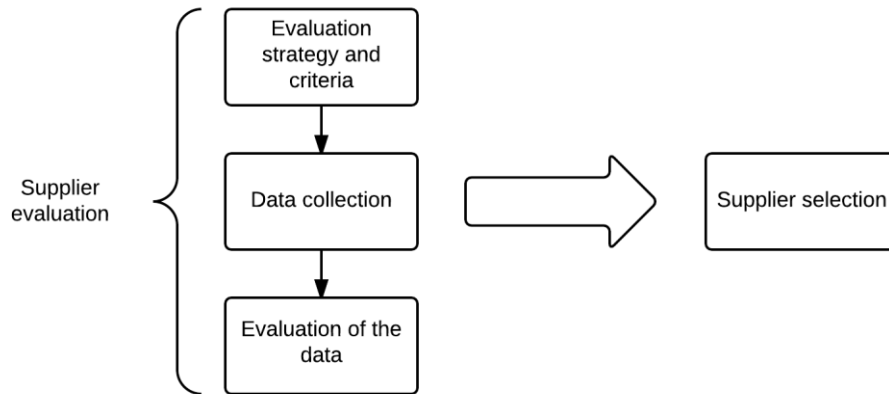


Figure 2. Connection between the supplier evaluation phases and the supplier selection

The connection of the supplier evaluation and the supplier selection is presented in figure 2. In the figure 2 the supplier evaluation is described by three phases: creating the evaluation strategy and criteria, collecting data, and evaluating the data. The aim of these three phases is to collect and create the needed information for the supplier selection.

The connection between supplier evaluation and selection can be described to be information. That information includes the collected data from the suppliers, evaluation according to evaluation strategy and criteria, and together the actual evaluation data for supplier selection. The data formed by the collected suppliers' information and evaluation data may be used also in other processes than only the selection. That information can also be utilised, e.g. in monitoring and controlling suppliers' performance or developing the buyer company's purchasing strategy. Because of the amount and extent of the data from the supplier evaluation its utilisation should be considered.

3.1 Data collection

Data collection in the supplier evaluation means how the purchasing company is going to collect the data of the possible suppliers in purpose of later selection. The procedure used for the data collection depends on buyer company's supplier management process. A supply management system model used in buyer company is affecting the supplier management process and defining the

information needed. One model of the supply management system outlines the skills, competences, and enabling behaviours needed to excellent supplier relationships, supplier performance, and improving the performance. (Gordon 2008, pp.19-20). Below is demonstrated the theoretical model for supply management system framework.

