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RISK MANAGEMENT IN OVERSIZED TRANSPORTATION – CASE KAARLAID OÜ

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RISKIEN HALLINTA ERIKOISKULJETUKSISSA – CASE KAARLAID OÜ

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Tämän opinnäytetyön tarkoituksena on selvittää, mitä riskejä on erikoiskuljetuksissa, kun kuljetetaan Virosta Suomeen. Teoriaosuus käsittää riskienhallinnan peruselementit, miten tehdä riskianalyysi ja mitä työkaluja siihen on avuksi. Riskienhallintaa pienyrityksissä käsitellään myös, koska Kaarlaid Oü:ssä työskentelee alle 50 työntekijää. Lisäksi riskienhallintaa tarkastellaan kansainvälisestä näkökulmasta. Erikoiskuljetuksen peruselementtejä käydään myös läpi, mitä dokumentteja tarvitaan, miten lupia haetaan ja mitä kaikkea muuta tulee ottaa huomioon, kun suunnitellaan erikoiskuljetusta. Lupa-asioita käsitellään vain siitä näkökulmasta, mitä Suomessa on säädetty. Lopuksi tehdään riskianalyysi, jossa analysoidaan mitä mahdollisia riskejä voi kohdata, kun kuljetetaan erikoiskuljetuksia Suomessa. Tämän analyysin pohjalta kirjoittaja antaa case yritykselle suosituksia parantamaan heidän riskienhallintaa.

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The purpose of this thesis is to find out what different risks there are concerning oversized transportations when transporting from Estonia to Finland. Theory part consists of the base elements of risk management; how to do risk analysis and what different tools there are to support the evaluation. There is also discussed small and medium companies' risk management, since there are working less than fifty employees Kaarlaid Oü. In addition, risk management is viewed from international point of view. Base elements of oversized transportations are discussed also, what documents are needed, how to grant permits and what else there needs to be taken into account when planning special transportation. Permits are discussed only from the point of view what is regulated in Finland. Finally, there is done a risk analysis, where will be analyzed what possible risks could be faced when transporting oversized transportations in Finland. Based on this analysis, the author will give her suggestions to the case company, which will improve their risk management.

CONTENTS

1 INTRODUCTION

In everyday life there are in different situations risks that we might meet. How these risks are handled, depends on individuals' risk takin propensity. A good example is lottery, one might not want to gamble at all, because they are aware that the possibility to win is very small and they would only end up losing money. On the other hand, one might bet huge amount of money to win, these people take the risk that they might lose all money they have bet. Some people tend to take risks more easily than others, it very much depends on individual's personality.

Businesses also operate in environments with full of risks. Large companies can afford having risk management system, which by they can anticipate risks in different situations and how they will handle them, but smaller companies may not have enough resources to have same kind of risk management system.

1.1 Background

This thesis is done to a case company called Kaarlaid Oü, where the author has completed her practical training part two in 2016. Kaarlaid Oü is located in small town called Jüri, it is approximately 15 kilometers from Tallinn. The author worked in the company as an assistant for Scandinavia project manager. As inspired by the process of transporting oversized loads, the author had an idea to write thesis about risk management in oversized transportations. Risk management is needed in everyday life, so the author wanted to deepen her knowledge on the topic and by including logistics, it creates a good basis for the future.

Theory part will consist of risk management, tools for risk analysis, risk management in small medium enterprises (SME's), oversized transportation process and documents needed in transportation. Risk management will cover risk assessment, identification and monitoring and by which tools these risks can be managed. SME risk management will also be a part of the theory, because case company is considered as SME, since there works over ten but under fifty employees. And because the case company is lo-

cated in Estonia, there will be gone through international matters in terms of risk management. To get the aspect of special transportation to the thesis there will be gone through the process of transporting oversized loads and what documents will be needed.

The aim of the thesis is to give to the case company risk analysis for possible risks when transporting oversized loads in Finland.

Research method used in this thesis is qualitative research. There will be done an interview with the case company's COO and the idea is to have focused interview. By having open conversation, it will help to have a better overall view of company's situation instead of using accurate and limited questions. The idea is to get perspective of in what base company's risk management is at the moment and what is expected.

1.2 Purpose and objectives

The purpose of this thesis is to identify risks when transporting oversized loads from Estonia to Finland. The case company does most of their transportation projects to Finland, so this analysis will help company to gain competitive advantage, since many transport companies in Estonia have Finnish customers, that want transportation services to Finland. Also, it helps to develop operations and create risk management strategy.

Objectives of this thesis is to give suggestions to the case company based on the risk analysis on what they should consider when transporting oversized goods to Finland. These identified risks will help the company in the future. Author's objective is to gain more knowledge on chosen topic, risk management and oversized transportation, which will help in the future.

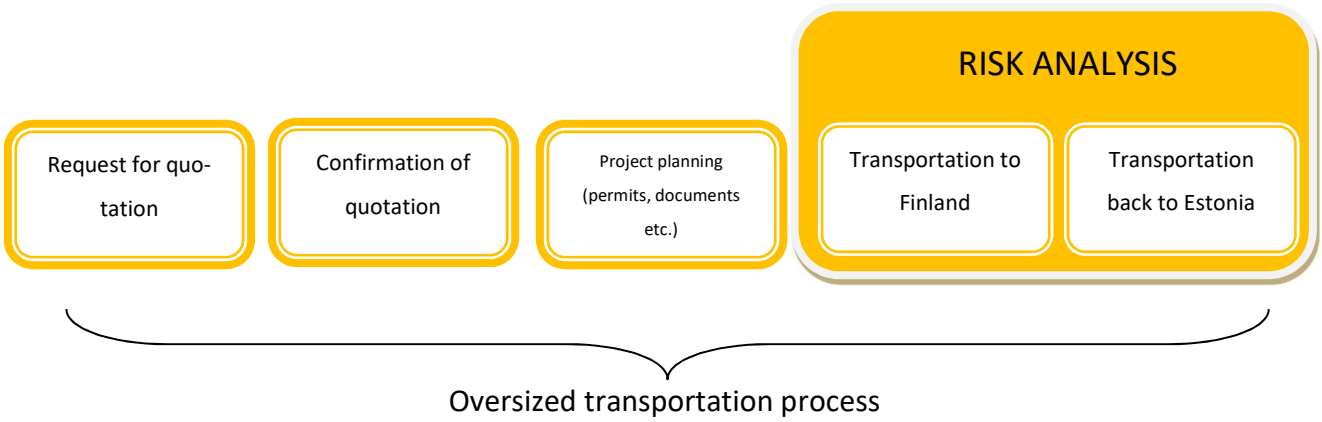
Research questions of this thesis are:

- *What is risk management? (including risk analysis)*
- *What are main steps in oversized transportations?*

- *What aspects need to be considered in oversized transportations? (documents, customs, risks, permits, routes etc.)*
- *What is Kaarlaid OÜ's transportation process like?*
- *What are the risks concerning Kaarlaid OÜ's transportation process?*
- *What recommendations can be given based on risk analysis to the case company?*

1.3 Conceptual framework

In the conceptual framework is described the transportation process of oversized loads. The process starts from receiving the quotation from the customer and leads to confirming the quotation or making a counteroffer to the customer. When it is confirmed, starts project planning. Planning routes, gathering needed documents such as permits, scheduling the transport etc. Then the transportation process is executed, in this case the transportation is between Estonia and Finland, and the risk analysis will concern this part of the transportation process.



Picture 1. Conceptual framework. (Perälä 2017.)

1.4 Limitations

The topic is limited to cover only special transportations; any other transportation modes are not explained. The road transportation is limited to cover risks only at Finnish roads when transporting oversized transportation, but ferries between Estonia and

Finland are included. The documents used in transportation are limited so, that there will be explained only those documents needed in road transportation between Finland and Estonia, which in this case are waybill and CMR. Thesis will only concentrate to risks that are affecting Kaarlaid Oü, customers and forwarders are left out. Export risks are not gone through in any specific way, both Finland and Estonia are EU countries, so the regulations and laws regarding transportation in both countries are similar. As well as permits regarding oversized transportation are gone through only what is legislated in Finland. Risks regarding currency exchange rates are left out, since there is same currency in both Finland and Estonia.

2 CASE COMPANY

Kaarlaid OÜ is a company specialized in oversized transportations, located in Jüri, Estonia. Company has been established in year 2000. Kaarlaid is a service provider, the core competence of the company is that they have the best knowledge on how to arrange fast and good quality transportations to Finland, Scandinavia, Baltics, Europe and CIS (Commonwealth of Independent States). Every transportation request from customers are planned carefully as individual projects from beginning untill the end. Kaarlaid owns over 50 trailers where can be loaded different loads regardless on oversized load. Kaarlaid cooperates with over 20 different local trucking companies.

Kaarlaid services consist of route planning, special permits and approvals, import and export documentation, pilot car services, engineering solutions, CAD-2D/3D planning and simulations, consultation and intermediate storage. Storage facilities company has in Baltics, Scandinavia and Belarus.

2.1 Company Structure

Company consist of CEO, COO, project manager for Baltics and his assistant, project manager for Scandinavia and the author was his assistant, project manager for heavy load transportations, project manager for Europe, project manager for CIS and he has

a consultant, engineer, one who is in account of equipment maintenance, accountant and secretary (See appendix 1).

Project manager for CIS (member states are Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan and Uzbekistan, and also two associate states Turkmenistan and Ukraine (Website of the CIS stat)) is working projects from Russia and Belarus. Project manager for Baltics and his assistant are working with projects in Estonia, Latvia and Lithuania. Project manager for Scandinavia is working with projects to Finland mostly, but some projects to Sweden are handled too by Scandinavia project manager. Project manager for Europe takes care of transportations to Sweden, Germany, Poland, Slovenia and Netherlands. Project manager for heavy loads is handling all oversized and heavy transportations. Equipment maintenance employee makes sure every trailer has needed equipment and keeps record in administration program if any repairs are needed in trailers.

