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Lahti University of Applied Sciences

BENCHMARKING PROCESS OF SCREENING SUPPLIERS FOR ENVIRONMENTAL PERFORMANCE

Case: UPM-Kymmene Oyj and Modern Lumber Technology Ltd

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Vladimir Maximenko

Lahti University of Applied Sciences
Degree Programme in International Business

MAXIMENKO, VLADIMIR:

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ABSTRACT

Green purchasing helps companies avoid potential environmental problems that might arise with their suppliers, which could in turn, threaten their own environmental performance. Modern Lumber Technology (MLT), one of the most dynamically developing wood-processing companies in Russia, takes care of the environment even when it selects suppliers. However, for companies there is always room for improvement and learning something from others. Therefore, the thesis focuses on performing benchmarking on a company's process of screening suppliers for environmental performance against UPM-Kymmene.

The theoretical framework of the study concentrates on the benchmarking philosophy. Based on the proposed supplier selection model, a situation analysis of the process at UPM is examined. A situation analysis of MLT's process is based on the proposed model and the analysis of UPM's process. SWOT analysis in the study allows identifying weaknesses in MLT's process. Based on the weaknesses and the comparison with the UPM's process, suggestions for areas of possible improvement in the process of MLT are provided. The study adopts qualitative method in a deductive approach. To serve the final goal of the thesis, information is collected through various sources. Secondary data is acquired from topic related academic books, journals, the companys' reports and trusted internet sources. Primary data is collected through semi-structured interviews with representatives from the case companies.

The benchmarking study shows that there are weaknesses and threats which could negatively affect MLT's process. To handle them, the company should create incentives for its employees, strengthen their Code of Conduct, implement an electronic tool to collect supplier data and include transportation as selection criteria.

Key words: benchmarking, screening suppliers, environmental performance, environmental supplier selection criteria, MLT, UPM

CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS

KPI - Key Performance Indicator

EMS - Environmental Management System

EMAS - Eco Management and Audit Scheme

ISO - International Organization for Standardization

SWOT - Strengths, Weaknesses, Opportunities, Threats

FSC - Forest Stewardship Council

PEFC - Programme for the Endorsement of Forest Certification

MLT - Modern Lumber Technology

1 INTRODUCTION

1.1 Background

In the world of globalization, growth of population and increased consumption of raw materials and goods, competition for resources is increasing rapidly. Moreover, it also results in continuously increasing adverse effect on the environment when pollution and waste generation predominates over the ability of the earth and current technology to regenerate itself. (Ellram & Tate 2013, 5.) For instance, according to Eurostat (2015), the amount of municipal waste in 2013 per person in the EU is equal to 481 kilograms. The figure below shows that the share of waste recycled or composed is increasing constantly; nevertheless, more than half of it is still landfilled or incinerated.

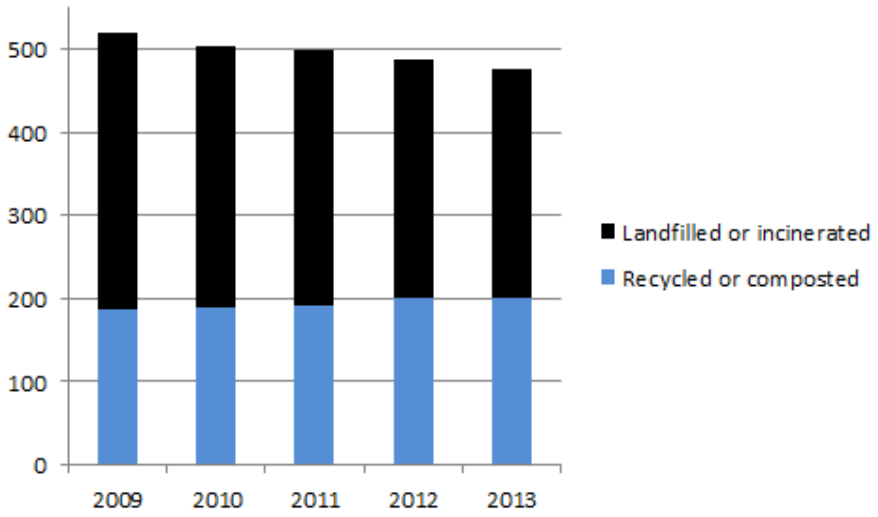

FIGURE 1. Municipal Waste Generation and Treatment in the EU in kg per person (Modified from Eurostat 2015)

Eurostat (2015) indicates that among all economic activities the total amount of waste generated by households is about 11.8%. The share of businesses in waste generation is much more significant, and they could be seen as main players in reduction of waste produced (Ellram & Tate 2013, 2). This can be explained by the fact that despite what any business produces and sells it is mostly comprised of materials, parts, goods or

services which are purchased from other businesses (Ellram & Tate 2013, 3). Moreover, there is no difference between a company and its suppliers for customers and other stakeholders. That is why a company is often responsible for environmental problems of its suppliers. (Sarkis 2008.) Hence, it is a vicious circle where suppliers depend on their suppliers and environmental performance of each is also dependent on each provider. The way to escape the vicious circle and enhance environmental performance is to revise the procurement process and select those suppliers who are responsible towards the environment. Thus, companies that are in compliance with legal and regulatory issues related to sustainable purchasing, gain preferred supplier status among customers and also urge other businesses to sustainable development in order to be competitive. (Ellram & Tate 2013.)

The author has always been interested in the subject of environmental issues since current environmental problems affect every person. Additionally, more and more companies adopt environmentally friendly practices to please consumers and get other benefits. The thesis topic came up to the author when he was looking for a company that is interested in strengthening its environmental practices. The Head of Import/Export Department of Modern Lumber Technology (MLT) Ltd, one of the most dynamically developing wood-processing companies in Russia, responded favourably to the researcher's interest. The representative of the company expressed interest in conducting a benchmarking process of screening suppliers for environmental performance. UPM-Kymmene Oyj, one of the biggest wood-processing companies in Finland and Europe, is selected as the benchmarkee by MLT. Hence, the study concentrates on understanding a process of screening suppliers for environmental performance as well as conducting a benchmarking process.

1.2 Study Objectives and Research Questions

Since a need to revise the process of screening suppliers for environmental performance was identified by MLT, the commissioning party of the thesis, the benchmarking study is offered to the company. Therefore, the objective of the thesis is to provide an insightful investigation into the company's current situation of the process and provide suggestions for areas of possible improvement.

To be able to provide relevant information, the thesis is going to solve the following main question:

What can be improved in the process of screening suppliers for environmental performance and selection by the commissioning party?

In order to answer the research question, the thesis is going to solve the following four sub-questions:

- What is the process of screening suppliers for environmental performance and selection?
- What is the benchmarkee's current process of screening suppliers for environmental performance and selection?
- What is the MLT's current process of screening suppliers for environmental performance and selection?
- What is the MLT's position compared to the benchmarkee's current position concerning the process of screening suppliers for environmental performance and selection?

1.3 Limitations

In order to give an understanding of the benchmarking subject, the thesis examines theory on supplier selection process regarding environmental performance. Integration of environmental criteria into the supplier selection process is examined by proposing a model for screening suppliers for environmental performance. The qualitative and quantitative criteria of supplier evaluation are discussed. However, the choice of

criteria and sub-criteria varies amongst the industry. That is why green criteria is reviewed only for the industry of the case companies - forestry. Moreover, the study does not cover methods that can be used for grouping and prioritising the criteria and methods for determining the interrelation amongst them. Methods for ranking and selecting the best suppliers are not examined in the study as well. These methods are involved in the entire purchasing screening process and a consideration of them is too extensive for the study. Moreover, the research limitations allow focusing only on the planning and analysis phases of the benchmarking process.

1.4 Theoretical Framework

The thesis includes a theory of benchmarking. Benchmarking is a process of measuring and comparing a company's performance with other prosperous organizations in a similar activity in order to get information that can help eliminate gaps or weaknesses of one's own operations.

There are different types of learning from best practices that can be used. In most cases a focus is on measurable metrics without knowledge of the process that leads to superior performance. (Zairi & Leonard 2011, 51-52.)

Process benchmarking is conducted in the study to identify weaknesses of MLT in the supplier selection process. As can be seen in figure 2, a benchmarking process consists of four main phases. However, as stated in the research limitations, the planning and analysis phases of the benchmarking process are only examined in the study.

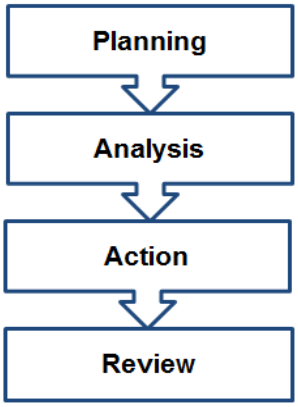

FIGURE 2. Benchmarking Methodology (Simplified and Modified from Rolstadas 1995, 123)

Apart from the benchmarking philosophy, a theory on the process of screening suppliers for environmental performance is examined in the study in order to provide an understanding of the benchmarking subject and to propose a green supplier selection model. Based on the proposed model and its analysis with UPM's process, an analysis of an example is conducted to prove the proposed model. Meanwhile, a situation analysis of MLT's process of screening supplier environmental performance evaluation is based on the proposed model and the analysis of the example. A SWOT analysis in the study allows identifying weaknesses of MLT's process. Thus, based on the SWOT analysis and in comparison with the analysis of the example, the researcher provides suggestions for areas of possible improvement. Figure 4 of sub-chapter 1.5 shows a consistency of the theoretical framework. Further discussion of the framework is in chapter 2.