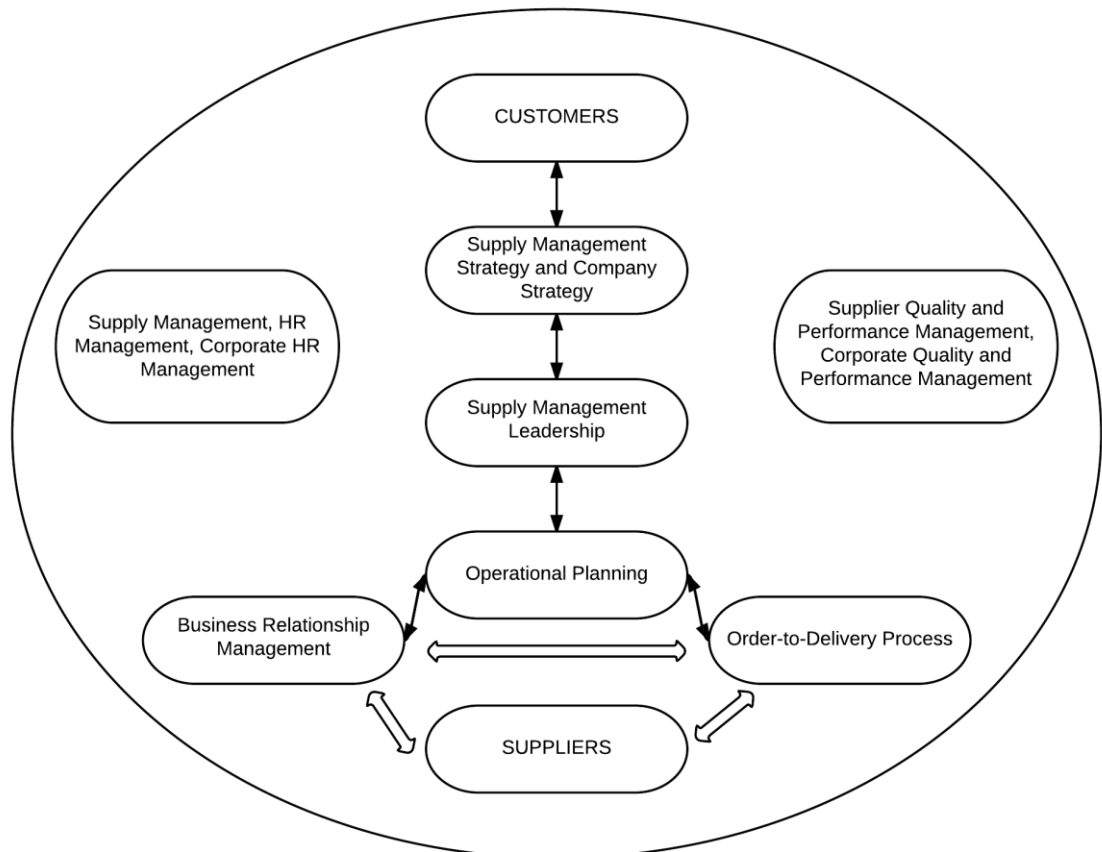


Figure 3. Supply management system framework (Gordon 2008, p.20)

In figure 3 the demonstrated supply management system describes the overall supplier management process from the start to end. In the figure can be seen factors affecting the supplier management process. Those factors of supply management system framework should be taken into consideration when planning supplier evaluation and selection processes.

This supply management system framework combines the factors, e.g. customers, strategies etc., the buyer company needs to manage the supplier relationships and the suppliers' performance. Those factors are affecting the

supplier evaluation and selection by indicating the aspects needed to consider in the criteria and requirements. In general the supply management system connects the company's operations, their customers' needs and supporting factors, which are affecting finally the suppliers' performance. (Gordon 2008, pp.19-22.)

The process of the supplier evaluation and data collection needs to start from the company's own goals, objectives and strategy, as well as the need of the customers. The reason is that the supplier evaluation process needs to actively support the strategies, otherwise working cross-functionally in the company is impossible. One main objective of supply management system along with risk mitigation is cross-functionality. The company's strategy will later on define the criteria and requirements for the evaluation of suppliers. This method is called strategy deployment, which means the process goes down from corporate objectives to operational level. (Gordon 2008, pp.27–31.)

The strategy how the supplier information should be collected depends on the purposes in which the information is needed. When it is needed to evaluate the potential and already existing suppliers, the method is called supplier qualification. Supplier qualification includes usually the data collection directly from suppliers. The data can be collected by different electronic sourcing systems, e.g. electronically sent questionnaires. The information collected via questionnaire is depending on the criteria and requirements defined by the buyer company's strategies and goals, and the needs of their customers. The aim of the qualification process is to be steady, efficient, cost-effective, as well as transparent to key stakeholders and suppliers. Furthermore the questionnaire used for evaluation of current suppliers need to be repeated steadily and evaluate the results depending on the supplier's position in segmented supply base. (Gordon 2008, pp.69–73.) For the purposes of the actual data collection and processing throughout the evaluation and selection processes, internal IT systems have been developed. Depending on the company needs, the method of data collection, and the linkage to the ERP system used, the companies can select the ready- or tailor-made systems. (Gordon 2008, p.75.)