2.2 Oversized transportation process of Kaarlaid OÜ

Company's oversized transportation process (see appendix 2) starts with receiving request of quotation from customer. First is considered is it possible to execute requested project, and if the request is accepted it will be handed to the right project manager (Scandinavia/Europe/CIS/Baltics/heavy loads). Then the acceptance of quotation is sent to the customer and asked for further information about the transportation if needed. When customer has accepted the quotation starts the planning of the transportation. Project manager needs to consider the load that is in question, what kind of trailer and truck needs to be used, communicate truck drivers that are available, consult engineer if needed, apply for needed permits, fill CMR form and book needed ferry tickets. When planning is done confirmation about details of transportation can be communicated to the customer, such as date, time, loading and unloading place and time etc. When receiving the booking numbers from shipping company, they are sent to the truck driver so that they know when they go to the harbor and have the booking number to show before driving to the ship. Returning tickets are booked depending on how long the transportation lasts, but usually day or two before return. When the cost

of project is calculated it is marked into Kaarlaid's own software and from there accountant can see all needed information and makes an invoice for the customer.

3 RISK MANAGEMENT

Word risk is understood as a threat or danger. When a person takes a risk, it means that something unbeneficial may happen to the person or one's property. As a baseline for a risk can be considered uncertainty, one can never know for sure what is going to happen. If outcome of an event or an act can be predicted, or it is known what is going to happen, then it is not a risk. Not even if the outcome would be negative. Also, the scope and meaning of a risk has an impact of how high the stakes are and as how serious the risk is seen. (Juvonen et al. …, 8-9.)

The idea of company's risk management is to ensure that company has minimum distractions in different situations, by this companies can support their competitiveness at markets. Risk management is being aware and having organized activities to reduce risks and consequences resulting from them. In order to have well-functioning risk management, all processes of the company have to be included. This means that company is fully aware of what is happening and done in the whole organization. When management is conscious of all activities, elimination of hazards is a lot easier. In a nutshell risk management means that it is known what is done, responsibilities and obligations are clear, effective processes and activities are used and taking a risk is always conscious choice. (Vesterinen, 111.)

Risk management is defined as a tool which by the organization can identify specific risks and help to handle these in the best possible way. With risk management companies can identify, assess, plan and manage risks. As mentioned above, in order that company has an effective risk management, all levels of the organization must be included. According to Merna and Al-Thani (2008, 3), these levels are described as "corporate (policy setting), strategic business (the lines of business) and project". In risk management these levels need to be taken under consideration that interaction between

these levels is flawless and that there can be learning from each other. Risk management's objective is in three parts; identifying risks, start analyzing specific risks in organization and to reply to these risks in an effective and proper way. In these earlier mentioned levels, the idea is to be able to estimate the existing environment (both internal and external) and to estimate how would changes to that environment have impact to a project. Risk management should be considered not only as threats to the business, but also as a new possibilities and benefits. (Merna & Al-Thani 2008, 3-4.)

Risks can be categorized to two different groups; they are either pure risks or speculative risks. Pure risks are considered as for example if a storm destroys company's premises. It cannot be predicted, and impact of the storm is strict. Companies should attempt to reduce, control and eliminate pure risks. On the other hand, speculative risks are ones that company should try to turn as benefit or avoid risks' negative effects (Tanhua, 2015). Speculative risk is for example a company ordering material too much, but suddenly there is an even in town and the company is now able to sell the extra materials. Company has turned a speculative risk into positive event, but on the other hand there was a hidden possibility for an occurring risk to turn out as negative.

Risk may occur in different events in a company. They may be internal risks, considered as weaknesses, or external risks, which are considered as threats. Internal risks can be managed once they are identified, but external risks may be out of control, for example natural disasters. All risks do not have negative origin, they can be opportunities or come from positive sources. For example, expanding or growing business is associated with lots of risks, but are still opportunities for the company. (Website of the SBA.)

Risk management brings also some limitations that should be kept in mind when planning well-functioning risk management. Risk management is not making decisions for the company, but it can help when making decisions. Although, these decisions are limited on how deep the research or analysis of risks is, people that are involved in its evaluation and what is their exposure and experience and is it relevant to the risk management. Risk management does not make company risk-free, but it can help owners to prepare to the consequences occurring from risks. It will not guarantee that employees do not get into accidents. Every operation that involve humans, have the possibility

that mistakes, and accidents can happen. Lastly, risk evaluation is not comprehensive – it is not fail-safe. Risk evaluation pursues to identify all remarkable risks, but resources available limit it. (Risk Management Guide for Small Businesses, 9.)

3.1 Risk management process

Risk management should be a part of company's strategic management, it helps to identify and control the occurring risks. By having a functional risk management, it increases the possibility of company to achieve its objectives. Risk management process includes identifying systematically risks that circle company's activities, estimating the possibility of occurring events and to understand how to act on these events, setting up plans on how to deal with consequences and monitor how effective company's risk management is and change it if needed. (Website of the Info Entrepreneurs.)

Risk management process starts with risk identification, once risks are identified it moves to evaluation of risks. Then it is considered most suitable strategies how to handle evaluated risks and regularly monitor and control them.

As a result, from well-functioning risk management company can improve its planning, prioritization and decision-making, to allocate efficiently resources and capital, predict occurring possibly negative or worst-case scenario events and plan in advance how to act on these events and increase the possibility of delivering business plan on budget and time. (Website of the Info Entrepreneurs.)

3.2 Risk types

In order to manage risks, it is important to consider what kind of risks company is dealing with. In risk management, they are divided in three different types (see figure 1); risks that can be turned into opportunities (speculative risks), risks that bring uncertainty (pure risks) and risks that are hazards. After this, risks can be categorized in

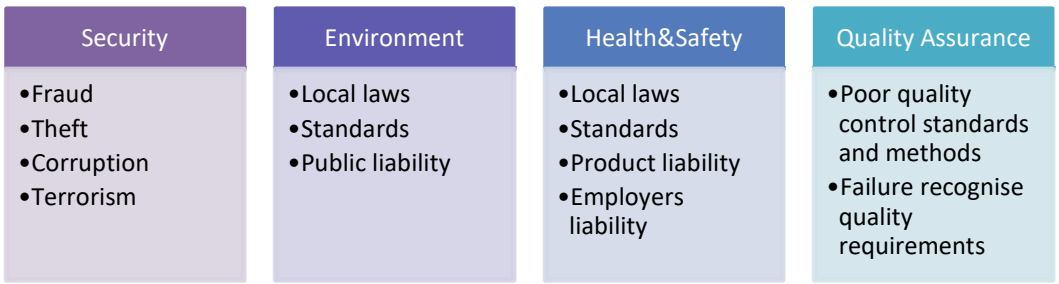
to external and internal risks and further into subcategories, such as: strategic, compliance, operational, financial and reputational risks. Risks and their types concerning SME's (small medium enterprises) are gone through more detailed in chapter 5.

Figure 1. Risk types and their management. (Risk Management Guide for Small Businesses, 10-11.)

Uncertainty-based risks

Uncertain risk's result is usually unexpected events that are difficult to specify. This kind of risks can be for example disasters in nature, which have negative outcome and are impossible to manage or affect. When uncertainty-based risk occurs to SME it may have severe consequences. To prepare to uncertain risks, companies need to come up with plans for emergencies and disasters, plan how to recover from them and make continuity plan. Continuity plan ensures that companies can continue operating after significant interruption. Examples of uncertainty-based (pure) risks are listed below:

Figure 2. Pure risks. (Tanhua 2015.)



Opportunity-based risks

These risks can be turned into company's benefit. If company makes conscious decision on taking opportunity-based (speculative) risk, the risk is accepted, and its negative impact is being minimized in every possible way and benefits are maximized. Opportunity-based risks can or cannot occur as physically or visibly observable, it is

commonly financial and may have either negative or positive outcome as well as be long-term or short-term. (Website of the EnvatoTuts+.)

Figure 3. Speculative risks. (Tanhua 2015.)

Hazard-based risks

Hazard is considered as a risk that may hurt an individual. For example, at a work place, if electrical cords are broken there is a chance of getting an electrical shock or if someone has piled boxes dangerously, it can result boxes to fall on employee. Any activity done by a human, brings hazard with it. Some common hazards to mention: diseases and illnesses, slips and falls, car accidents, sports accidents, fires and electrical accidents. (Ostrom & Wilhelmsen, 1)

Hazard risks deteriorate company's objectives in the business plan and they have a negative outcome. Hazard risks concern matters like, fire repelling, property damages, safety and health at work and insufficient products. Operations may be interrupted because of a hazard risk, as well as it may increase costs, deteriorate publicity that is associated with interrupted events. (Hopkin, 21.)

Nowadays IT and other supporting devices are important to many businesses and there are also related a lot of hazard risks. Due to dependencies to IT devices, a crash on IT systems, internet crashing down or server room on fire can cause serious troubles. Also, hackers and virus infections on computers are irritate companies as well. (Hopkin, 21.)

3.2.1 Internal risks

Human risks

Human risks are a risk for any company. These risks are usually employees' illnesses and death. Illness may vary from day to months, which is a risk for a company. When an employee is on a sick leave company pays salary for him and if there is a substitute for employee he needs to get paid too. So, the result is that company pays double salary, and loses money. (Website of the SBA.)

Employees need to be treated with trust and respect. Risk of losing loyal employees to the competitor is real, and if it happens, loyal customers may be lost to the competitor as well. So, in fact human risks can be categorized in both internal and external risks. In most small companies, the atmosphere among employees is honest and compact, but there is still always a risk for a fraud. Even misuse of timecard is a risk and account risks such as if employee steals money to their own use. On the other hand, even the atmosphere in the working environment is good, the risk of unhappy employees is always possible. (Website of the SBA.)