1.5 Research Methodology and Data Collection

In order to give an understanding of the study to the reader, the flow of logic should be implemented in the thesis. It can be done by either a deductive or inductive approach which aims for establishing a relationship between theory and practice. An inductive approach moves from a few particular situations in order to make general theories while the deductive

approach forms an empirical part from theory. (Kananen 2013, 40.) The thesis utilizes the deductive approach.

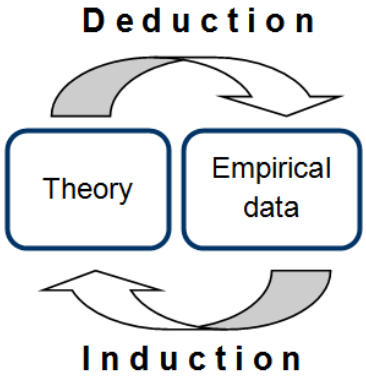

FIGURE 3. Deduction and Induction (Modified from Kananen 2013, 29)

Then, the method should be identified whether it is a qualitative or quantitative method of research. The main emphases of quantitative research are testing and verifying statistical data to generalise while the qualitative method aims for an understanding of the research subject (Kananen 2013, 29). Since the study aims for a more in-depth understanding, the qualitative research method is applied. However, Kananen (2013, 32) states that qualitative research does not have an exact methodological framework and it is a cyclical and flexible process. Thus, research can be begun with a literature review, an analysis of an example and a case study (Wand & Hannafin 2005, according to Kananen 2013, 49).

The study uses a case research as its purpose to get more in-depth understanding of a phenomena. A literature review and an analysis of an example are used to test the case research. Therefore, the interpretation of the case research is constructed based on a theory and the analysis of the example. That explains the deductive approach in qualitative research. (Kananen 2013, 38.) This concept is suitable when the study uses the benchmarking philosophy to identify weaknesses in the process of screening suppliers for environmental performance and in the selection of

a commissioning party because of the nature of the benchmarking process. Figure 4 shows the qualitative research structure.

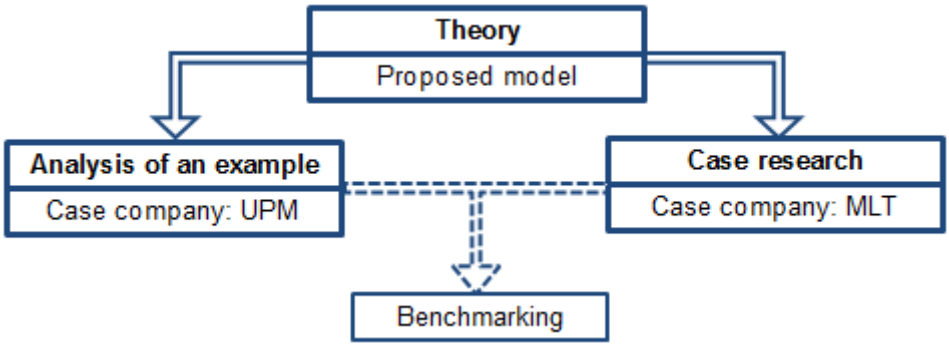

FIGURE 4. Qualitative Research Structure

Conducting qualitative research means using qualitative data collection methods and analyzing the collected data (Kananen 2013, 31). There are two types of data sources: primary sources and secondary sources. Primary data is information collected by the researcher in order to answer the research questions and to meet the objectives of the research. Observation, interviews or questionnaires allow the researcher to have access to primary data. Meanwhile, secondary data includes raw data and published data for some other purposes. (Saunders et. al, 2009.)

A combination of secondary and primary data is used to answer the research question of the study. Secondary data is used to form theory and to propose a model for screening suppliers for environmental performance. Interviews as primary source are one of the most important and common data gathering techniques of qualitative researcher (Kananen 2013, 110). The researcher has a main structure of the interview and is able to question for in-depth understanding, by having prepared in advance the topics for discussion. Thus, semi-structured interviews are used as primary source material in the study to conduct the empirical part.

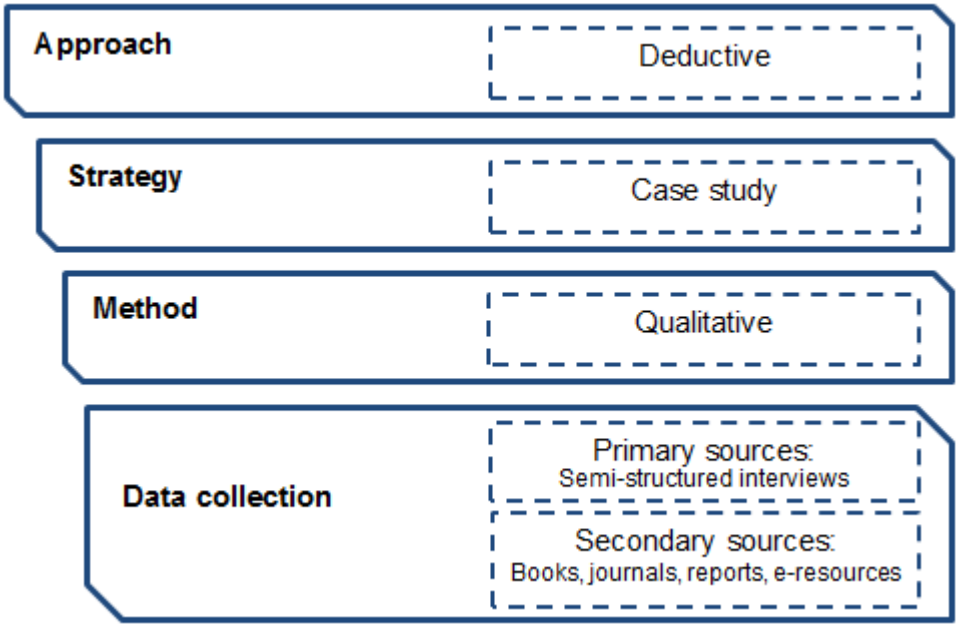

FIGURE 5. Research Methodology

Figure 5 summaries the research methodology that is used in the thesis. As can be seen from the figure, the study adopts the deductive approach. The research strategy of the thesis is case research, and the method choice is quantitative method. As for data collection, both primary and secondary sources are used.

1.6 Thesis Structure

In order to answer the research questions, the thesis is structured as follows:

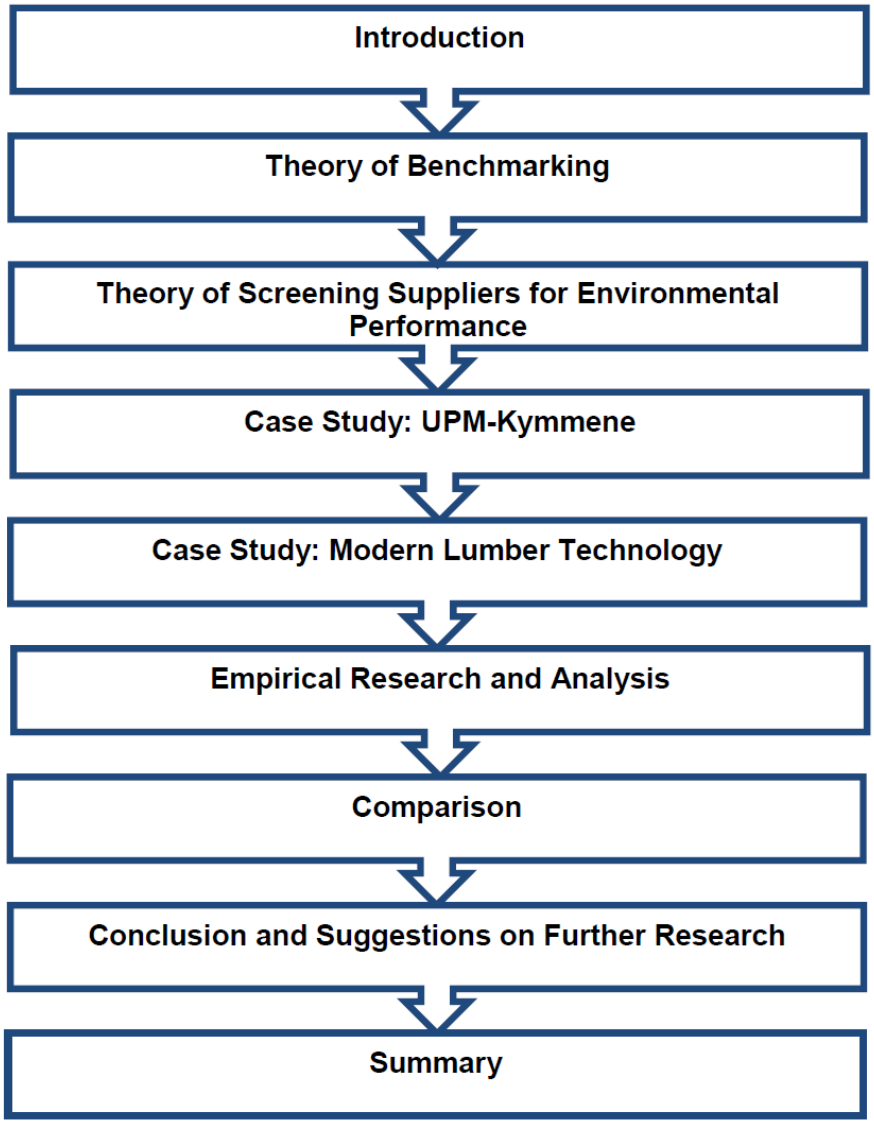

FIGURE 6. Thesis Structure

Chapter 1 describes the background of the thesis and research objectives by introducing data on the importance of green procurement practice and MLT's request for suggestions concerning improvement in the process of screening suppliers for environmental performance. It also includes research questions and limitations to address the research problem and to define the scope of the thesis. The theoretical framework and the research methodology are also presented in this chapter.