3.2 Criteria and requirements for the data

The criteria and requirements of the supplier evaluation are constructed to support the actual supplier selection while mitigating the risks and ensuring the quality. In data collection the systematic model for the process was introduced (figure 3). Therefore can be said that the criteria and requirements need to be based on the company's goals, strategy, and the customer's needs. Based on the literature, the supplier evaluation criteria are not defined by any specific needs, and it is highly emphasized that criteria and requirements depend on each company and their services. But in general the supplier evaluation criteria can include performance, capability and collaborative relationship evaluation. (Park et al. 2010, p. 498.) It also can be said that a good evaluation should also cover many aspects of quality, such as safety and possible environmental problems. (Giunipero & Brewer 1993, p.38.)

The criteria can be based on the supplier segmentation. The supplier segmentation is helpful especially considering the evaluation of the current suppliers. The supplier segmentation can also be applied for evaluation of potential suppliers by constructing the criteria to reach the goal of the wanted supplier status. The aim of the supplier segmentation is to group the suppliers needing different level of monitoring and evaluation, and to see what is required from the ideal suppliers. (Gordon 2008, pp.57–59.)

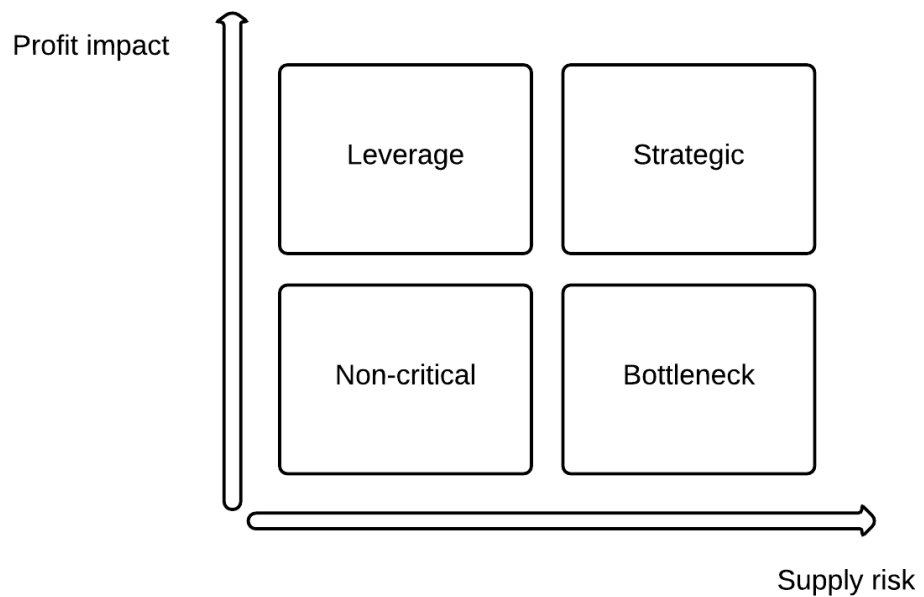


Figure 4. Kraljic's portfolio model for the supplier segmentation

In figure 4 is presented Kraljic's portfolio model, which is a classical segmentation model in purchasing theory. Kraljic's portfolio model can be used for the supplier base segmentation. Based on that classical segmentation model, the suppliers can be categorized to strategic, bottleneck, non-critical and leverage. The strategic suppliers are the ones creating high value and impact for the purchasing company. Bottleneck suppliers are those from whom the products/services with high importance for customer are supplied. Because of the high importance, the risk of supply fails and other supply problems are affecting to the whole supply chain. Noncritical suppliers are the ones who can easily be replaced, and the products/services of which are not critical or does not pose a high risk to the buyer company's business. Leverage suppliers are aimed to be cooperative and the purchasing volume of buyer company is high. Influences on the purchasing volume will impact straight the total costs of ownership and profit margins of the buyer company. Strategic suppliers are the main applicants for the evaluation; the model itself includes the segmentation matrices, which are difficult to measure, such as risk and profit impact. Some other measures presented in the Kraljic's portfolio model are: exploit power,

balance, diversity, volume insurance, and efficient processing. Either way the criteria and requirements for the questionnaire and the evaluation are suggested to be constructed with the support of the supplier segmentation. (Gordon 2008, pp.57–61.)