Technology risk

Technology risks are nowadays very usual, internet may crush down, software's will not work, or new equipment may break down and need adjustments. Also, other physical damage, such as a breakage of a trailer when transporting goods may be significant risk to a company, since goods are unable to deliver to the customer. (Website of the SBA.)

Financial risks

Financial risks come when economy is instable, and company meets financial losses when there are ups and downs in stock prices, interest rates and currencies for example (Website of the Simplilearn, 2016). In international business, the foreign exchange rates can also hide possible risks. When doing business internationally payments of clients from other countries always come with associated risk. There are different cultures and people relate to paying invoices differently in different countries. (Website of the Chron, 2017.)

Other risks

Other internal risks can happen in the premises the company is located. Maintenance of the premises, such as windows or alarm system, internet connection or phone lines may break down. Damages to the business may cause the business itself, for example selling wrong product or having miscommunication among transportation process will come at cost, such as the business may take damage for example if a storm destroys premises. (Website of the SBA.)

3.2.2 External risks

Competition and marketing risks

Markets are changing all the time. Competitors advertise, material costs vary as well as gasoline and oil costs affect to everyday business. Keeping up the reputation is also vital for a company. Loss of a reputation may come from failure in products or bad service, negative publicity or lawsuits. Nowadays even a posting in the social media might affect to company's reputation (Website of the Chron, 2017). New innovations are invented every day and competition is very rough in markets. The worst possible competitor might open up a new store right next to one's company. Competition with prices is rigorous in markets. If competitor has very good discounts it can be a serious risk, especially for a company that has higher costs compared to competitor. Usually companies give discounts because of issues in supply or demand where company has excess inventory or because of pricing strategy that is very aggressive can kick off a pricing war. (Website of the Simplicable 2017.)

Business environment risks

Environmental changes can be for example laws that change, or new ones that are legislated. Natural disasters, such as earth quakes or tornados, are risks that can affect so badly to the business that it may have to end its operations. Community changes and interests of people change all the time as well as spending habits which have affect to businesses (Website of the SBA). Companies should try to follow their business environment from political and financial view, for example in terms of transportation, changes in politics may suddenly have impact on import and export regulations. At worst, a political risk can occur in the country that goods are being transported, there

might be a war, which may cause some serious problems. Substantial changes in currency politics or permissions may cause serious troubles in raw materials or other business activities too. (Juvonen, et al. …, 148.)

Transport risk

Logistical risks can be considered in many ways, but most common way to divide these risks is to divide them into business and damage risks, for example damage of goods during transportation (Juvonen, et al…, 148-149). Transportation risks are gone through more detailed in risk analysis made to the case company.

Most of transport risks can be anticipated with insurances. Alone an insurance is not sufficient action of risk management. Insurances do not compensate expenses occurring from a damage, so because of this a systematic risk management and anticipation ensure less damages and disturbance to the company, and exceptional situations do not threat the continuity of business activities. When acquiring insurances to transport, there are two insurance modes; cargo transport insurance and forwarder's liability insurance. Usually the owner of the goods takes cargo transport insurance in case of the goods get damaged while transporting them to the end location. Freight forwarder does not actually insure the goods but own liability of damages. (Juvonen, et al…, 148-149.)

3.3 Risk identification

Risk identification allows companies to specify how significant occurring risks are to the business. It gives the possibility to take action and eliminate or minimize them. (Website of the Info Entrepreneurs, 2009.)

Important part of risk identification is to have a business plan. In business, there are areas that will effect on business continuity and growing, so business plan will help evaluating these areas and possible risks there. Identification and assessment of risks is important and should be done regularly and with time. (National Research Council 2005.)

Data of past events or projects are helpful when identifying risks in business activities, but most important knowledge is in people's minds, so gathering teams to brainstorm possible risks met in different areas of business. Keys to successful risk identification is when adding together technical experience and expertise, group dynamics and personal contacts. Risks identified in brainstorming should be documented and monitored. The purpose of identifying risks is to identify all possible risks, not to find solutions how to mitigate them or find risks that will not be under consideration. (National Research Council 2005.)

According to Suominen, for example, when identifying risks in transportation, by using "what, when, where" -type of questions are effective. Transportations can be divided in following groups: import, export, domestic transportations, subcontractor transportations, transportations between company's departments, internal transportations and other transportations. After this the one analysing should ask the next question: By what equipment is the goods transported. These could be: road, air, sea, railway and other transportations. Then the analyser considers what is such that can happen, in order to transportation risk occur. The nature, qualities and durability have to be considered also, because when transporting expensive machinery versus transporting tulips differ from each other considerably. No one can be a hundred percent sure what different damage can happen when transporting and for this reason the risks are very difficult to categorize. In categorization, it is important that the on analysing risks knows how insurance companies categorize occurred transportation damages. For example, what is the compensation if happens an accident, robbery or fire. Transportation risks should be categorized a bit further, from the point of view of accountability, it is important to know has the damage occurred before planned transportation, during or after the transportation, when the consignee has received the goods. (Suominen, 40-42.)

3.4 Risk evaluation

Once risks are identified it is essential to evaluate them, what is their impact and extent. There are different tools to help in risk evaluation, they are explained more detailed in chapter 6. By evaluating risks, it is easier to start dealing with them once they are

categorized. Risks are ranked by their probability and consequences with rough scale (Suominen, 43). Also, prioritization of risks enables company to target its money and time to risks that are the most important. With risk evaluation companies can create adequate implementation and planning how to reduce risks. (Website of the Info Entrepreneurs 2009.).

Important aspect to consider when starting to evaluate risks, is that who will be involved in the evaluation. In some cases, and in large companies, risk evaluation is done as top-down exercise, where the board of directors do the evaluation. It can also be done as bottom-up approach where risk evaluation is done by individuals and department managers. Opinion of company's CEO is important in risk evaluation, because it helps to see the overall picture and what is company's attitude towards risks. There is also a disadvantage, if a CEO is only one evaluating risks, because usually risks evaluated by the CEO tend to be only external. (Hopkin, 140.)

There are tools to help evaluate risks. Most common are questionnaires and checklists, which help to gather information that assist to identify most significant risks. As mentioned above, it is important to consider who is involved in the risk evaluation, and as one evaluation technique is to use brainstorming and workshops. When ideas are gathered together from different points of views and discussed different events that could have impact on objectives, key dependencies or core processes, it will result as getting broad picture of current situation and possible risks that are a threat to the company and its operations. Inspection of premises and operations and audits can also help of getting broader picture of ongoing situation in the company. Flowcharts and dependency analysis can reveal what are the keys to success. By analyzing processes and operations in the company, can be identified the most critical components. Traditional PESTLE and SWOT analyses are also good tools to help in risk evaluation, because they serve structured approach to identifying risks. (Hopkin, 123.)

3.4.1 Risk perception

With risk perception, it is meant the probability of a type of accident occurring and how we feel about consequences of it. In order to perceive risk, one must evaluate the

probability of the risk as well as consider the negative outcome. (Sjöberg, Moen & Rundmo, 8.)

Risk perception is important because it tells what kind of hazard risks people tend to take and how they will deal with them, which is especially important in risk communication. Risk perception can be divided to two main dimensions, cognitive and emotional. Cognitive dimension means how aware people are of risks and what is their understanding towards them and emotional means how people feel about risks. (Paek and Hove 2017.)

It is beneficial that people have different risk appetite, opinions and views towards risks. When evaluating risks, it is useful to have opinions from managements all levels, this way can be gotten different perspectives, better risk communication, more complete risk understanding and most suitable control measures (Hopkin, 126.)

3.4.2 Evaluation of hazards

In order for a company to have a broad picture of possible risks, it is essential to categorize risks. When categorizing, companies should take in account the impact, source and time scale of impact. FIRM scorecard and categorization of pure, speculative and hazard risks give the complete picture and help in evaluation (Hopkin, 137.)

Hazards can be easily evaluated with two multiplied factors: hazards potential consequences and its severity and likelihood of consequences to occur. In this case can be used risk mapping as a tool, and categorize hazards to A, B and C classes. C class hazards are presenting relatively little risks, B class hazards are more serious risks, which can be taken under control if noticed as soon as possible and C class hazards are unbearable and need immediate attention and controlling (Website of the Retail-safety 2017). Below in table 1 is illustrated the mapping, and for which class does the hazard goes will be the basis for making decisions of how these hazards are controlled.

Table 1. Evaluation of hazards with risk mapping tool. (Perälä 2017.)

Will occur	B	B	A	A	A
Almost certain	C	B	B	A	A
Might happen	C	C	B	B	A
Unlikely	C	C	C	B	B
Very unlikely	C	C	C	C	B
	Minor	Moderate	Severe	Major	Catastrophic

However, there will be sometimes situations that are complicated and there are more important matters that need to be considered. These situations can for example be:

- The frequency of exposure, the greater the risk, the more often people are exposed to the hazard
- The duration of the exposure, the greater the risk, the longer people are exposed to the hazard
- There might be extra circumstances that could affect the risk of injury.

That is to say, circumstances can enlarge the risk. Taking as an example working in a grocery store. There are lot of different ways to prevent robbery in a shop, but still robbery hazard, even if it is small – it is always present. It can happen anytime, although there would be alarm systems, guards or robbery prevention plan. And to add if an employee is working alone in the shop the hazard gets enlarged. (Website of the Retail Safety 2017.)

3.4.3 FIRM scorecard

This scorecard helps when evaluating risks occurring, with it one can determine the level of the risk that is evaluated. The more of risks that are evaluated fall upon certain topic, can be figured out what kinds of risks are in question. (Hopkin, 134-135.)

FIRM comes from words financial, infrastructure, reputation and marketplace and it is used to determine the level of evaluated risk. Financial and infrastructure risks are considered as internal and reputation and marketplace risks are to the company external risks. From these four financial and marketplace risks are easiest to quantify in terms of financial aspects and on the other hand infrastructure and reputational risks are harder to quantify. (Hopkin, 134-135.)