Chapter 2 concerns a theory of benchmarking defining benchmarking and describing types, phases of the process and tools.

Chapter 3 is dedicated to examine a theory on green supplier selection process and propose a model for screening suppliers for environmental performance.

Chapter 4 is dedicated to conduct an analysis of an example in order to test the proposed model and examine the UPM's process.

Chapter 5 presents the current situation analysis of supplier environmental performance evaluation at the MLT company based on the proposed model and the SWOT analysis of the process.

Chapter 6 explains the empirical research by analyzing the obtained data.

Chapter 7 provides suggestions for areas of possible improvement regarding the process of supplier selection in MLT.

Chapter 8 presents the conclusion of the study and suggestions for future research.

Chapter 9 briefly summarizes the thesis to recap the main points and findings.

2 THEORY OF BENCHMARKING

For companies there is always room for improvement and learning something from others. Benchmarking is utilized in the study as a tool to find out what can be improved in MLT's process by comparing the company's process of supplier selection with a process of a prosperous organization. A need to improve the process of screening suppliers for environmental performance was identified by the company. Thus, defining benchmarking and describing types, phases of the process and tools, this chapter provides an understanding of the theory of benchmarking in order to be able to conduct the process of benchmarking.

2.1 Definition & Types

Many definitions of benchmarking can be found in the literature describing business management. However, the common denominator is learning from the best practices. By company-to-company comparisons managers are able to obtain information that can be used for identifying opportunities for improvement or setting performance targets. (Andersen & Pettersen 1996, 4)

There are different types of benchmarking. They could be classified based on what is compared and against whom. Depending on what could be compared, Andersen & Pettersen (1996, 5) list performance, process and strategic benchmarking, while internal, competitive, functional and generic benchmarking are defined, depending on against whom a comparison could be made.

Performance benchmarking is comparison of measurable metrics like key financial metrics in order to evaluate and rank a company or a business unit. Comparison of business practices or processes is process benchmarking in order to learn and adapt high performing or best practices which leads to the superior performance from others. Strategic benchmarking helps companies focus on capabilities critical to building

strategic advantage or positioning through comparison of strategic choices. (Andersen & Pettersen 1996, 6.)

Comparison between departments or units within the same organization or comparison of an organization's performance over a period of time is internal benchmarking (Cheney 1998, 2). Comparison against the best practices of a direct competitor that operates within the same industry refers to competitive benchmarking (Kozak 2004, 12). Meanwhile, comparison against the best practices that can be identified worldwide and regardless of industry is generic benchmarking (Zairi 1994, 62). Comparison of specific business functions or processes against both competitors and companies that perform similar activities in different industry is functional benchmarking (Kozak 2004, 12).

As an alternative to competitive benchmarking, there is collaborative benchmarking. It refers to a comparison by mutual agreement, thus, both parties could obtain information without great difficulty for identifying opportunities for improvement. (Cox et.al 1997, according to Kozak 2004, 12.)

Since the commissioning party and the benchmarkee are competitors producing similar goods, the benchmarking type in this study is competitive benchmarking. Based on what is compared, the benchmarking type is process benchmarking as processes of screening suppliers for environmental performance are compared.

2.2 Benchmarking Process

As mentioned before, a benchmarking process consists of four main phases. The figure below represents more detailed information on steps involved in the benchmarking process.

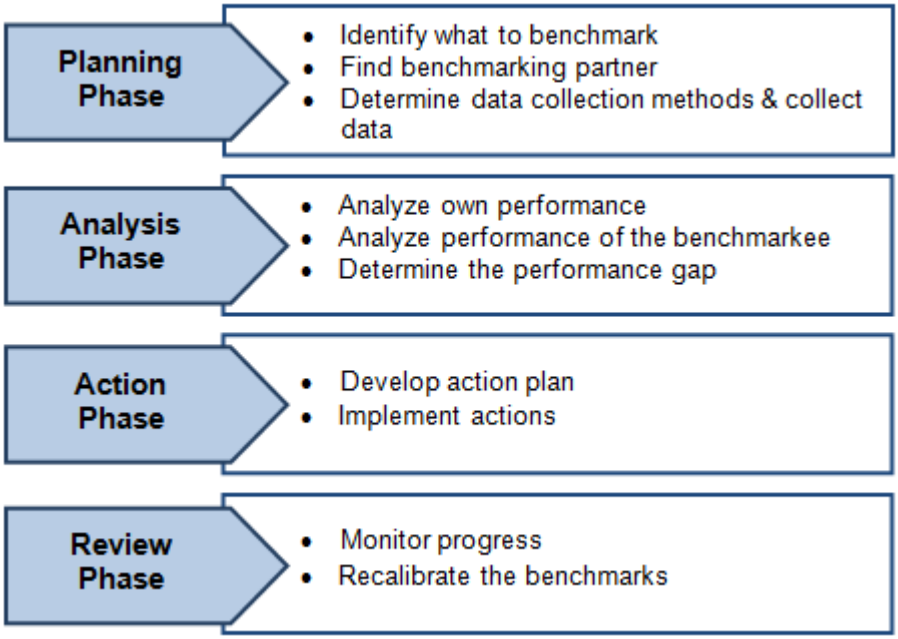

FIGURE 7. Benchmarking Process (modified from Johnson & Scholes 2001)

The benchmarking process starts with the identification of an activity that needs to be benchmarked. The next step in the planning phase is selection of an appropriate company against which own performance can be measured. Additionally, the methods for data collection should be selected in order to collect necessary information for the next phase. The next phase concerns analysis of collected data. It is important that the company learns its own strengths and weaknesses. Then, the collected data on the benchmarkee should be analyzed. A successful benchmarking process requires an analysis of data collected directly from the benchmarkee and from secondary sources. The main purpose of the analysis phase is to uncover the causes for the gap by making a comparison between the companies. The third phase is action. It involves an establishment of goals for the improvements which make it possible to achieve a higher performance. Based on established goals, an action plan should be designed and put into action. During the review phase the progress should be monitored and adjusted in order to gain the maximum benefits of the benchmarking process. (Johnson & Scholes 2001.)

According to research limitations, the study concerns mostly the planning and analysis phases of the benchmarking process.

2.3 Tools

There are different methods and software tools to conduct benchmarking. They allow researchers to handle collected information. The most well-known among them are the SWOT Analysis, Potential/Resources Analysis, Price/Performance Ratio, Life Cycle Analysis, Combo Benchmark, and GOBENCH. (Kairies 2001.)

The study employs the SWOT analysis as a method for a supporting benchmarking process. The SWOT analysis is an extremely efficient and simple tool for analyzing and understanding a company's or individual's situation (Stapenhurst 2009, 157). It is an acronym for Strengths, Weaknesses, Opportunities and Threats as shown in figure 8.

FIGURE 8. SWOT Analysis (modified from Stapenhurst 2009, 157)

One of the main purposes of a SWOT analysis involves assessing capabilities. It helps to identify the strengths and weaknesses, pinpoint opportunities and note threats in order to make good decisions. Strengths and weaknesses determine an organization's current situation while opportunities and threats indicate future prospects. Reviewing a snapshot of a company's situation facilitates a planning on how to change weaknesses into strengths and eliminate or mitigate threats. (Stapenhurst 2009, 157 - 158.)

3 THEORY OF SCREENING SUPPLIERS FOR ENVIRONMENTAL PERFORMANCE

This chapter describes the theory of screening suppliers for environmental performance in order to propose a green supplier selection process model by the researcher as well as to help the reader understand the main idea of the process.

3.1 Reasons

Screening suppliers for environmental performance means that a company's purchasing process is done with care for the environment. The main reasons for introducing environmental aspects into the purchasing process for a company are examined below.

3.1.1 Legislation

Purchasing is subject to a range of national and international environmental directives and legislations. Companies are obligated by governments to take care of their purchasing activities as they have direct impact on environmental performance. (Lysons & Farrington 2012, 647.)

There is a wide range of EU legislation pertaining to the environment. They protect the environment by setting certain standards as well as require companies to provide information to the European Commission on the effectiveness of their implementation. (Hedemann-Robinson 2015, 202.)

According to OCED (1999), the key areas are:

- Nature and biodiversity protection
- Integrated pollution control and risk management
- Waste management
- Air pollution
- Water pollution
- Noise pollution

- Environmental impact assessment
- Genetically modified organisms and chemicals

Some of them require reporting significant environmental issues using a type of performance measurement, Key Performance Indicators (KPIs). Today, in order to report on environmental KPIs, companies collect the relevant data from standard business information, for example, electricity bills. (Defra 2011, 12.)

3.1.2 Profitability and Scarcity of Resources

Despite the fact that organizations are forced to have sustainability programs in place to respond to regulatory requirements, they can use sustainability initiatives to capture value, making sustainability profitable. Bonini & Swartz (2014, 11) summarize value from sustainability opportunities into three key areas: returns on capital, growth and risk management.