While creating the criteria and requirements suitable for the company, different third-party certifications, e.g. ISO series, can be used together with strategy deployment as mentioned before. If the company has certified a standard, e.g. ISO 9001 quality management standard, the criteria could be partly structured to discover whether the supplier is operating according to the standard's requirements. Business drivers, e.g. time and technology can also be used for constructing the criteria and requirements. (Gordon 2008, pp.83–91.)

Considering the importance and relevance of the CSR in the companies nowadays, it creates more requirements for the evaluation criteria and the requirements the suppliers should meet. CSR combines many aspects considering the working environment and the companies' operations affect the surrounding environment. If the company is presenting their CSR targets and aiming to work according to them, their suppliers need to work in compliance. One part of the criteria can therefore be built according to the CSR and quality requirements. Often the companies' CSR targets are supported by the different certifications, which means they are working according to the requirements set by the certificate. It means the previously mentioned alignment with the third-party certifications and the criteria is involved closely to the consideration of the CSR targets, as part of the criteria.

3.3 Evaluation of the data

One aim of the supplier evaluation is to use it as an instrument designed to affect supplier action in purpose of maintaining successful connection. The action of the supplier will change according to the interests of the evaluating company. Therefore the change will lead to improved supplier capabilities and performance turning into benefit for the buying company. (Sundtoft Hald & Ellegaard 2011, p.890.) The companies should evaluate their suppliers to help

them to gain their own goals, in providing the products or services for their customers with the desired cost level.

Evaluation phase generally combines data collection and criteria phases. A criterion designed is used to evaluate the collected data of the suppliers. The aim of the suppliers evaluation is to produce the data needed for the suppliers selection. The supplier evaluation can be defined as rating the suppliers' value after measuring the suppliers' capability and performance. This information can be used to the selection and also for the supplier development. (Park et al. 2010, p. 498.)

In the evaluation phase it is important to be able to assess both the new and the current suppliers. The same criteria and requirements can be applied for both, but for the current ones the data collection can differ. New suppliers are evaluated based on the data collected with the method selected. That data is then evaluated by the set criteria and requirements, and possible additional information is requested. Instead, the current suppliers should already be documented and that documentation can be used in purposes of the evaluation. Also to have up-to-date information, it is useful to repeat the data collection for the current suppliers. When repeating the data collection, it can be accomplished by the same method as for the new suppliers.

4 Supplier selection

The supplier selection will be based on the information gathered by the supplier evaluation. The aim of the supplier selection is to find the supplier, which satisfies the buyer company's multidimensional needs. Supplier selection problem can be either single or multiple sourcing. (Shin-Chan & Cho 2008, p.117.) Single and multiple sourcing are used, e.g. in purposes of handling the supply risks by defining which products or services are supplied from certain suppliers. Single or multiple sourcing can be separated as their own factors in the supplier selection. In single sourcing selecting one supplier is needed to satisfy the company's needs and in multiple sourcing many suppliers are needed in order to satisfy their needs. Multiple sourcing leads to the allocation of the supplies between the selected suppliers, which will therefore set more

criteria for the selecting criteria. (Park et al. 2010, p. 497.) Hadavale and Alexander (2009) emphasise dual or multiple sourcing in supplier selection to reduce potential operational and disruption risks along with carefully considered multidimensional selection criteria to evaluate suppliers. They also recommended a formal risk analysis approach constructing of risk identification, risk classification, risk assessment, and risk management.