Financial risks

- company does not have adequate resources to meet set strategies and plans
- risks that can affect the way of how available cash resources are controlled and allocated
- financial risks that come up with failure of procedures to decrease the possibility of losses and to ensure that cash resources are allocated correctly
- risks where the objective is to achieve sufficient level for internal control and financial management

Infrastructure risks

- risks that affect the level of normal operations' effectiveness in the company
- infrastructure risks that comes with failure of normal processes
- risks where the objective is to gain and maintain and infrastructure that will satisfy customers requirements efficiently

Reputational risks

- risks that impact customers' and partners' want and need to deal or trade with the company
- reputational risks that come with failure of the company to gain wanted perception with customers, partners, stakeholders and staff
- risks where the objective is to achieve and maintain the wanted level of reputation that will ensure company's positive image

Marketplace risks

- risks that can effect on the level of customer expenditure and retention

- marketplace risks that come up with failure of company achieving needed level revenues
- risks where the objective is to achieve sufficient level of continuous income that is under control, including exceeding and budgeting

(Hopkin, 83-88.)

3.5 Risk management strategies

The position and meaning of risk management can be evaluated based on the decisions made in the company. The risk management strategies form mostly from what company is doing, how they implement risk management solutions and what aspects are emphasized in these solutions (Suominen, 159). When planning risk management strategies, first thing to do is to have a robust risk management plan. To mention aspects that should be included in the plan are: individual risks listed, each risk rated based on impact and likelihood, evaluation of current controls, plan of how these risks are handled. Company should consider how to handle each risk identified and prioritize them (Blackman 2015). There are different ways to handle risks and they are gone through more specific below.

Risk avoidance

There will come times, when there is nothing else to do than eliminating risk. Risk avoidance is, when an activity is avoided overall or wholly different approach is used. If for example investing in a particular stock is too risky, one can decide that it is not worth of investing and avoid it. (Blackman 2015.)

Risk avoidance is very advantageous, because it is most effective way to deal with risk. If an activity is causing problems, elimination is giving the chance of decreasing the possibility of losses. On the other hand, with risk avoidance there is a chance that possible benefits occurring from a risk can be lost. Some risky activities may have benefits or be very profitable to the business. (Blackman 2015.)

Risk avoidance is good to save later to use as an ace up on one's sleeve. When every possible strategy is used, and it is discovered that the level of risk is too high, risk avoidance is the only chance. (Blackman 2015.)

Risk reduction

Risk reduction is considered as the most significant risk management strategy. The main point is to try to reduce consequences and effect of an incident. Most severe risks cannot be eliminated, but with different actions they can be reduced. This can be done with for example, educating staff, backup plans and work safety actions. There is often a possibility to reduce a risk, but in some cases the costs may increase so high that it is not profitable. So, it is important to calculate whether its profitable or not to reduce risks. On the other hand, it is possible that when reducing risks, the efficiency of production or quality of service might increase, when the financial benefit needs to be taken under consideration. (Nygren et al…, 23-24.)

Risk acceptance

When companies are facing risks they most likely make the decision to treat certain risk. Although, the first question needed to ask that does the risk really need to be treated? In some occasions, it is possible to accept the risk, if the risk is at certain level that the company is comfortable with. If the risk is acceptable it can be marked to risk register and be monitored continuously, since there is a possibility that it can grow to higher risk. And some risks are above of risk tolerance, where nothing can be done about it or the treatment of a certain risk would be so costly that it is better to accept it. (Website of the Paladin Risk Management Services 2017.)

Risk Transfer

One risk management strategy is risk transfer, where pure risks can be contractually transferred from party to another. Companies make relationships, agreements and negotiate written contracts with suppliers, consumers, contractors and subcontractors. Nowadays it is usual to write a contract, where one party agrees to adopt other party's liabilities. By accepting to take liability of other party can be expensive. In these kind of contracts, company's may have to pay for such issues that normally would not be company's responsibility. So, companies must be careful and read the requirements

with care. Usually risk transfer is executed through an insurance policy. This arrangement is voluntary between insurance company and the policyholder, and insurance company straight supposes policyholder to define financial risks. For example, if company's premises burn down, the insurance company pays costs occurring from it. Insurance companies charge money for accepting the risk. (Website of the CNA, 2018.)

Effective risk transfer divides risk equitably for all parties involved. It is recommended that the party who has the most control of sources of potential liability should have the most responsibility on handling possible risks. (Website of the CAN, 2018.)

Risk absorption/pooling

Risk absorption or pooling is a suitable way of handling risk if it can be pooled with an alliance, joint venture or consortium. Usually industries with very high research and development costs use this strategy for example when developing new products and infrastructure projects. (Website of the Simplicable.)

Risk sharing

One way to manage risks is to share them, meaning, that risks are shared among individuals, teams, departments or companies. For example, there are insurances for clients that pool risks among them or self-insurance for the entire company, which will help to reduce impact to any department or a team. Sharing a risk can open opportunities for the company to reduce risks, for example when sharing risks between teams, it can come up with opportunity to reduce risks and share available resources. As a strategy, risk sharing can be used to commit stakeholders to a project. If sales and finance departments share risks of a certain project, the result is more likely a success, compared to situation where sales department handles all the risks occurring from that project. (Website of the Simplicable.)

3.6 Risk monitoring and controlling

In order company to have risk management up to date, the monitoring process should be continuous. The process includes monitoring already identified risks, identify new risks, make sure that there is correct response to risks and evaluate effectiveness of

risk management in overall. Enduring systems to improving identification of risk are gather statistics and how danger spots are handled, reporting, observation and auditing working environment and work, research of damage incidents and accidents and regular monitoring of risks. (Balakian 2010.)

When controlling risks, it is vital that there are controls that generate other controls. First, it is key factor to understand how internal control and risk management integrate. In any size of company, there are different people thinking different ways to control activities and planning how to implement them. In order to have effective control system, using only risk register is not good enough, but to understand the wide range of alternative techniques is the key to it. And especially inspecting those alternative techniques by gathering information from different people in the company. Second, controls that generate other controls are generally intelligent controls. Concentration should be kept on individuals and activities that can have most impact on value, because it is important to get value from risk controlling. (Leitch, 49). There are numerous ways and techniques to control risks and controls that generate other controls, but they are not gone through any detailed in this thesis.

Risk monitoring and control is needed company to ensure that risk planning is executed correctly and to evaluate its effectiveness on how it reduces risks. It is also important to follow up identified risks. With continuous follow up new risks, and the ones that in first place did not even thought of can come up. New situations which might result into contingencies may also occur. Monitoring and control also gives the possibility to update operations and objectives. (Al-Khalil 2008.)

4 RISK MANAGEMENT IN INTERNATIONAL OPERATIONS

In this chapter is gone through some aspects that needs to be considered when analyzing international risks. Nowadays technology, transportation and communication improve at fast phase and they are pushing international business' development further. Due to globalization, foreign or domestic investments have only very blurry line between them. On the other hand, foreign market investments always come with a risk,

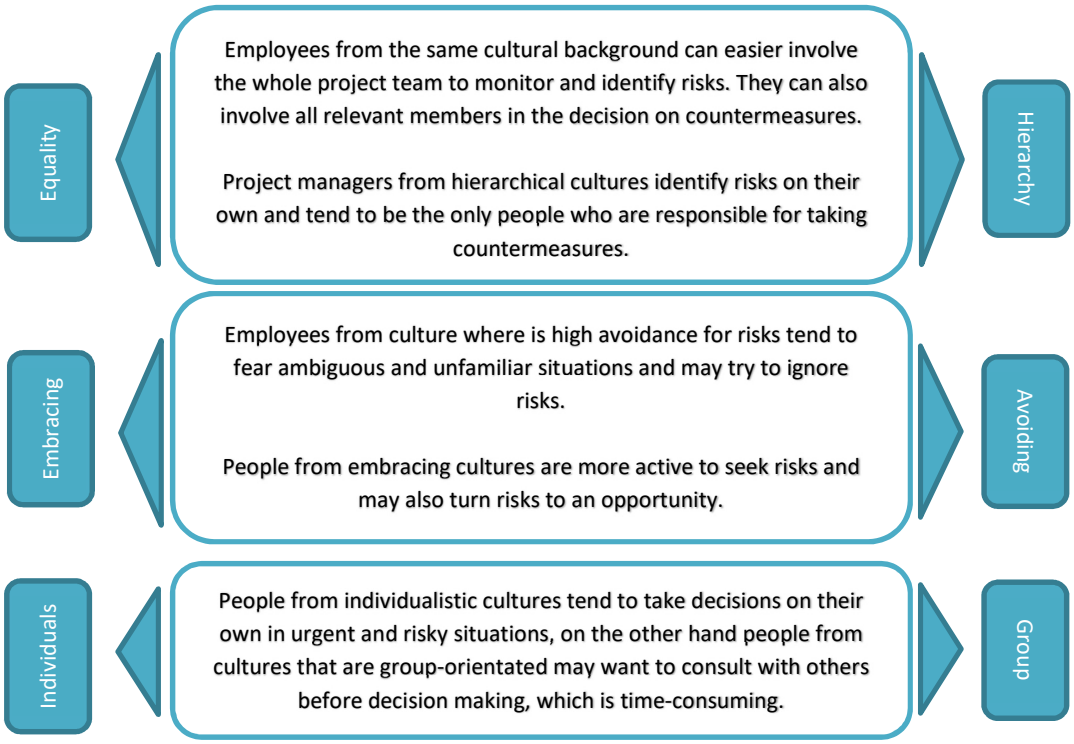
but at the same comes opportunities if comparing to risk taken domestic. (Xuamei Hou, 23.)