However, considering long-term strategic view of sustainability, the companies should pursue integration of sustainability into their business, including purchasing activities, not because they can miss potential growth opportunities but because of the fact that we are moving to a world of limited resources. Companies that will be able to integrate sustainability will acquire competitiveness and new market shares but those that fail the integration will experience social and regulation pressures, strong rivalry and a boost in prices. (Haanae et.al 2013.)

3.1.3 Preferred Supplier Status

Today, large companies tend to require environmental performance information from suppliers in order to achieve their environmental objectives and goals and report on their own environmental performance. Thus, reporting on environmental information, companies multiply their chances of being selected as a supplier. (Defra 2011, 11.)

3.2 Green Supplier Selection Process

3.2.1 Criteria Selection

Environmental supplier selection criteria involve qualitative and quantitative criteria. Generally, qualitative criteria are used for supplier selection. The importance of them varies from industries and depends on business priorities and strategies. (Nielsen et.al 2014, 84.) Qualitative criteria Nielsen et.al (2014, 85) categorized into five main groups of:

- Management Competences, e.g.: senior management support, environmental partners
- Green Image: customer's purchasing retention, green market share
- Design for Environment, e.g: recycle, reuse, remanufacture
- Environment Management Systems, e.g: environmental certification, environmental policies
- Environment Competencies, e.g: clean technology availability, use of environmental friendly material, pollution reduction capability.

Meanwhile, quantitative environmental criteria are clearly defined quantifiable parameters that allow defining the environmental performance of a business and reviewing how goals and objectives are achieved. Generally quantitative environmental key performance indicators (KPIs) are categorized into groups, for example: emissions to air, emissions to water, emissions to land, resource use etc. (Defra 2011, 12.)

Environmental management systems (EMS) as criteria should be emphasized. According to Nielsen et.al (2014, 85), environmental management system is considered as the most important qualitative criteria during the green supplier selection process. EMS certificate proves that a business is in compliance with environmental legislations and requirements, as well as has a commitment to continuous improvement. Thus, an obtaining of an EMS certification by a supplier shows the ability

to undertake management of its own activities in an environmentally-friendly way. (Commission for Environmental Cooperation 2004, 34.)

There are different types of certified EMSs, for example: the International Organization for Standardization (ISO) 14001 EMS Standard, the EU Eco Management and Audit Scheme (EMAS), and a phased approach of implementing EMS. (Defra 2011, 14). More than two thirds of companies require ISO 14001 certification in order to get information about EMS when screening suppliers (Dufresne 2000, according to Zutshi 2006, 316). Using best techniques and practices available, some organizations have EMAS which goes beyond the scope of ISO 14001. Many large companies have their own EMS considering them as a more advanced system, or have customized EMS. To stay in compliance with requirements, many small companies use partly implemented EMS. (Rao 2008, 84.)

However, since the case companies operate in the forest industry, it should be stated that ISO standards are criticized severely due to the lack of performance levels and the lack of shareholders participation in forest management (Lechner & Boli 2015, 536-537). Since the standards do not have a narrow scope in forestry, Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC) are developed for forest management certification. They account for about 98 percent of the world's certified forest and chain of custody certificates. (PEFC International 2013.) Chain of Custody certification set up requirements for tracking certified wood and wood-based products from the forest to the final product. In other words, it verifies the origin of wood since certified material is tracked by using labeling. (Forest Stewardship Council 2015.)

Biodiversity criteria also applies to the study since it is relevant for the sector of business in which the case companies are involved. Defra (2011, 20) states that biodiversity as criteria is important for such industries that have impact on biodiversity as extractive industries, natural resource use, for example, forestry, and agriculture. However, it is also mentioned by

Defra (2011, 20) that the impacts of company activity on biodiversity cannot be precisely measured.

To sum up, there is a number of different ways to determine relevant KPIs. Environmental management certification, origin of wood and biodiversity are determined by the researcher as the main criteria for companies purchasing wood. However, the optimal environmental indicators can be determined by experts and depend on company's internal resources and sector of business (Defra 2011, 24).

3.2.2 Expert Team

Banaeian et. al (2015, 159) states that in order to obtain a rational framework, to find relevant criteria and their weights, the model should be developed through an expert team.

Due to many factors that need to be considered, the expert team should be a cross-functional team. According to Day (2002, 217), a cross-functional team can include, for example, not only purchasing and environmental managers but also technical staff, internal customers and existing and potential suppliers.

Day (2002, 220) states that the use of a cross-functional teams allows to:

- explore and control purchases more precisely
- be flexible in making decisions
- be more detailed on appraisal
- enhance management experience
- enhance cost-efficiency
- promote growth and development
- promote research and development.

3.2.3 Supplier Selection

Usually screening of suppliers is done via questionnaires, requiring compliance with international standards (Lysons & Farrington 2012, 649). When the environmental criteria are defined by an expert team, the environmental indicators can be incorporated into supplier assessment process as questions. The questions are combined together to form a questionnaire. The questionnaire usually includes both general requirements and environmental. Thus, a company requires suppliers to complete an assessment form in order to gather data on environmental management system and relevant performance metrics. Then, the provided data can be weighed to score suppliers and create a list of preferred suppliers. (Dada 2013, 35.)

There are four principals of appropriate used questionnaires, according to Day (2002, 220):

- Questionnaire should be integrated into the purchasing process.
- It should be clear and well-structured.
- The use should be explained to suppliers.
- It should be accompanied by feedback.

The suppliers that are selected on the questionnaire stage then should be examined by supplier audit using third parties or internal staff and/or supplier visits (Day 2002, 217).

An environmental audit of a supplier allows to appraise more precisely the performance of business activities and compliance to required environmental requirements and legislations. The audit includes a self-assessment tool requiring a supplier to return a report on environmental performance. When the report is reviewed by an audit team, the supplier's site can be visited for checking the validity of the results. Then, the results can be communicated to the supplier in order to adjust or improve practices. (Ellram & Tate 2013, 33-35.)

3.2.4 Proposed Model

The above theory and literature review allow scheming a model for screening suppliers for environmental performance. The model can be presented as a set of phases to evaluate and select suppliers including planning, do, check and act phases. Figure 9 shows all the phases and steps which are included into the process.

3.2.4.1 Planning Phase

In order to mitigate risks and capture opportunities from regulation, drive growth and improve returns on capital appropriately, the organization should undertake certain steps to implement an environmental purchasing policy. Once the top management is committed to the implementation of an environmental friendly purchasing policy, senior managers or higher levels in the organization establish an Expert Team. Since environmental purchasing is a team effort process, a company should assemble the right people together to learn, test and scale, providing appropriate training and development. (Lysons & Farrington 2012, 647.) Bonini & Swartz (2014, 10) states that in order to involve employees and to be able to capture the full value of integration of sustainability into a purchasing process, an organization should also create incentives for employees by rewarding them for good sustainable performance. The Expert Team defines the goals and approaches in order to guide its operations.

Then, the Expert Team should determine the meaningful indicators which are able to reflect how the suppliers perform environmentally and whether they are able to meet the company's goal and objectives. Usually, general and green criteria are collected together to develop a list of requirements and a supplier assessment questionnaire. A list of requirements serves as a checklist for suppliers. By familiarizing with the list of requirements, suppliers are able to check that they are applicable. It allows mitigating the high risk suppliers. Meanwhile, the assessment questionnaire serves as a tool for understanding current environmental performance of "applicable" suppliers.