The supplier selection is performed according to the criteria defined in the supplier evaluation phase. The criteria are dependent on the companies' own goals and targets including the companies' CSR aims, as well as the needs of their customers. That leads to the circumstances that in theory has presented many different determinants for the criteria, and there is not only one certain criterion, which could be used in general. In the literature the most common determinants have introduced to be cost, quality, and delivery performance. (Kannan & Tan 2002, p.15.)

The supplier selection is defined as an unstructured decision problem (Ordoobadi & Wand 2011, p.630) but still being a crucial process considering the selection of the suppliers enhancing the competitive advantage (Chin-Chun, Kannan, Leong & Tan 2006, p.213). By the unstructured decision problem is indicated to the criteria as a concept including multiple criteria for the decision-making (Ordoobadi & Wand 2011, p.630).

For the supplier evaluation and selection are presented several different mathematical methods or information systems' in the theories. Companies' also need to select the method, the most often information system, by which to carry out the supplier evaluation and selection. The general supply management system framework is presented in figure 3 on page 14. The model of supply management system framework also partly illustrates the architecture of the information system, which could be used for the supplier management. The selected information system for the supplier management can be connected to the company's ERP system. Because of the increased usage of the information systems for supplier management, ready-made packages of supplier management systems are on the markets. Alternatively the company can buy a tailor-made supplier management system.

Another possible method is a generic supplier management tool consisting of supplier management network, supplier selection hierarchical model, and supplier selection workflow. This tool was created to combine the details of supplier management, including supplier selection in a matter of selecting and managing local and global suppliers. (Choy & Lee 2002, p.238). This thesis is not focused on any actual mathematical method or information system, as the aim is to generally define what is the SMT and what are the effects of the SMT to the supplier management.

The previous studies have been emphasizing the supplier selection as a vital step to competitive advantage, which is a reason why a company should use efforts to maintain successful supplier selection. Even though the competitive advantage is highly emphasized in a large amount of researches, the studies cannot identify any exact relation of supplier selection and assessment to the business performance of the company. (Kannan & Tan 2002, p.12.) Nowadays due to the competitive advantage, the supplier selection is becoming a strategic decision. Supplier selection can be seen as strategic decision also because it is a risk decision. (Östring 2003, p.3.) One reason for the supplier selection and evaluating the suppliers' performance is the impact of suppliers' performance on the buying company. Simply the poor performance will cost money for the buyer. (Supplier Selection & Management Report 2004).

When the importance of the supplier selection has increased, the measurement is not based only on price. Especially the companies with suppliers of critical materials, the studies recommend to evaluate other strategic and operational factors, e.g. quality and flexibility. (Sarkis & Talluri 2002, pp.18-19.) The measurement and evaluation of suppliers are emphasized in supplier selection, especially while gaining the competitive advantage. In spite of the number of researches and emphasis, there has not been created a common definition of the importance or the actual measurements about effective supplier selection. (Chin-Chun et al. 2006, p.214.)

5 Risk management

Goods and services are in a key role in every organisation while achieving its objectives and goals. While trying to obtain those items, the risk always exists even though it would be recognised and managed. (Zsidisin, Ellram, Carter & Cavinato 2004, p.397.) Risk management of the supplier management has increased its importance among the researchers and there has been published many articles in recent years. The reasons for increased importance lies basically in globalization and the current business environment. Due to the mentioned reasons there is no company, which would not face any risks in their operations nowadays. In general, risk management means protecting the shareholders' assets and revenue for the company itself. In practice risk management is a continuous process of systematically analysing the risks of operations and products. (Östring 2003, p.22.)

The role of the supply chain management as the competitive advantage affects the companies in a way that they need to adopt globalization and outsourcing strategies for their extended supply network. Managing the extended supply network may be challenging and if problems arise it may increase the disruptions along the supply chain. (Murugesan, Natarajan & Manikandan 2013, pp.79-80.) Rice & Caniato (2003) also emphasize the importance of the supply network with extensive and volatile security processes and procedures. Those security processes and procedures should consider the possible disruptions within the supply network. When the supply network is extensive it can be seen as an increasing factor for disruptions in the supply chains. The increase of disruptions is also seen to be affected by economic, political and social developments, which are appearing due to more complex supply chains. (Khan & Zsidisin 2012, p.9.)