4.1 Risk and culture

In international operations it is important to understand different attitudes and meanings that different people have towards risks. Meaning that project manager has to be aware of these differences, since it might be possible that there could be unidentified external risks. Project manager should include cultural risks in project planning. When systematically analyzing markets geographically or the country that international project will involve with or target, should be used PESTEL tool. This is because it includes political, economic, sociocultural, technological, environmental and legal aspects to consider in the target country (Köster, 106.)

Figure 5 shows the most notable differences in individual's attitudes in likelihood of taking risks in the context of diverse cultures. These differences can occur inherent risks in a project and lead to risks that are external and unidentified. Project manager has to include these differences that may cause extra risks in project planning. Differences in people's attitudes towards taking a risk can cause from other reasons such as, organizational culture, educational background or individual's personality. (Köster, 100.)

Figure 5. Cultural impact on risk management (Köster, 101.)



4.2 Country risk

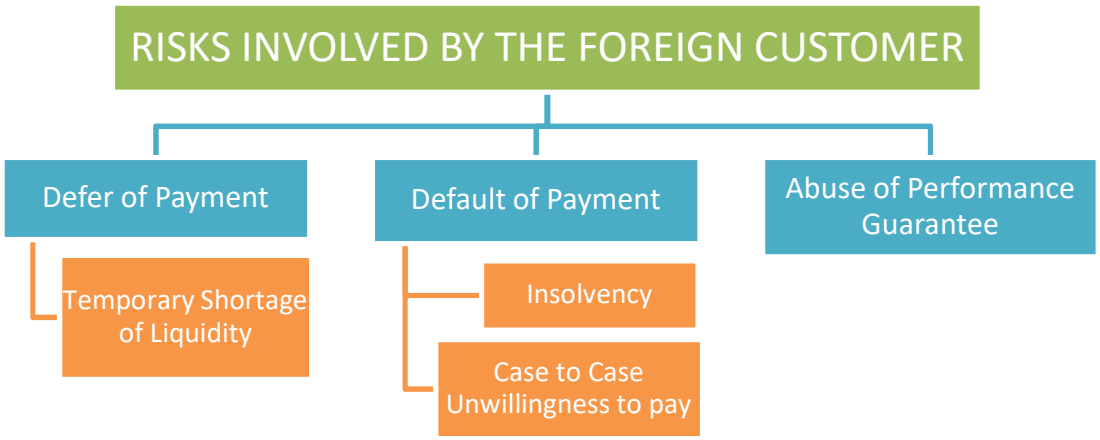
In internal operations, there are three different forms of country risks that may occur; political, economic and social country risk. By political country risk is meant administrative or legislative exceptions in foreign trade set by the government, that may harm export operations. Economic country risk is for example changes in competitive advantage, fluctuations in exchange rates, inflation or weakness in company's business activities. Third, social country risk is a threat of a war, rebellion, revolution, corruption or bureaucracy etc. (Grafers & Schlich, 158-159.)

However, the conversion and transfer risk are the most important of political risks, which is a result from restrictions set by government or cross-board payment transaction interruption. Transfer payments or converts, that a customer from foreign country would like to do by his domestic currency, are declined by the central bank. Globally operating bigger companies make their own country ratings (country risks), and they are not available for everyone to see. SMEs do not have the same amount of capacity,

so they will get their help regarding country ratings from their trade associations, national export credit guarantee agency or home bank. (Grafers & Schlich, 159.)

Foreign customer risk

In addition of evaluating foreign customer, the other contracting parties need to be evaluated, for example suppliers or joint venture. Different cultures effect on how each one does business, some operations are done differently e.g. in Asia, if compared to Europe. For example, foreign customer risks concerning financial matters (picture 2), payment might be late due to problems in liquidity, the company does not have enough money at the moment to pay the invoice. In some cases, there might be unwillingness to pay the invoice, due to a conflict between the seller and customer. Due to cultural differences performance guarantee might be wide perception. Other party expects certain performance on a project and the other party might understand the expected performance in a different way. So, it would be desirable to settle wanted performance guarantee in the contract.



Picture 2. Economic risk (del credere risk). (Grafers & Schlich, 163.)

Contract risk

When talking about contracts, they are usually considered as legal tools, because they make sure that law enforces. Companies make contracts not just for legal matters, but achieve objectives set to the business. Contracts should be considered as a tool for management, to create value, competitive advantage and profitability (Haapio &

Siedel, 11). Contract risks for example can be uncertainty to reach set objectives or expected outcomes, threat for contract to succeed and impact on business and legal objectives. (Haapio & Siedel, 20.)

Other party may be the reason why contract risk occurs for example economic reasons. As mentioned before the other party may be unwilling or unable to pay. If risk is considered as uncertainty when talking about achieving objectives, the answer is depending on who is answering. For example, a project manager might think that there is a risk when trying to succeed in project outcomes, and in this case, contract sets goals and enables to monitor results, especially when talking about quality, time and money (Haapio & Siedel 18-19.)

Social risks

World is full of diverse cultures, values and religious beliefs are such cultural factors that may cause risks, but in a multicultural environment these values and beliefs of different nations must be honored. In some countries family companies are very important, such as most of Asia, southern Europe and northern Africa. Companies must be careful in these cultural environments to minimize possible cultural business risks. (Dlabay & Scott, 563.)

Logistical risk

When doing overseas business, it is essential at purchasing materials and goods abroad. Even if there are uncertainties for example, if the supplier is unable to deliver within budget and in time. By diversifying supply chain, to spread orders to several suppliers, a logistical risk can be reduced. Using suppliers that are divided in several regions or nations across the world, helps to reduce risks concerning for unexpected problems like weather issues. Using this kind of supplier is a step further in risk management, and it may work the best in large companies, who have needed resources. Although small businesses might be able to similar procedure, it is important to have backup supplier to existing suppliers. (Website of the Chron 2017.)

Route planning is also important and there are also many risks associated. The quality of transported good and vulnerability effect in route planning, for example exceptional measurements of goods or conditions of consignee. Geographic conditions may effect

on the access of goods to the end point, so that they arrive whole and in time. (Nygren et al…, 25.)

Carriage risk

When transporting goods to a foreign country, the goods can be lost or damaged or authorities may distrain them and sometimes carriers transport insurances do not cover all damage. With cargo insurance company can transfer its carriage risks to insurance company and can by this ensure its business activity in damage situation. Cargo insurance can be taken to every transportation or for a certain transportation. Companies can insure domestic or foreign transportations, transportations between different agencies and subcontracting transportations. So, cargo insurance mans that owner of the goods takes the carriage risk. The other option is to take cargo liability insurance, which means that freight forwarder, warehouse keeper or stevedore is liable for the goods that has been entrusted for him or her. Liability in different modes of transportation regulate and limit national and international laws and conventions. (Website of the Logistiikanmaailma.)

5 RISK MANAGEMENT IN SME'S

Most SME's do not have risk management, because they do not have enough resources. Risk management is vital to companies, because in worst scenarios risks can have catastrophic consequences, which may effect on customers, liabilities or may even drive company to bankruptcy. (Falkner & Hiebl 2015, 125.)

Due to small resources in SMEs, the manager is the one that knows the specific risks that may harm the company. In order to identify these specific risks, there is a standard risk checklist, where can be added aspects from specific expertise. Of course, physical damage to property, e.g. criminal activities or a damage occurred from fire are harmful for every company, but there are some initial possible risks that may be very harmful for SMEs. These risks can be for example interruptions in business, if company is unable to sell goods or service for a long time, it may have severe consequences. Or if an important employee or the owner becomes sick and is unable to work for a long

time or dies, may the small company be in serious trouble. (Website of the American Express 2010.)

When risks are identified with the checklist, vulnerability for each risk need to be determined. Vulnerability means what is the probability of a specific risk to occur and how much can the company stand to lose on such risk. In the second step of risk management is to determine which risks are such that company is worth to deal with. The risks that are worth of handling, should be considered that how affordable are they, in order company to protect it from them. If specific risk's probability of occurring is low and it would cost 30 000€ maximum in losses, but to protect against this risk would be 25 000€. So, using resources to protect from this risk may not be the best use of resources. Third step is to prepare contingency plan, and it is more than insuring assets. There are many ways to manage risks, such as: avoid transactions with possible suspicious customers or having a security system that protects from property losses. Fourth step is to get right types of insurance, since it is a crucial part of company's risk management. Some key insurance types are: general liability insurance which usually covers medical expenses, property damages and some legal services and product liability or professional liability insurance, other is to cover damage caused by a product that is defective and other is the same but for service. Last and fifth step is adapting and monitoring. Every risk management plan should be updated on a regular basis, using few days for example every six months is a good use of resources. (Website of the American Express 2010.)

Risk categories

Categorization helps SMEs to evaluate risks, by putting identified risks into areas or categories company gets more perspective to evaluation. Risk category is a specific area or topic that are considered one at a time in order to have clear and structured risk identification. By this companies can focus their attention to a specific category, to have more brainstorming and more possibilities to identify risks. Moreover, when these categories are understood, they assist company's owner to select categories that are most adequate techniques and tools to risk identification and further to analysis. For example, if a specific category is technology, the methodology used in risk identification can contain researches and existing information of exposure of risk. On the

other hand, if risk category is commercial, which has more strategic focus, the identification process could involve SWOT analysis and structured brainstorming. Common categories of SMEs are: financial, equipment, organizational, security, legal & regulatory compliance, reputation, operational, service delivery, commercial, project, safety, stakeholder management, strategic and technology. (Website of the Significance International 2017.)

6 TOOLS FOR RISK ANALYSIS

6.1 Vulnerability analysis

By vulnerability is meant the uncertainty in risk management that threatens company's operations. View with this analysis has focus on the future: how to manage in the future and how to learn from knowledge and experiences. By considering what kind of situations and accidents has happened to oneself and others, can have hints of what could be own strength and weaknesses. (Website of the PK-RH-Riskienhallinta 2017.)