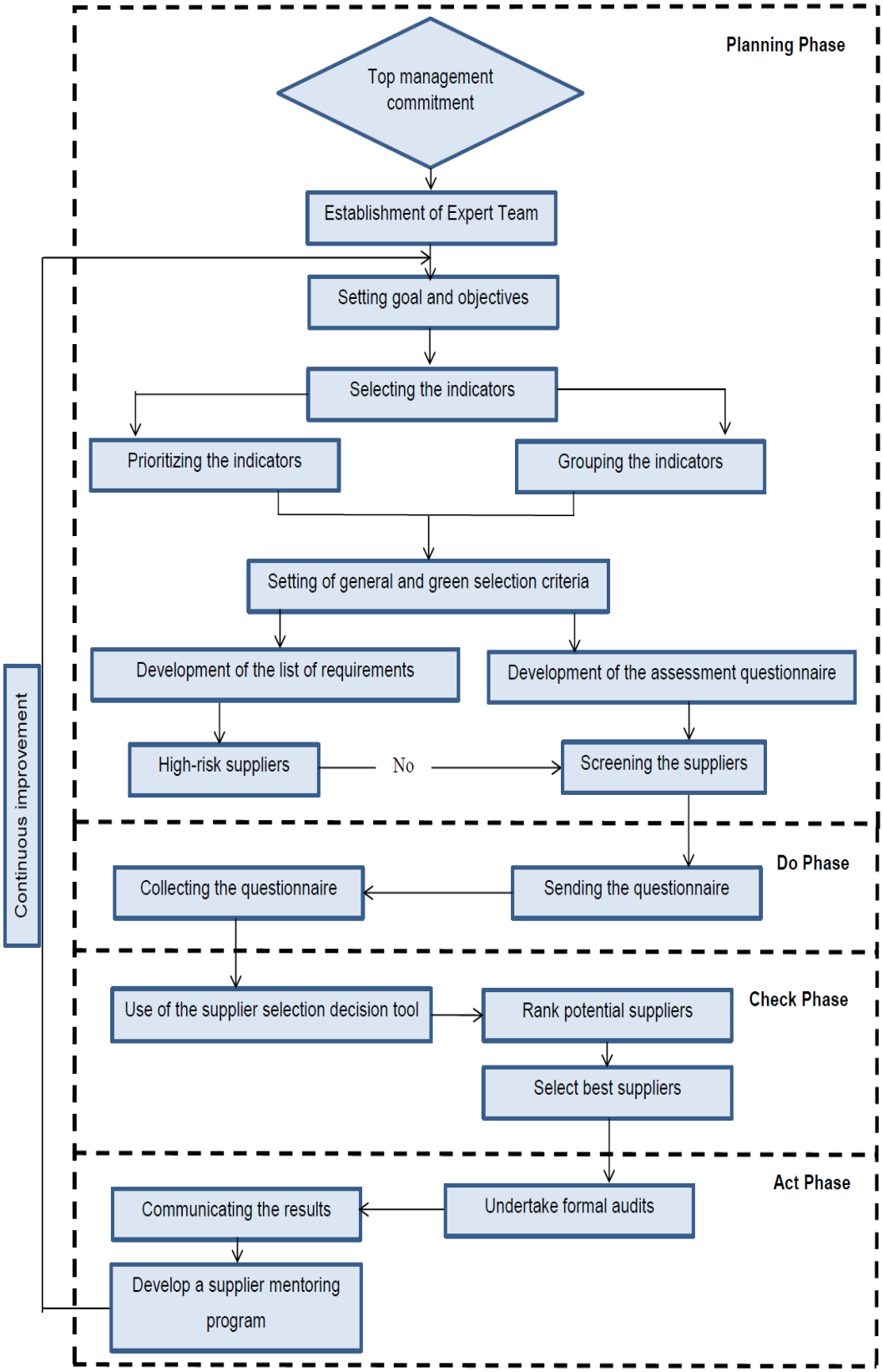

FIGURE 9. Proposed Model for Screening Suppliers for Environmental Performance (modified from Banaeian et. al 2015, 154)

3.2.4.2 Do Phase

The completed assessment forms allow gathering data on the environmental management system and relevant performance metrics (Rao 2008, 47-50).

3.2.4.3 Check Phase

Then, by using a supplier selection decision tool, the Expert Team can analyze and weigh provided data in order to score suppliers and create a list of preferred suppliers (Sarkis 2008, 285).

3.2.4.4 Act Phase

Audits and visits can be undertaken by the company to verify that the supplier is in compliance with the company's requirements and does not affect the environmental performance of the company (Esty & Simmons 2011).

The results have to be clearly communicated to the suppliers, thus the obtained data can be used to make continuous environmental improvements. The "staircase model" can be used as a tool where suppliers work with the company to identify achievable targets. When the suppliers reach those targets, the company helps set up new targets by providing guidance and support to help them improve their performance. (Esty & Simmons 2011.)

4 CASE STUDY: UPM-KYMMENE OYJ

This chapter is dedicated to conduct the analysis of the example in order to prove the proposed model for real and examine UPM's process. As mentioned in sub-chapter 1.2, the company was chosen by MLT as the benchmarkee to provide suggestions concerning improvements in the process of screening suppliers for environmental performance.

UPM is a prosperous organization in the supply chain management. The company is the winner of numerous awards for responsible sourcing and environmental performance due to its supply chain management. The Environmental Leadership and Taking Responsibility Together are few of the most meaningful awards in the supply chain management on the national competition as part of the European Commission's European Business Awards for the Environment competition. Moreover, UPM received the WWF Environmental Awards for their production operations, responsible purchasing and for innovative environmental solutions. (UPM 2015 b.)

4.1 Company Overview

UPM-Kymmene started its operations in 1996, when Kymmene Corporation, Repola Ltd and its subsidiary United Paper Mills Ltd merged. The headquarter of the company is in Helsinki, Finland (UPM 2015 e). By integrating bio and forest industries, the company built sustainable development across its business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Paper Asia, UPM Paper ENA (Europe and North America) and UPM Plywood and Other operations (UPM 2014).

The UPM Biorefining includes pulp, timber and biofuels businesses. Its energy segment produces electric power. The UPM Raflatac segment makes label materials for product and information labeling. The UPM Paper Asia consists of a paper mill in China and label paper operations in Finland. The UPM Paper ENA manufactures magazine paper, newsprint and fine paper. The UPM Plywood offers plywood and veneer products.

Other operations include Biocomposites and Biochemicals busineses, Wood Sourcing and Forestry and Group services. (Forbes 2015.)

In 2014, the company's sales amounted to EUR 9.9 billion. UPM has production sites in 13 countries and employs more than 20,000 employees across the world. UPM's shares are listed on NADAQ Helsinki stock exchange. (UPM 2014.)

4.2 Suppliers

UPM has over 22,000 approved suppliers all over the world which deliver a range of materials, products and services. However, wood is UPM's most important raw material since the majority of UPM's production is based on wood. There is a Wood Sourcing and Forestry unit in UPM which is responsible for wood sourcing and sustainable management of forests under its responsibility. (UPM 2015 a.)

The company is the biggest forest owner in Finland and a purchaser of wood both from national and foreign private forest owners. The company continuously measures and evaluates the quality and performance of its suppliers. Some of the suppliers have a long-term plan with the company in order to establish development of performance and quality. (UPM 2015 a.)

4.3 Screening Suppliers for Environmental Performance Process

Based on the proposed model for screening suppliers for environmental performance, UPM's supplier selection process is discussed below in order to examine the application of the model for real. Since the commissioning party operates in the forestry business, only green criteria of UPM wood sourcing and forestry business area are reviewed.

4.3.1 Planning Phase

UPM operates according to the new EU Timber Regulation (UPM 2014). According to the European Commission (2013), the law prohibits a trade of illegally harvested timber and timber products.

UPM has a commitment to sustainable sourcing, and it is included into the UPM Corporate Responsibility Principles and targets. Moreover, UPM offers rewards and recognition with an emphasis on high environmental performance which depends also on sustainable sourcing. (Heinonen 2015.) There are Short Term Incentive and Long Term Incentive plans. The first plan includes company and business level targets and personal and/or team performance targets. The second plan has a Performance Share Plan for senior executives and a Deferred Bonus Plan for other key employees. (UPM 2014.)

There is a team of experts in the company that establishes the ways of working and guidelines to set them as requirements for all UPM's suppliers. In order to select suppliers the company created a certain evaluation process. Strategic fit, service range, product performance, quality and sustainability play important roles in supplier selection and evaluation. The team defines requirements for financial, social and environmental responsibility in order to put the requirements together with the supplier selection process. (Heinonen 2015.)

There are generic requirements and instructions and area specific requirements (Heinonen 2015). The generic requirements and instructions comprised of Supplier Code, General Purchasing Conditions, Travel Rule for third parties, E-invoicing and eCatalogues and eConnectivity (UPM 2015 e).

General Purchasing Conditions define general obligations of the suppliers such as product and service warranties, breaches, terms of delivery, delays, access rights and audits and any other issues concerning purchasing conditions (UPM 2015 c).

UPM Supplier Code is based on the principles of the Code of Conduct and defines social, economic and environmental responsibilities. Environmental responsibility covers supplier's obligation to minimize its environmental impact, manage any waste and demonstrate continuous improvement. (UPM 2015 e.)

Area specific requirements set requirements for suppliers of each UPM business areas. UPM wood sourcing and forestry supplier requirements state environmental responsibility according to this industry. (Heinonen 2015.)

Based on UPM Supplier Code, there are UPM Wood & Biomass Supplier Requirements, UPM's Rules for Forestry and Wood Sourcing Activities and UPM Forest Certification Rules on the company's website. By familiarizing with these requirements and rules, suppliers could make a decision whether they are applicable. It allows mitigating the high risk suppliers which are not able to meet the responsibilities. A questionnaire is used for those who meet these requirements and rules in order to evaluate their performance. Key performance indicators are used as criteria for the evaluation of suppliers. (Heinonen 2015.)

UPM's supplier performance questionnaire is integrated into the purchasing process. The questionnaire is clear structured, and explained to their suppliers by presenting a relevant introduction part. The relevant green KPIs are grouped into main groups (see Appendix 1).

Forest certification and origin of wood are the main criteria for the evaluation of suppliers. The certificate provides assurances that forest products of suppliers comply with a local or an international sustainable forest management standard. The company uses Chain of Custody system as a tool to track two such global forest certification schemes as FSC and PEFC, as well as to track the origin of wood and determine the true share of certified wood. Additionally, a statement of origin that defines the location of the logging area is required for suppliers in Russia and the Baltic countries. Then, UPM carries out supplier audits and logging site

checks to check the reliability of the statement of origin and ensure that suppliers' operations meet the company's requirements. (Heinonen 2015.)

Moreover, biodiversity is included as green criteria of the selection process. The criteria are used to define commitment of a supplier to develop sustainable forest management practices. UPM aims to promote biodiversity in commercially managed forests. (Heinonen 2015.)

The company defines six main elements in order to track and evaluate sustainable forest management practices:

- Maintain proportion of native tree species
- Managing deadwood quality and quantity
- Maintain water bodies and wetlands
- Protection of valuable habitats
- Managing variation in forest structure
- Preservation of natural forests.