The logistics processes are nowadays seen as one of the major issues in the supply chain management. The reason for that is the role of uninterrupted operations as a key factor while achieving the company's goals. These uninterrupted operations cannot be achieved without efficient risk management. There has been identified one major problem considering risk management of logistics operations. The major problem is that the company's risk management

procedure lacks the standardization and models. (Jereb, Ivanusa & Rosi 2013, p.57.) Both Jereb et al. (2013) and Rice & Caniato (2003) have divided risk management into two different factors, internal and external. In general the internal risk factors are the ones, which may occur in the buyer company, and external risk factors are the ones, which may occur by the supplier or any third party or environment. Some examples of internal risk factors are information and data management, and other activities, which may harm the buying company's performance. Some examples of external risk factors are natural disasters, terrorist action, or any activities outside of the buying company's control. (Jereb et al. 2013, p.60.) Rice & Caniato (2003) define one external risk factor to be the relationships with the suppliers and customers, which have a possibility to establish a more secure and volatile network. Internally they suggest the challenge to be the understanding of the employees about the existing linkages and operational essentials.

As the risk management is an effecting factor for the successful supply chains there are also consequences of the failures in risk management operations. The failure will cause a negative impact on companies. The disruptions in the supply chain are mainly leading to financial losses, damaging the company's image, and also a bad reputation possibly leading to losses in demand. The failure in risk management is affecting every aspect considering the relationships between the suppliers, buying company and their customers including the image and reputation, as well as the company's finance or productivity.

5.1 Risk management process

The risk management process's aim is to define the risks and the methods how to react in case the risk occurs, as well as to create methods to monitor and control the risks. The risk management process may be performed as one's own process but it can also be used in other processes as supporting information. For example, the information produced by the risk management process can be integrated to the supplier evaluation criteria in purpose to enhance the risk management operations. The risk management process can be said to construct from different phases as told before:

1. Risk identification: the risk identification means the identification of potential risks towards the supply chain performance. Identification along with harshness of the impacts is helping while constructing the supply networks, as well as the strategies for risk mitigation in risk control. (Murugesan et al. 2013, pp.79-81.) The purpose of risk mitigation is to minimize the possible effects arising from the possible risks.
2. Risk assessment: the risk assessment continues the risk identification process as creating detailed risk descriptions for the purposes of risk control planning and implementation. After identification and analysing it is suggested to rank the possible risk items, as well as the suppliers according to the risk scale. (Östring 2003, p.22-23.) In risk assessment the supplier segmentation is needed due to the fact that this phase can be considered as part of the supplier evaluation.
3. Risk control: the risk control means basically creating the actions and implementing them in purpose of reacting, mitigating, and managing the possible risks. One model is to divide the risk control into three elements: Risk management planning instructions on how to handle the possible risks if occurring; risk resolution describes the situations in which the occurred risk is managed in the planned way or resolved otherwise; risk monitoring is continuously monitoring the supplier risk's status and by that way implementing the actual risk assessment. (Östring 2003, p.23.)

5.2 Risk classification

Risk classification means how the risks are categorized in the company's field of business. Many different classifications have been presented in theory. Those theoretical models can be said to be general and helping to see the direction of the categorization. Mainly the classification is still needed to be in accordance with the company's own strategy and the corporate codes of conduct, especially as the sustainability is one of the current trends in business.