In the analysis will be identified company's most vulnerable sectors. These sectors are: individuals, assets and discontinuity, prerequisite for operation, organizing activities, stakeholders and economy. Every of these sectors are sorted into specific central sectors. With vulnerability analysis can be identified these specific sectors that affiliate with greatest risks. Thereby is done deeper investigation and procedures that reduce risks. (Website of the PK-RH-Riskienhallinta 2017.)

Picture 3. Vulnerability analysis (PK-RH-Riskienhallinta 2018.)

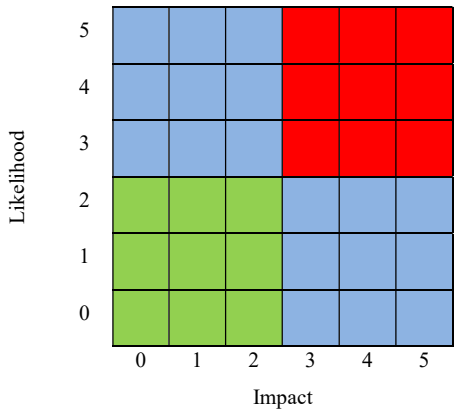
Above in the picture 3 can be seen the sectors in vulnerability analysis. Next is gone more specific what goes under these sectors. Individual sector contains incidents, working ability and illnesses, change of working place, selection of individuals, know-how and use of experts. Assets and interruption sector contains pure risks such as fire, floods, equipment breaks, information risks, criminality and transportation risks. Economy sector contains profitability, solvency and liquidity. Arrange of operations sector contains development of operations, dependencies and contractual and responsibility matters. Stakeholder sector contains customers, investors, subcontractors and authorities. Lastly sector of prerequisite for operations that contains machinery and equipment, raw materials, waste and emission, premises and quality of products and service. By specifying all identified risks to these sectors, it is more efficient to start evaluating and further monitoring and controlling risks, but one must remember that vulnerability analysis is a start for evaluation. It reveals sectors that affiliate risks, but to get more specific details on these risks for example risk specific checklist would be a great additional tool to use with vulnerability analysis (Website of the PK-RH-Riskienhallinta 2017.)

6.2 Risk map

Risk map is a tool for a company that can prioritize and visualize risks threatening it. With risk map companies can describe the risk management politics according to its risk sensitivity. Describing risk management politics can be done with risk map, see

figure 5 below. It can be done by increasing or decreasing the red area of key risks. By key risk is meant a risk, that threatens company to achieve its objectives and exceeds company's risk-taking propensity. (Website of the SecMeter.)

Figure 5. Risk map. (Perälä 2017.)

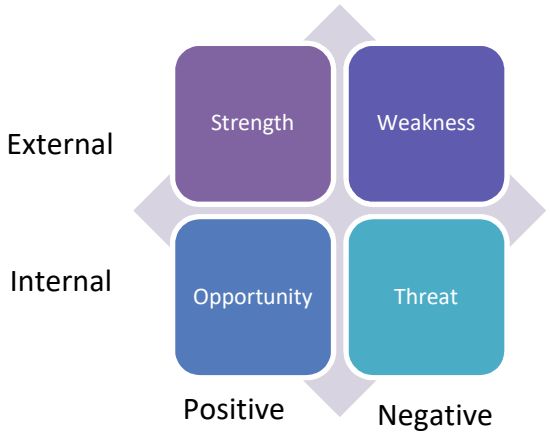


Red area on the map is where all the key risks go, meaning these are the ones that exceed company's risk-taking propensity or risk appetite. Blue area is for risks that are controllable, they fit to company's risk-takin propensity and risk appetite. Green area is for low significance risks, which do not need any procedures. Likelihood and impact of a risk form together two-dimensional coordinates to risk map. Risks are placed based on their coordinates (X, Y) to the map. For example, a specific logistical risk has a likelihood to occur of 1 and impact of that risk is 2, it is placed on a map to the green area, meaning it is low significance risk, and does not need any procedures. (Website of the SecMeter.)

6.3 SWOT

SWOT comes from words strength, weakness, opportunity and threat. Strengths in the matrix (see picture 4) are helpful capabilities coming from internal operations that may help the company to reach its goals and objectives. These also consider how company is handling skills, core competencies or skills (Verma 2017). Weaknesses are also internal factors that may harm company's capability to reach set goals and objectives. Opportunities come from external aspects and are ones that company can turn in to its

benefit. Threats are increasing and current factors coming from external factors that can challenge performance. (Website of the PK-RH-riskienhallinta 2018.)



Picture 4. SWOT. (Perälä 2017.)

SWOT analysis can be done in every organization. Analysis can concern the whole company or some particular part. Detailed analysis is more limited, for example focus of the analysis is on products or markets. At its best SWOT analysis is a simple method that can be done individually or in a group. One way of doing SWOT and having thorough result is to first have everyone individually think and write down company's strengths, weaknesses, opportunities and threats and gather everyone's opinions. In the end set up brainstorming in teams to sort out what are the real strengths, weaknesses, opportunities and threats. It is also important to keep the analysis as simple as possible and to separate present state from future state. From the analysis company can decide to strengthen the strengths and to exploit them in the future, fix and improve weaknesses, make benefit from opportunities according to available resources and prepare with precise planning to threats. (Website of the PK-RH-riskienhallinta 2017.)

6.4 Potential problem analysis

Potential problem analysis (PPA) is an effective tool for risk management. The main idea is to bring together different people with open minds and different expertise. PPA

is developed in large-scale industries where are the greatest risks, that's why it is very effective tool to use. (Website of the PK-RH-Riskienhallinta 2017.)

It starts with preparation of PPA. First there is agreed target or risks that is being identified, this could be for example human or information risks. The ideal amount of people to execute PPA is from three to four. These people should be those who are aware of the target or risks that are going to be handled. It would be good to choose for example, employee, manager, designer and people who have expertise in quality for example, and the most important is to have a person to lead the conversation, that knows how PPA works. Risks are generated with brainstorming. Leader gives key words concerning specific topics one at a time for the team. For example, the leader gives to the team keyword transportations, then each member of the team writes to the paper three risks concerning the given keyword and then paper is tossed to the next sitting person. Then the other writes down his or her own ideas to the risks that previous person has wrote down. When no one has new ideas, there will be given a new keyword. Old keywords can be gathered aside, and if anyone wants they can go back to them. (Website of the PK-RH-Riskienhallinta 2017.)

Once brainstorming is done, the leader gathers identified risks and categorizes them according to target of risk or the situation where harm occurs. These categorized risks are gone through by discussing. At the same time team can try to find out new risks. Among the conversation, the significance of identified risks is estimated. It is important to be able to estimate what kind of procedures identified risks need, and they can be estimated following:

- Risk is too small, and it has no significance = no risk
- Risk is significant, but it is under control at the moment = risk under control
- Risk is significant, but it needs immediate procedures = risk has to be taken care of.

Now, the risks are marked to summary form. After that, the risks that need monitoring and controlling are taken into consideration and gone through. First is estimated the scope of the risk, usually scope depends on the often or more likely risk occurs or the greater damage it does when it occurs. Scope of the risk can be estimated on rough

scale: not significant, average, significant or 1,2,3. (Website of the PK-RH-Riskienhallinta 2017.)

Lastly needs to be discussed how the risks are handled, what kind of strategies is used, in order to reduce, avoid or transfer them. Procedures should be started from the most significant risks. There is agreed also who is the person in charge for monitoring and controlling risks and schedule. (Website of the PK-RH-Riskienhallinta 2017.)

7 OVERSIZED TRANSPORATION

Road transportation is the mostly used mode of transportation in the world. Reason for that is, because they are fast and easy to execute and with this mode the goods can be delivered to customers' the doors if needed. With road transportation, almost any kind of goods can be transported; packages, containers and oversized transportations. Need for oversized transportations become from manufacturing (machinery, structures, products) and construction (machinery and cranes, elements, buildings) and most common destinations are e.g. construction sites, factories and harbors. (Website of the ELY-keskus 2010.)

Allowed measurements for transportation in Finland is maximum height 4,4 meters and total weight 76 tons. Before 1st October 2013 these measurements were maximum height 4,2 meters and total weight 60 tons. This change was done in order to increase Finland's competitiveness. In Finland transportation costs are very high, because of long distances. (Website of the Liikennevirasto 2015.)

Picture 5. Overwide transportation, moving the walking excavator. (Website of the Kaarlaid 2015.)

Oversized transportation (also known as abnormal transport) is considered as a transport where a vehicle or vehicle combination with indivisible load or no load, and it at least exceeds one weight or dimension of allowed in Finnish regulations. All oversized transports do not need permits, because vehicles or combinations registered in EU and ETA countries have so called free dimension limits. Oversized transportations done within these dimension limits do not need to apply abnormal transportation permits. Although this kind of transportation still needs follow rules and regulations, e.g. escort vehicles, traffic directors and transportation marking. Oversized load cannot occur from loading goods side by side, one after another or one on the other. Indivisible oversized transportation is for example heavy crane and large or heavy loads, which are impossible to divide. (Website of the ELY-keskus 2010.)

The technical requirements of vehicles are mostly originating from EU regulations, but there are also national regulations that apply to usage of the vehicle, registration, inspection and taxation. Official regulations can be found from every country's authorities. These authorities in Finland are TraFi and the Centre of Economic Development, Transport and the Environment. (Website of the Logistiikanmaailma.)

Oversized transportation is not transportation that does not exceed normal measures and volume limits. Transportation of dangerous goods and thermos has their own regulations. Depending on bridge capacity and volume of transportation, crossing bridge might has to do under surveillance in order to prevent possible damage in the bridge. Public authority of special transportations determines the way of crossing bridge and if surveillance is needed (Website of the ELY-keskus.)

7.1 Applying permits

In Finland the only organization, where oversized transport permits can be granted is the Centre of Economic Development, Transport and the Environment. Except abnormal transport permits to Åland islands are granted from the government of Åland. (Website of the ELY-keskus 2013.)