UPM also controls suppliers' impact of logistics activities. The environmental impact of logistics is controlled in order to discover supplier's encouragement for the use of environmentally-friendly modes of transport, planning of routes and capacity utilization. (Heinonen 2015.)

4.3.2 Do & Check Phases

UPM uses a special electronic tool with their suppliers. The tool allows to register suppliers on the company's web site in order to fill in the company's supplier performance questionnaire. Based on provided information, the expert can analyze and weigh data, and score suppliers. (Heinonen 2015.)

4.3.3 Act Phase

As mentioned before, the company uses supplier audits in order to study more closely performance of selected suppliers. Supplier audits and logging site checks can be also carried out to track compliance of existing

suppliers with UPM's requirements. All the results of supplier audits and field checks are saved to the management operating system. The results can be used to provide feedback to suppliers. Corrective actions can be proposed in case of discrepancy between the results and requirements. Providing guidance and support, the implementation and their results can be reviewed to improve their performance. (Heinonen 2015.)

UPM company sees its purchasing activity as one of the most important processes of the business in order to ensure its efficiency and profitability. Integration with its suppliers irrespective of their types and sizes is an important process. By integration and long-term cooperation, the company is able to advance the value chain and obtain long-term benefits to both parties. (Heinonen 2015.)

Moreover, UPM’s environmental responsibility of suppliers requires using the best efforts in order to promote UPM's requirements among sub-suppliers. This kind of collaboration allows careful exploration of the product life cycles in order to discover opportunities to decrease the negative effects. (Heinonen 2015.)

4.4 Process Analysis

The description of UPM’s process of screening suppliers for environmental performance follows the same phases of the proposed model as well as involves the same steps of the phases. Thus, the picture of the process of the company is identical with the proposed model when drawing. Hence, it can be decided that the analysis of the example proves the proposed model for real.

5 CASE STUDY: MODERN LUMBER TECHNOLOGY LTD

This chapter describes the current situation analysis of MLT and its supplier environmental evaluation process based on the proposed model. The SWOT analysis of the process is presented to identify the strengths and weaknesses, point out opportunities and note threats. Strengths and weaknesses determine an organization's current situation while opportunities and threats indicate future prospects. Reviewing a snapshot of a company's situation facilitates a planning on how to change weaknesses into strengths and eliminate or mitigate threats.

5.1 Company Overview

Modern Lumber Technology (MLT) started its operations in 2005. The headquarter of the company is in Saint-Petersburg, Russia. MLT is one of the biggest producers of Laminated Veneer Lumber (LVL) in Europe under Ultralam brand name. It is a product of deep wood processing with physical and mechanical properties surpassing solid timber. The main business area of the company is production of LVL in a form of boards and billets. The company's additional operations include production of timber elements, framework and structures for construction, manufacturing of fuel pellets, production of electric and heat power, logistics and transportation services and forestry.

MLT is one of the most dynamically developing wood-processing companies in Russia. Since 2006 to present, MLT has been implementing investment in project development of Russia's timber sector which is included in a list of priority projects of the Ministry of Industry and Trade of the Russian Federation. (Афанасий-бизнес 2015.) Total investment of the company in the project amounts to EUR 400 million, 70% of which has been loaned by the biggest Russian bank - Sberbank (Credinform 2015). One of the latest projects agreed by Federal Forestry Agency is production of sustainable chipboard. Investment in this project amounts to EUR 180 million. The full capacity of the plant will be reached by the end of 2017.

According to calculations, income from investments will increase by 2.6 times by the year 2018, and by 13 times by 2027. (ИА REGNUM 2014.)

5.2 Suppliers

The company is the biggest forest owner in the Tver oblast, Russia and a purchaser of wood from national private forest owners. Due to MLT's expansion, purchasing of wood will be doubled, and the company is focused on the search for new suppliers. (Izmailova 2015.)

FIGURE 10. MLT: Potential Areas of the Search for Suppliers

As shown in the figure above, Arkhangelsk, Novgorod, Pskov and Vologda oblasts and Siberia are main areas for the search (Izmailova 2015).

5.3 Screening Suppliers for Environmental Performance Process

As a leader in LVL supply in Europe, MLT operates according to the new EU Timber Regulation which prohibits a trade of illegally harvested timber and timber products. MLT's increased demand for wood out of

neighbouring regions forces the company to review its process of screening suppliers. (Izmailova 2015.)

5.3.1 Planning Phase

MLT is committed to sustainable sourcing. It is an important part of MLT Corporate Responsibility Principles and targets. (Izmailova 2015.)

A team of experts is created to manage the company's sourcing activities. The objectives of the company are defined and monitored annually. The team is responsible for evaluation process of suppliers. Product performance, strategic fit, quality and sustainability play important roles in supplier selection and evaluation. Therefore, the team defines requirements for financial, social and environmental responsibility to unite the requirements with the supplier selection process. (Izmailova 2015.)

There are generic requirements and instructions and area specific requirements.

The generic requirements and instructions comprise of General Purchasing Conditions, Supplier Rules and Invoicing. General Purchasing Conditions define general obligations of the suppliers such as product and service warranties, breaches, terms of delivery, delays, access rights and audits and any other issues concerning purchasing conditions. Supplier Rules defines social, economic and environmental responsibilities for suppliers. Environmental responsibility covers supplier's obligation to minimize its environmental impact, manage any waste and demonstrate willingness to improve business. (Izmailova 2015.)

Area specific requirements set requirements for suppliers of MLT business areas. The company's wood sourcing and forestry supplier requirements state environmental responsibility according to this business area. The main indicators used as criteria for the evaluation of suppliers are forest certification, origin of wood, biodiversity. (Izmailova 2015.)

MLT considers forest certification as the main criteria for the evaluation of suppliers to assure that supplied wood complies with sustainable forest management standards. Thus, the company tracks FSC forest certification scheme when it evaluates suppliers. (Izmailova 2015.)

MLT's origin of wood tracing system is based on a statement of origin that defines the location of the logging area and audits and field checks based on the statement of origin. In other words, the supplier is responsible for providing statement of origin, and then, the company carries out checking the reliability of the statement of origin and observations of the supplier’s method of operation in relation to the legislation, and responsibility in managing environmental matter. (Izmailova 2015.)

The company is focused on promotion of biodiversity in commercially managed forests of its suppliers as well. Therefore, biodiversity as criteria is included into supplier selection process in order to define the level of commitment of its suppliers to a sustainable forestry. The main elements of biodiversity in order to track and evaluate sustainable forest management practices are defined as follows:

- Preservation of protected areas
- Protection of high conservation value forests
- Protection of valuable habitats
- Maintain proportion of native species
- Managing variation in forest structure
- Managing deadwood quality and quantity. (Izmailova 2015.)

The company co-operates with experts of the Moscow and Tver State Universities, which carry out the analysis, monitoring and assessment of the impact on the environment (Izmailova 2015).

The list of basic requirements is created to form an announcement based on generic requirements and instructions and area specific requirements.

The content of the announcement allows eliminating the high risk suppliers which are not able to meet the company's responsibilities. Therefore, those suppliers who are able to meet the company's requirements could contact the responsible person, be registered and evaluated. The announcement is clearly structured and explained to suppliers by presenting relevant information. The relevant green criteria are gathered into main groups and included into the announcement. (Izmailova 2015.)

5.3.2 Do & Check Phases

MLT uses business-to-business web portals to place announcements for suppliers. An announcement includes the main requirements and the company's contact details. Getting in touch with the company, suppliers could be registered by an expert. The expert will collect information, analyze and weigh provided data and score suppliers. (Izmailova 2015.)

5.3.3 Act Phase

Supplier audits are used to study more closely the performance of selected suppliers. Supplier audits and logging site checks are also carried out to track compliance of existing suppliers with the company's requirements. The results of supplier audits and field checks are saved to the archival depository. They can be used to provide feedback to suppliers and help plan future suppliers' operations. (Izmailova 2015.)

The integration and long-term cooperation with the suppliers are seen as an important factor of efficient and profitable business for both the company and a supplier. Corrective actions can be proposed in case of discrepancy between the requirements and results of checks. MLT provides guidance and assistance in implementation of the actions, and reviews the results. The environmental responsibility of the company urges suppliers to promote responsibility among its suppliers. (Izmailova 2015.)

5.4 Process Analysis

This sub-chapter presents the SWOT analysis. The analysis examines the key strengths and weaknesses in regard to MLT's process of screening suppliers for environmental performance, and describes the opportunities and threats facing the process.

Among MLT's advantages, the company's innovative wood processing technologies and production methods should be mentioned as they indirectly affect the process of screening suppliers. The company's innovative wood processing technologies allow producing wood-based composite materials of a high quality. Meanwhile, the production methods allow using a low-grade wood and minimizing negative effects of natural wood defects. Moreover, the production is waste-free since black waste, such as bark, is fed to an energy plant. (Modern Lumber Technologies 2015, 43.) The purchasing and utilization of different types and grade of wood is one of the most rational ways of wood processing which allows saving forest resources of Russia. Thus, the suppliers of the company are able to decrease waste generation, focus on a single buyer and enlarge the scope of environmental concern by co-operating with the company. (Izmailova 2015.)

Then, top management of the company is committed to sustainable sourcing. As mentioned before, there is a cross-functional team in the company to define the goals and approaches for sustainable sourcing. The team is responsible for the process of screening suppliers. The meaningful indicators which are able to determine how the suppliers perform environmentally and whether they are able to meet the company's goal and objectives are determined and integrated into the purchasing process. Thus, the process is well-structured.