Cost, quality, lead-time, and security risks are the most often mentioned in the theory of supply chain risk management nowadays. These are the types of risks the companies may face considering their supply chain and especially in sourcing. Cost risks means the company should evaluate all of the additional

costs, which may occur from the suppliers' performance. Also, for example, the currency and freights are affecting the cost risks. All the possible additional costs should be considered in risk identification and analysis. Quality risks are the risks consisting of the suppliers' products and services, and how much costs poor quality can cause. Lead-time risks are any factors affecting the lead-times throughout the supply chain, which means there are straight effects on the service level the buying company provides to its customers. Security risks consist of the risks affecting the safety and liability of, for example, transportation, production or information flows. For example freight breaches are related to the transportation and one risk is increased possibility of violating rectitude of cargo. (Khan & Zsidisin 2012, pp.14 - 17.)

Murugesan et al. (2013, pp.81-83) have classified the risks into supply side risks, manufacturing side risks, demand side risks, logistics side risks, information risks, and environment risk. Supply risks are related to the suppliers' performance and products, which are sometimes related to quality problems as well. Manufacturing risks are related to the manufacturers' performance and efficiency. Demand side risk is a result of disruptions from recent supply chain performance, and usually occurs when company's predictions are not meeting the actual demand. Logistics risks are roughly categorized into disruptions of the flow of goods, information, and money. Other logistics risk factors are considering storages, carriers, transport networks, and delays of deliveries. Information risk occurs when effective information flow between the supply chain's members is not meeting the requirements. Information has a significant role in the supply chain performance, as it is depending on the what, when, how and with whom the information is shared. Environmental risks appear when supply chain network and its environment interact. Environmental risks include restrictions toward business, institutional, and regulatory environments, and factors: policy risk, macro economic, social risk, labour availability, different force majeure, and natural disasters. (Murugesan et al. 2013.)

Considering the two models of risk classification presented, the model of Murugesan et al. is more detailed and more easily interpreted for the further understanding of risk identification. Based on the risks mentioned in the certain

model there can be seen the connection between the risk management and the company's strategy, as well as corporate social responsibility targets. Many of the mentioned risks are considering the facts usually mentioned in companies' strategies and principles. By this classification can also be justified that risk management should be included in the supplier evaluation process.

6 Documentation of the supplier management process

Documentation as part of the supplier management procedures is not researched much. But in general it can be said that documentation and its importance for the operations is significant considering all the companies' operations cross-functionally. Documentation is one method of information sharing and it helps performing implementation, monitoring, and improving of the operations.

Documentation is important throughout the supplier management procedure. It means documenting all the information of the supplier evaluation, selection activities and risk assessment, as well as the supplier network and contracts. Considering the documentation, the supplier management systems are posing an important role. The role lies in a fact that information systems' nature is to store and share information. Due to that the information storing and sharing will lead to the automatic documentation, which will therefore enhance the information managing throughout the process, as well as shorten the duration of the operations.

Third-party certifications were mentioned as part of the supplier evaluation criteria, which reflects then to documentation. All the standards' require documentation of certain procedures if wanted to certify. Considering the supplier management, the quality management is currently emphasized. For example, the study of ISO 9001 quality management standard shows that documentation enables efficient communication and information sharing between the employees, to improve processes, and establishing consistency of the processes. These issues are seen as the potential operations in fixing problems relating to suppliers, as well as improving the SRM. (Prajogo, Huo & Han 2012, pp.309-310.)

Monczka & Markham (2007) suggest also the documentation of the strategy and action plans in purpose of acting as a guideline. This emphasizes the documentations importance in the continuous improvement of the operations in each function of the companies. Documentation of the extended supply network may be challenging. A possible method to handle the documentation is categorizing the suppliers. For the categorization one option is supplier segmentation, which was mentioned before. It affects also to the documentation of risk assessment. Hanfland (2008) emphasizes especially the documentation of the suppliers' risk assessment status, as it is defining the need of establishing deeper relationship with the most critical suppliers. It is also defined that high-risk suppliers need the acquiring and controlling of full documentation. Considering the SRM and supplier quality aspects is emphasized quality agreements and communication with the vital suppliers. The documentation and communication enhance to gain benefits, e.g. reducing the business risk and identifying improvements leading to the leading position of the markets reacting to changing business environment. (Hanfland 2008.)