Permit is applied by filling a form found on the website of the Centre of Economic Development, Transport and the Environment, and it can be sent by fax or email. Permit is granted to company performing the transport, manufacturer of the load or client who has ordered the transport. The permit is only for start and end location, and the route is predefined with road names, road numbers and places and crossings. (Website of the ELY-keskus 2013.)

Permit for oversized transportation can be granted if the load cannot be transported with any other mode (sea, rail, air), without causing danger or unreasonable costs. The vehicle must be registered and approved for traffic, and it needs to be suitable for the transportation, e.g. able to carry heavy loads. The route must be without barriers and bridges and be sufficient to last heavy transportation. There is some special condition that can be applied to the oversized transportation permit. Notification condition for permit means that if the transportation is over seven meters (Website of the ELY-keskus 2013). Example of oversized transportation permit can be seen from appendix 5.

Route and road network permits

Route specific permits are granted for the starting and ending point marked in the application. There is specified road numbers and crossroads accurately. Permit is valid one way only. In road network permit there is determined roads and areas and their limitations where transportation is allowed to move. There are also limitations in height and bridges that cannot be crossed. (Website of the ELY-keskus.)

Road network permits are mostly used by transporting companies. Usually a vehicle that is executing oversized transportation has valid permits that cover whole Finnish road network with specific dimensions, road network permit for specific area and permit that is needed for specific transportation. Cradle used in special transportation has exceeding limits, so it needs per se a permit. Road network permits can be applied to cover whole Finnish road network or to cover concise road network. (Kohtamäki 2014, 6-7.)

Regional road network permits can be chosen for nine different areas. Roads and streets are chosen for these permits so that the permit would be as comprehensive as possible and that there is included important objects, such as industrial areas and production facilities. With road network permit transportation can move on main roads and for those parts that the permit does not cover, can be applied route permit. With national road network permit there is access to harbors and power plants. (Kohtamäki 2014, 6-7.)

7.2 Pilot cars

The need and number of traffic escort and pilot cars is determined by transportation's dimensions. In some cases, use of a pilot car does not need traffic escort and use of traffic escort does not need a pilot car. Pilot cars drive behind the oversized transportation when driving at highway or other roads where is no approaching traffic. At narrower roads where passing is impossible, the pilot car drives in front of the oversized transportation. If it is needed in oversized transportation permit can be determined the minimum of using other warning procedures. As a pilot car can be used a passenger

car, van or truck that has at maximum total weight of four tons. (Website of the ELY-Keskus 2015.)

Warning signs of oversized transportations are used in pilot cars, that approaching vehicles notice it. If there is no need to have a pilot car driving behind the transportation, but the length exceeds 25,25 meters, then there is needed a pilot car driving behind with warning sign. Signs are used so that first others are warned of overwide, secondly of over length and thirdly of over height transportation, see picture of signs below from picture 8. Sign of wide transportation (leveä kuljetus) is used when the transportation is over 3,5 meters, in this case length and height do not matter. For long transportation (pitkä kuljetus) signs are used when transportation is over 3 meters wide, but at maximum 3,5 meters and at the same time length is over 25,25 meters or width is at maximum 3 meters and length is over 30 meters. High transportation (korkea kuljetus) sign is used when transportation is higher than is allowed and does not need signs of wide or long transportation. (Website of the ELY-Keskus 2015.)

Picture 6. Warning signs of oversized transportation in Finland. (Website of the ELY-keskus 2015.)

Pilot cars also need warning lightning to notice approaching vehicles. Pilot car and abnormal transportation vehicle needs to have at least two yellow flashing lights, if a tractor is used it should have at least one flashing yellow light. (Website of the ELY-Keskus 2015.)

Table 2. Minimum needed number of pilot cars in oversized transportation. (Trafi 2016.)

	Width (m)					
Length (m)	up to 3	over 3	over 3,5	over 4	over 5	over 7
up to 30			1	2	3	4
over 30		1	1	2	3	4
over 35	1	2	2	3	3	4
over 40	2	2	3	3	3	4
over 45	2	3	3	3	3	4
over 50	3	3	3	3	3	4

In table 2 above can be seen what the minimum amount of pilot cars in different size of abnormal transportations are. Numbers inside the red square are dimensions where escort vehicle is enough. For example, if a transportation is over 40 meters long and over 5 meters wide there will be needed 3 pilot cars. (Website of the Trafi 2016.)

If there would not be any need based on the dimensions in table 2, separate pilot cars need to be based on transportations height, exceed of vehicle or load. Pilot cars can be more than the minimum amount if securing other traffic requires it. Polices emergency vehicles always replaces a pilot car. (Website of the Trafi 2016.)

7.3 Traffic directing

Before a person can work as a traffic director, one needs to complete road safety course and pass an exam. The qualification for traffic escort is valid for five years. Depending on how demanding work is in question, there are two different traffic directing educations that needs to be completed. Some municipalities require employees to complete their own street safety courses. For traffic directing road qualification course 1 (Tieturva 1-pätevyys) is required, as well as driving license for passenger car, van or moped. In addition, the person must be of legal age and have normal senses. There is also a course for traffic directing abnormal transportations, that must be taken. This license is valid for five years. (Website of the Liikennevirasto 2015.)

Traffic director is always educated to the job. Content of the education can be modified based on earlier experience, knowledge or approach. Following topics are always gone

through in the education: legislation concerning traffic escorts, possible risks and how to minimize them, general actions of traffic escort, principals of traffic escort, communication between traffic escorts and how to act on abnormal situations. (Website of the Liikennevirasto 2015.)

In addition of education, the person needs to be inducted for the job. In induction, the following aspects that needs to be taken into account in working site: going through the traffic directing plan of the working site, aspects concerning traffic escort, such as formed lines, guidance equipment used at working site, possible requirements concerning protective equipment (other than mentioned in legislation), how to use communication equipment, make sure that they work and know where the spare batteries are and their maintenance, breaks, how to act on special occasions and contact of corresponding person. (Website of the Liikennevirasto 2015.)

Tasks for traffic director are to make sure that: oversized transportations are legal and subject to license, routes are followed, removed traffic signs and equipment are put back in place right after transportation has passed, it is informed if there are any broken traffic signs, traffic escort equipment or cut electric, phone or other wires and oversized transportation does not disturb the other traffic and arranges the possibility to others to pass the oversized transportation. (Website of the ELY-keskus 2013.)

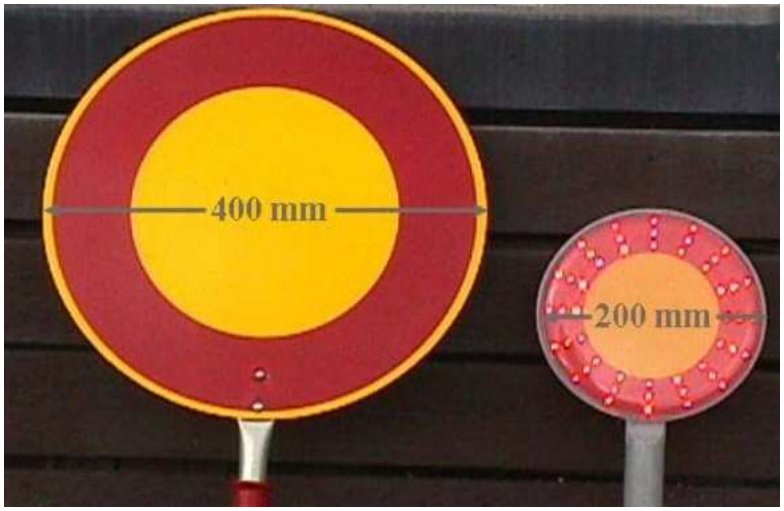
Equipment used is traffic directing

All work done in roads needs to be used clothing according to standard SFS-EN 471 or SFS-EN ISO 20471 that has protection level of 2. In traffic directors clothing needs to be according to same standards as above mentioned, but protection level must be 3 and they must be CE marked. In traffic directing, there must be used light gloves at night and dark times, because they add the visibility of hands. In communication traffic escorts use radio phones or similar, such as UHF or VHF phones. (Website of the Liikennevirasto 2015.)

All working sites of Liikennevirasto and the Centre of Economic Development must be used safety helmets. In addition, for helmet safety shoes needs to be worn as well. Other protective equipment is used if work assignments requires, for example earmuffs or respirator mask. Employee needs to use and maintain these equipment with care

according to given directions. These requirements concern also truck drivers, traffic directors and people visiting working sites. (Website of the Liikennevirasto 2015.)

In planned traffic directing is used stop sign number 311, which forbids a vehicle to drive, see picture 9 below. At day time is used stop sign that has diameter of 400mm and at night or dark times is used sign that has diameter of 200mm. (Website of the Liikennevirasto 2015.)



Picture 9. Stop sign used in traffic directing. (Website of the Liikennevirasto 2015.)

7.4 Transporting in a convoy

At maximum, there can be six oversized transportation vehicles travelling in a convoy. At least one traffic director and pilot car need to drive in front of and behind the convoy. Additional pilot cars go behind and in front if the transportation exceeds six meters. If there is four or more travelling in the convoy, there must be pilot car and traffic director in front and behind and between every two transportations. The minimum amount of pilot cars in front of the convoy is determined by the dimensions of the largest vehicle travelling in the convoy. Exclusively, in long transportations it is enough that there is one pilot car and traffic director in front of every third transportation (Website of the ELY-keskus.)

7.5 Police escort

Oversized transportations that are wider than seven meters, has to use at least four pilot cars. One or more of them can be a police car. (Act of Ministry of Transport and Communication decision on special transportations and special transportation vehicles 1715/1992.)

If transportation is more than seven meters long, there has to be given notice three days before planned transportation to the police of departure point. If needed, police can come to lead the traffic or inspect the transportation. If transportation is driving between 6 am and 9 am on a motorway or other highway that has four or more lanes, the permit holder must contact police of departure point in order to arrange traffic directing, if needed. (Website of the ELY-keskus.)