MLT has its own biodiversity programme to promote the biological diversity of forests among its suppliers. The company is also able to offer other high quality forestry services, guidance and support to suppliers according to their needs for integration and long-term cooperation. (Izmailova 2015.)

However, there are some weaknesses related to the process which should be taken into account. Firstly, a deficiency of reward and recognition which are based on high environmental performance in the company may lead to decrease in involvement of employees to capture the full value of integration of sustainability into the purchasing process. (Izmailova 2015) Secondly, the process of screening suppliers for environmental performance is well-structured but data collection is performed manually. (Izmailova 2015) Lastly, the company does not control suppliers' impact of logistics activities. That is why the company is not able to track environmental performance of suppliers to full extent and make an objective evaluation as the UPM company.

There are also opportunities for the process. First of all, the demand for an eco-friendly and at a reasonable price houses and construction materials made of wood is continuously increasing in Russia (BSN, 2015). The expansion of the company as well as the increase in the demand for the company's products could necessitate selection and co-operation with new suppliers (ЛесПромИнформ 2015). The company's cross-functional team and well-structured process of screening suppliers are capable of managing the complexity of the current business scenario. Second of all, the development of MLT is one of the highest priority investment projects related to timber processing in Russia and supported by the Russian government. In accordance with Russian legislation, a priority investment project in the field of forestry and wood processing has a number of benefits during the period of development, such as a reduction of payments for use of Russian forestry fund, reconstruction and development of transport infrastructure and implementation of modern information technologies. (LSOLVL 2015.) That is why the company, with the support of the Russian government, has an opportunity to implement the necessary data collection programme and assessment tools for the process of screening suppliers. Today, the reconstruction and development of transport routes and railway lines to the company's plant are carried out within the framework of the state programme for the development of the company (Izmailova 2015). This will allow reducing the

traffic on roads and mitigating logistics issues. Last, Tver oblast is the second largest forest area in Central Russia. It presents an opportunity for the company to manage the fluctuation of supply by using such benefits as reduction of payments for use of Russian forestry fund.

However, there are critical threats that could affect the process. First, Russia has a high level of corruption (Transparency International 2015). Bribery, as the most common type of corruption, can have a negative impact on a process of supplier selection. For instance, bribes can result in selection of a supplier which provides goods at higher prices, low quality products and fraudulent documents for the goods (Gee 2015, 244). Second, forestry arson is a widespread practice in Russia. Amongst them, the most important motivation is profit. (ARD 2015.) The most part of fires is committed for mercenary motives by concerned parties such as competitors of MLT or competitors of the company's suppliers (Izmailova, 2015). Moreover, there is a lack of legislative regulation in Russia and an ill-defined public responsibility for fire management on various lands, such as forestry and agricultural lands (Goldammer et. al 2013). That is why MLT, as the biggest forest owner in the Tver oblast, finances a company responsible for fire management. However, not all of the company's suppliers are in perfect security. Therefore, a long-term cooperation with a supplier could be disrupted in case of forestry arson. (Izmailova, 2015.) Last, insufficient development of transport infrastructure, use of overage vehicles, bad condition of roads and bad traffic management are some serious problems in Russia (Совет Безопасности Российской Федерации 2016). It is complicated to control suppliers' environmental impact of logistics activities under such conditions in Russia. (Izmailova, 2015.)

FIGURE 11. SWOT Analysis: MLT's Process of Screening Suppliers for Environmental Performance

The above figure summarizes the main points of the SWOT analysis of MLT's process of screening suppliers for environmental performance. The process has notable advantages and opportunities. There are also weaknesses which could significantly affect the process. Moreover, the

process of screening suppliers has some potential threats. Thus, it is important to conduct benchmarking with the company's competitor by planning on how to change weaknesses into strengths and eliminate or mitigate threats.

6 EMPIRICAL RESEARCH AND ANALYSIS

This chapter explains the empirical research process of the study. An unstructured interview was carried out in the middle of September 2015 with a representative of the commissioning party in Saint-Petersburg, Russia, to discuss details of the study. The aim of the interview was to receive general information about the company, its products, markets and its situation regarding screening suppliers for environmental performance as well as to provide some information on the study. That is why the researcher did not prepare any specific questions. The representative was interested in the study and agreed in rendering assistance.

6.1 Data Collection Process

The study is a qualitative research as it aims to develop in-depth understanding of the situation with non-numeric data. As was mentioned in Chapter 1, qualitative research does not have an exact methodological framework and it is a cyclical and flexible process. Thus, the research begins with literature review, the analysis of the example and case study. To conduct the qualitative research both secondary and primary sources are used.

The desk study started on 29 September 2015. Secondary data is used to form the theory and to propose the model for screening suppliers for environmental performance. Based on the proposed model, the researcher designed the question layout for the interviews (see Appendix 2). Face-to-face semi-structured interviews are used as primary source. The author interviewed the Supply Chain Manager of UPM on 25 November 2015 to make the analysis of the example. In other words, the interviews were conducted to prove the proposed model and examine the benchmarkee's process. UPM was chosen by MLT as the benchmarkee to provide suggestions concerning improvements in the process of screening suppliers for environmental performance.

When the researcher had an understanding of the process of screening suppliers for environmental performance and approved the model for real, the second face-to-face semi-structured interview was conducted with the Head of Import and Export Department of MLT. The interview was carried out on 15 December 2015 to examine and analyze MLT's process of screening suppliers for environmental performance, identify weaknesses of the process and recommend benchmarks based on its comparison with the analysis of the example.

The researcher recorded face-to-face interviews with the permission of the interviewees to be able to come back to the data which is more accurate than writing notes. However, notes were also taken during the interviews to check that the questions have been answered according to the designed layout for the interviews. At the end of the interviews, the obtained data is summarized by the researcher and confirmed by the respondents.

6.2 Data Analysis

Qualitative data is commonly transient. It can be understood only within context by using interpretive methodology, therefore that generally results in outcomes with a high degree of validity (Collis 2013, 130).

Additionally, the nature of the benchmarking process concerns the analysis of collected data (Johnson & Scholes 2001). Thus, Chapter 3 provides the findings regarding the benchmarkee's current process of screening suppliers for environmental performance and selection while Chapter 4 covers the commissioning company's process. Then, the findings are analyzed in Chapter 6 by comparing the commissioning company’s position and the benchmarkee's position concerning the process of screening suppliers for environmental performance and selection.

However, one of the successful aspects of benchmarking is a dedication to continuous benchmarking efforts and learning until reaching superior

performance in a company (Cheney, 1998). Hence, for MLT it is important to make reference to Heinonen's words:

> *In 2016, UPM is going to use an electronic tool, Scanmarket's Supply Base Management solution, to collect, organize, maintain and share information about suppliers as well as to manage the risk in the supply chain. And I like the slogan of this solution - Manage your suppliers so they don't manage you. (Heinonen 2015.)*

7 COMPARISON OF THE PROCESSES

Based on the proposed model and the analysis of the example, in this chapter the researcher provides suggestions for areas of possible development in the process of screening suppliers for environmental performance of MLT and recommendations on how these improvements could be achieved. The benchmarks for the process of screening suppliers for environmental performance of MLT concern a mean of supplier data collection, control of logistics activities, and a deficiency of reward and recognition which are based on high environmental performance in the company.

As was mentioned before, UPM offers reward and recognition for employees with an emphasis on high environmental performance that depends also on sustainable sourcing. They allow focusing employees on the company's desired outcomes. There are two types of incentive plans. The Short Term Incentive plan includes company- and business- level targets and personal and/or team performance targets. The Long Term Incentive plan has a Performance Share Plan for senior executives and a Deferred Bonus Plan for other key employees.

Whereas, MLT does not have strong incentive plans to involve employees and capture the full value of integration of sustainability into the purchasing process. According to Statista (2012), there is a low average monthly wage in Russia. As was mentioned before, the country has also a high level of corruption. Van Rijckeghem & Weder (2001) state that there is an inverse relationship between the level of wages and the incidence of corruption. Therefore, the company should also create incentives for employees by rewarding them for good environmental performance as well as strengthen Code of Conduct as a tool for dealing with corruption.

To deal with corruption by means of Code of Conduct, the management of the company should develop clear policies, guidelines, and training programs for implementing and enforcing the provisions of Code of Conduct regarding corruption. In other words, any employee whose

actions are found to violate the Code of Conduct can be sanctioned against misconduct or even dismissed. (The World Bank Group, 2015.)

The second weakness in MLT's process of screening suppliers for environmental performance is manual data collection. UPM uses special electronic assessment tools on its web site. The tool allows registering suppliers in order to fill in the company's supplier performance questionnaire. Then, an expert can analyze and weigh provided data and score suppliers. Therefore, the manual data collection is replaced by an electronic tool that is time-saving.

Meanwhile, a supplier performance questionnaire is substituted for announcements for suppliers on business-to-business web portals. Getting in touch with the company, a supplier could be registered by an expert. The expert collects information, analyzes provided data and ranks suppliers. The expansion of the company as well as the increase in the demand for the company's products could necessitate selection and co-operation with new suppliers. MLT should acquire an electronic tool to collect supplier information through the company's website. The company could also use announcements for suppliers on business-to-business web portals with a link to the website where suppliers can self-register in the electronic tool to provide all necessary information according to MLT's requirements. Collection of data electronically is more efficient than manually collected data, for example, electronic data is easier for analysis and assessment (Joint Comission Resources 2008, 21).