7 Empirical part

Empirical part was produced as project for the case company due to their need to simplify and clarify the supplier selection process as part of their newly implemented supplier management tool for their employees. Because of the company's request, the empirical part will not be published.

The data of the empirical part consists of the company's own information about their processes and the systems used. Due to a nature of the case project, the aim was to produce the written project for which the theory plays supporting role. The connection between the theoretical and empirical part is that the theory is used to justify certain activities and help to point out the main activities in the process. Even though the main aim was to simplify and clarify the supplier selection process, the work itself contains the whole supplier management process. The supplier selection needed to be contrasted to the bigger picture to see the connections and the benefits. Overall, all the

processes under the supplier management are closely linked as pointed out in the theoretical part.

The empirical part is mainly constructed by the same structure as the theoretical part in which the aspects of the theory learned were connected with the company's information in the purpose of creating the explanation of the whole supplier management process. Therefore both the theoretical and the empirical part were written at the same time. Mainly the theory was written at first and then implemented to the practice but sometimes it was needed to take a closer look to practice in purpose of maintaining the most relevant information for the theory. By this method the author was able to combine the theory and practice in the most efficient way, correlating to the aims, and to justify the activities.

8 Conclusions

The main idea was to clarify the usage of the SMT and its processes for the case company's employees into a report in which were combined the theory and the practical information from the company. The supplier management and different supplier management IT systems are emphasized and seen as one of the main factors for the competitive advantage nowadays. Therefore the comprehensive understanding about the SMT and its processes as part of the supplier management is needed.

The case company's newly implemented SMT-system and its usage built the base for the thesis and how its usage will relate to the theory and connect to the supplier management. Overall the SMT-system can be said to be the key tool for the supplier management in the case company. It helps to accomplish all the sub-processes of the supplier management, as well as store the supplier data. By this way the usage of the SMT can be justified as a key tool of the supplier management. Considering all the systems which can be used as the supporting tools of the supplier management ,there are various options. The system used depends on the company's activities and needs of the processes the system should perform, as well as the linkages to other information systems in the company.

To conclude the SMT's processes, supplier evaluation and supplier selection are the main activities accomplished. The risk management is integrated for those two main activities and plays an important role throughout the whole supplier management process. The actual methods for supplier evaluation and selection can vary between different companies and business areas. In general, the evaluation method includes: the way by which the information is collected from the suppliers, the type of information collected, and evaluation criteria used. The method of the supplier selection depends on whether the information system or the named employee will accomplish the selection.

During writing of this thesis, the importance and the benefits of the SMT's usage clarified. The main benefits of the SMT are efficient information management, shorter duration of the supplier approval process, and monitoring and controlling the suppliers' performance. The efficient information management is the main benefit, which allows achieving other benefits depending on how the information in the SMT is used.

The supplier registry, which will be constructed into SMT based on the information inserted, is the key matter of the supplier approval process's duration. Due to managing information in that registry enhances the users to find out all the needed information for the approval in one place. The same reason is enhancing the more efficient monitoring and controlling of the suppliers' performance as their performance can be reflected continuously to the information they have given for the buyer company. The importance of the SMT is based partially on the efficient information management but also on the fact how risk management is taken into account in the processes. The risk management has a more significant role in supplier management nowadays. Therefore the involvement of the risk management in the each process of the SMT is affecting the company's performance and increasing the importance of the SMT usage.

While writing the thesis was also noticed that the questionnaire used for the data collection includes many kind of information of the suppliers. The buyer company uses this information mainly for the actual supplier management process, even though the information could be utilised in different ways. The

ways the information could be utilised is depending on the questionnaire and its content. Some possible options to utilise the information are benchmarking and internal procedures improvements.

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