At last, MLT does not track suppliers' impact of logistics activities when screening suppliers for environmental performance. The environmental impact of logistics is controlled by UPM in order to discover supplier's encouragement for the use of environmentally-friendly modes of transport, planning of routes and capacity utilization. However, it is hard for MLT to track suppliers' impact of logistics activities. The company is confronted with difficulties to track environmental performance of suppliers to the full extent and make an objective evaluation because there is an insufficient

development of transport infrastructure, use of overage vehicles, bad condition of roads and bad traffic management in Russia.

Nonetheless, the company will be able to track suppliers' impact of logistics activities much easier when the transport routes and railway roads to the company's plant will be reconstructed and developed within the framework of the state programme for the development of the company. The commissioning of the transport routes and railway lines is scheduled for the end of 2016. This will allow reducing the traffic on roads and mitigating logistics issues. (Tverweek 2015.)

MLT should include requirements concerning transportation of wood as criteria and track the environmental impacts of logistics in order to discover supplier's encouragement for the use of environmentally-friendly modes of transport, capacity utilization and planning of routes.

8 CONCLUSION AND SUGGESTIONS FOR FURTHER RESEARCH

This chapter summarizes the findings and results of the research providing brief answers to the research questions presented at the beginning of the study. The researcher also evaluates the reliability and validity of the research as well as gives recommendations for future study.

8.1 Answers to Research Questions

The objective of the thesis is to identify areas of improvement in the process of screening suppliers for environmental performance at MLT. Secondary sources and the interviews with the representatives of the case companies are used in order to conduct a benchmarking process and to answer the thesis's main question and sub-questions. Table 1 below briefly summarizes the answers to the research questions.

Table 1. Thesis findings

Questions	Findings
What is the process of screening suppliers for environmental performance and selection?	It consists of four main phases: planning, do, check and act. Each phase compromises several steps (see the proposed model in sub-chapter 2.2.3). Environmental aspects are integrated into entire process of screening suppliers.
What is the benchmarkee's current process of screening suppliers for environmental performance and selection?	The process of screening suppliers for environmental performance in UPM is identical with the proposed model: involves the same phases and steps of the phases.

What is the MLT's current process of screening suppliers for environmental performance and selection?	The process of MLT has the same structure that as the process of UPM. However, MLT has some minor issues regarding the process which are discussed below.
What is the MLT's position compared to the benchmarkee's current position concerning the process of screening suppliers for environmental performance and selection?	The comparison showed that MLT is missing transportation as an indicator that is used in the screening suppliers in UPM. There is also a deficiency of reward and recognition which are based on high environmental performance in the company; that may lead to decrease in involvement of employees to capture the full value of integration of environmental aspects into purchasing process. Moreover, supplier data collection is performed manually by experts.
Main Question What can be improved in the process of screening suppliers for environmental performance and selection by commissioning party?	Suggestions for areas of possible improvements are based on MLT's minor issues regarding the process and some external strengths. Thus, the company should: - create incentives for employees by rewarding them for good

	environmental performance and strengthen Code of Conduct as a tool for dealing with corruption; - use announcements for suppliers on business-to-business web portals with a link to the website where suppliers can self-register in the electronic tool to provide all necessary information according to MLT's requirements; - include requirements concerning transportation of wood as criteria and track the environmental impacts of logistics.

8.2 Credibility

In terms of dependability of the study, the flow of logic is implemented in the thesis to give an understanding of this research to the reader. In terms of confirmability, postulates and decisions are provided with relevant references to the raw data to demonstrate that the data is linked to initial sources.

To conduct the theoretical part of the study, information is obtained from official books, journals as well as trusted Internet sources. The empirical part of the study is based on the interviews conducted with representatives of the companies. Some information is taken also from the company's reports to support the benchmarking process. As mentioned in Chapter 5, notes were taken during the interviews to check that the questions, according to the designed layout for the interviews, have been answered. Additionally, the researcher recorded interviews to be able to come back to

the data. At the end of the interviews the obtained data is summarized by the researcher and confirmed by the representatives of the companies. The results of the benchmarking process are to some extent universal in regards to what is the process of screening suppliers for environmental performance and selection like. It can be explained by the nature of the benchmarking process. In other words, the proposed model is approved for real by the analysis of the example based on UPM's process and by the case research based on the process of MLT. Thus, the results can be applied to other companies which consider the integration of environmental aspects into the process of screening suppliers.

To sum up, it can be stated that the study is credible since validity, reliability and generalisability are met in the research (Saunders et.al 2009).

8.3 Suggestions for Further Research

The main purpose of the thesis is to find the benchmarks for the process of screening suppliers for environmental performance. As was mentioned earlier, the research limitations allow focusing only on the planning and analysis phases of benchmarking process since the main question is to determine the performance gap in MLT's process and provide suggestions on how to close the gap, not on how to implement the benchmarks. That is why the Action and the Review phases are not covered in this study. In order to develop the action plan, it requires more specific and confidential information from MLT.

Therefore, a study on the development of an action plan for the implementation of the research's benchmarks for MLT should be conducted.

9 SUMMARY

Modern Lumber Technology is one of the most dynamically developing wood-processing companies in Russia. Due to MLT's expansion, purchasing of wood will be doubled, and the company is focused on the search for new suppliers. A need to improve the process of screening suppliers for environmental performance and selection was identified by MLT. Therefore, the thesis was conducted to provide an insightful investigation into the current situation of the company's process of screening suppliers for environmental performance and provide suggestions for areas of possible improvement.

In order to achieve this objective the research was conducted by using the deductive method which was supported by the qualitative approach. The benchmarking process is used as the framework for the research. The study started with an overview on the theory of screening suppliers for environmental performance to understand the object of the benchmarking. Data was collected from books, journal articles and trusted Internet sources. Then, the researcher proposed the model for screening suppliers for environmental performance.

The empirical part began with the analysis of the example and case research. The analysis of the example, that is the examination of UPM's process, was conducted to explore the application of the proposed model for real. Then, the analysis of the example is used to test the case research. Therefore, the interpretation of MLT's process is constructed based on the proposed model and the analysis of the example. The SWOT analysis is used to support the benchmarking process and to examine the key strengths and weaknesses concerning MLT's process, and to describe the opportunities and threats facing the process. Based on the SWOT analysis and comparison with the process of UPM, the author provides suggestions for MLT regarding the process. The primary data was collected through semi-structured interviews with representatives of the companies.

The study reached its objective by answering the main research question and sub-questions with a high level of credibility. The limitation concerning this study was the absence of an action plan for the implementation of the research's benchmarks.

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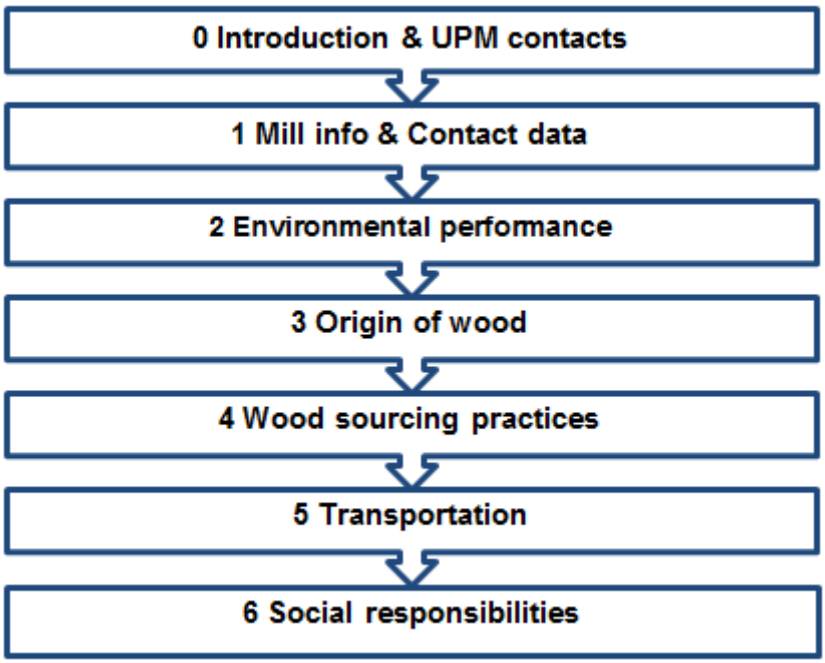
APPENDICES

APPENDIX 1

UPM Supplier Performance Questionnaire 2015 - Structure



APPENDIX 2

The question layout for the interviews

1. Is there a sustainable purchasing in the company?
2. Does the company have top management commitment to the sustainable purchasing?
3. Does it mean that the company screen supplier for environmental performance?
4. Does the company offer reward and recognition with an emphasis on high environmental performance?
5. Are there defined goals and approaches in order to screen suppliers for environmental performance?
6. Who is responsible for these operations?
7. What are the indicators for the screening?
8. Are the general and green criteria collected?
9. How the company uses the indicators to collect data on supplier performance?
10. How the company mitigates the high risk suppliers?
11. What is the next step to select the supplier when the data is collected?
12. What does the company make to verify that the supplier is practically in compliance with the company's requirements? Is there any audits or checks?
13. What does the company do in case of discrepancy between the results and requirements?
14. Does the company see an integration and long-term cooperation with the selected suppliers as an important aspect business? Why?