7.6 Route planning

Route planning is an important part when planning transportation. There has to be considered the size and volume of the transportation, because not in every road can be transported for example heavy loads. Bridges' capacities vary and for example over wide loads cannot go on every crossroad or on narrow roads. Of course, when applying for a permit to an oversized transportation, there will be given specific route that has to be obeyed. (Website of the Ecofleet.)

There are different ways for route planning, regular maps, google maps and many software. In this case, there will be discussed about Ecofleet software, because Kaarlaid Oü is using said software. Ecofleet is specialized in GPS based fleet and team management solutions and its objective is to optimize car fleets and workflows in order to help companies to increase revenues and reduce costs. Ecofleet has feature of planning route and it measures distances to target destinations. (Website of the Ecofleet.)

8 DOCUMENTS NEEDED IN TRANSPORTATION

In this chapter will be gone through documents that are needed especially in road transportations. Documents in export are extremely important, they need to be filled with care, because if there is some lack of information, as a result there can become unwanted delays with customs, goods can be damaged or be lost and of course extra costs. (Website of the Suomen Kuljetusopas.)

8.1 CMR

CMR (Appendix 3) is an international road transportation document used in EU countries, and it is consignor's and forwarder's contract of carriage, which both parties sign. CMR is done three copies, for; consignor, consignee and carrier. (Website of the Logistiikanmaailma) Below is gone through which clauses of the CMR is filled in by whom.

In CMR the shipper fills clauses 1-15,21 and 22 which are shippers name, address and country. If a third party is arranging the delivery, its name is added to this part. Next shipper fills consignee's information: name, address and country, place of delivered goods and country and date and place of taking the goods over. Attached CMR documents need to be listed, which can be for example, invoice, packing list, TIR number etc. Marks and numbers are filled, these can be such as pieces of cargo, IMO class and UN number of goods that are delivered under European Agreement that is concerning the International Carriage of Dangerous Goods by Road (ADR). Next is number of packages and description of packaging, nature of goods and their shipping name. More details on goods is filled HS code, gross weight and volume. Then is filled instructions from the seller, which is usually for showing address of customs clearance. Lastly, shipper needs to fill delivery terms that are according to Incoterms, place and date when CMR was issued and actual time and date of loading and departure, stamp and signature of the shipper. (Website of the Marina Transport Services.)

The carrier fills in the clauses 16-19, 23, 25-26. These consist of carrier's details: name, address and country and this part should be stamped. Possible details of consecutive carrier that is involved in delivery, name, address and country. Carrier's remarks

and clauses concerning packing and cargo. Then special conditions of the cargo and carrier's signature and stamp. Last clause 24 is filled by the Consignee which is the actual time and date of delivery's arrival to unloading place, and consignee's signature and stamp (Website of the Marina Transport Services.)

8.2 Waybill

Waybill (Appendix 4) is the proof of transport agreement and that the forwarder has received the goods. The accepted provisos that consignor has marked on waybill make him liable and if there are no marked provisos and reasons for them, it is seen that the freight has been in the beginning of transportation in faultless condition. (Website of the Laki24.)

In domestic transportations, there must be mentioned consignor's, freight forwarders and consignee's name and address. Loading and unloading place and date has to be mentioned and as well as the pieces of freight, and their special marks or numbers if there are any. In addition, the total weight of the freight has to be marked and if transported freight is hazardous material its accepted title has to be in waybill. Any party of the agreement can write down any other needed information. (Website of the Laki24.)

In international transportation in addition for above mentioned information, waybill must have information of where and when the waybill is written, used title for the freight, packaging and costs regarding the transportation. Such as freight, additional costs, customs and other costs that compound on making the agreement and consigning. Also, for international transportations there has to be needed guidance and mention that to the transportation applies to international carrier's general contract. (Website of the Laki24.)

If needed, there must be mentioned reloading forbiddance, costs, that consignor pays, value of the freight, possible claims after consigning freight, consignor's guidelines for freight forwarder about insuring the freight, deadline for when the transportation

has to be done and manifest for the freight forwarder about given documents. If consignor has marked false or insufficient information, he is responsible for the damage caused to the freight forwarder. (Website of the Laki24.)

8.3 Special transportation permit

On chapter 8 there was already gone through how special transportation permits are applied, now is gone in more detailed what is in permit when it is received.

In Finland there is classified road network, and transportation's execution can be inspected with help of Oversized Transportation Route Data System. In special transportation permit there are conditions, such as a specific time scale to execute transportation, markings of the carriage and vehicle, usage of pilot cars and speed limits. In Finland traffic directors of special transportation will take care of traffic directing, if the transportation exceeds normal dimensions or it must be executed against the traffic rules. This kind of situations can for example be, at crossroads, bridges and on narrow roads. (Website of the Transport XXL.)

To receive the permit (See appendix 5), it depends on volume of transportation and route. Permit for a specific route to transportation that has a volume of under hundred tons lasts usually from two to four working days. If the application has been done to several routes it might take longer. Permits for transportations that has volume over hundred tons lasts about one week, and if capacities of bridges have to be calculated again for already granted application there can be delays on the permit. Permit is granted either conveyor, client or goods' manufacturer and it cannot be transferred to another company or individual. (Website of the Transport XXL.)

9 RISK ANALYSIS

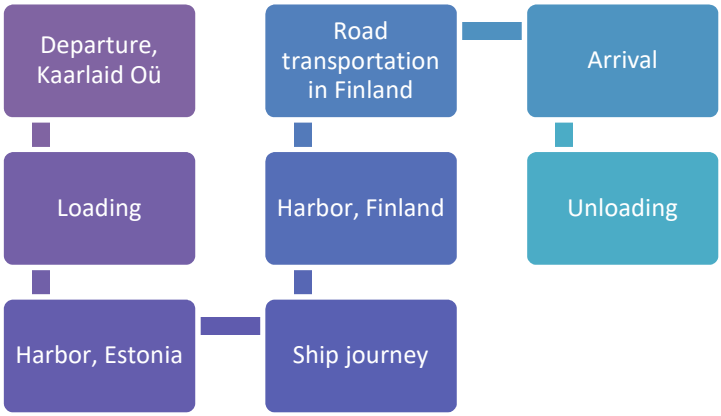
9.1 Baseline of risks

This chapter discusses what possible risks there could be when transporting oversized loads from Estonia to Finland. As mentioned in the beginning that there will not be gone through any risks concerning transportation in Estonian roads, only risks that could occur in both countries' harbors, during the ship journey or at Finnish roads. There will be used risk map as tool to help identify, evaluate and to choose correct risk management strategies, when doing the analysis.

Even Finland is a small country with population of 5.5 million, it is geographically challenging when talking about transportation. Distances are long, and it is time consuming to drive from northern to Southern Finland. This also increases logistic expenses, which are in Finland higher compared to expenses in other European countries. One way to reduce logistical expenses is to minimize the expenses that come from transport damage, and one of the most meaningful risk management strategy is risk reduction. Usual method when reducing risks is damage prevention, which by is to either prevent the damage or reduce the harm coming from occurring risk (Nygren et al… 2011, 26). According to Nygren et al. (27, 2011) about 70 percent of transport damage can be prevented with damage prevention and 30 percent are unpredictable. For example, these unpredictable risks can be weather, other traffic, road works, failures in equipment, driver's vitality and accidents.

Risk in transportation can be that goods do not come on time or at right place, they can be damaged, or bulk might be incorrect. When identifying transport risks, it is essential to recognize and consider differences between event that is associated with damage, what are reasons to this damage and what are the consequences of this damage. There is always a possibility for goods to disappear or damage when talking about transportation risks. The longer the distance, the more parties included, and the more transportation modes used, the greater chance for a risk is to occur. (Nygren et al… 2011, 27.)

Below can be seen an example of oversized transportation from Estonia to Finland. There is described the process and every step will be analyzed and possible risks associating from them will be identified.



Picture 7. Example of oversized transportation process. (Perälä 2017.)

The process of oversized transportation starts from Kaarlaid's premises where they have all trailers and continues to loading place, which is agreed with the customer. Once the cargo has been retrieved, truck will be headed to harbor. At some cases truck driver will only drop the cargo to the harbor and will continue its journey to transport other cargo. In these cases, harbor offers stevedoring services and takes care that cargo gets in time to the ship. Then cargo arrives to Finnish harbor, and if all documents are all right, it can continue its journey. When talking about oversized transportations, they usually have specifically defined route that they must obey. Transportation by road continues until it reaches destination, after that the cargo can be unloaded.

Kaarlaid has own programme KAP (Kaarlaid Administration Programme), where they keep all the data concerning transportations. According to open question interview that was done to company's COO, it resulted that Kaarlaid does not have separate risk management, but the data saved in KAP is a good basis for risk management. Suggestions to improve company's risk management are more than welcome, because smaller companies do not have such resources to maintain their risk management such as larger companies.

In every of these parts of above described process hides different risks, and the meaning in this thesis is to identify possible risks there, use tools to help in identification and consider proper ways to reduce or eliminate these identified risks.

9.2 Risk identification

9.2.1 Risks in Estonian and Finnish harbors

When arriving to harbor, first of all time is a risk. Truck might not get in time to the ship due to traffic or breakage in truck and ship might be also late, which causes risks too. There might be also breakage in the ship, which has to be repaired before departure and by that departure might be delayed. Time is money, and there might be loss to the customer, because of agreed schedule. If for example, some third party has ordered from the customer an item and expects it to arrive in certain time, because company's operations depend on it. Now, due to delay in harbor, transportation is unable to leave in time, and customer has to wait for ordered item.

There is always a possibility that there is traffic that may delay transportations arriving to the harbor. Now there is in question two large cities where these harbors are located, so there is always a risk that transportation could be late from ship journey.

Terminal employees' possibility to reduce transport damages

Terminal companies have also possibilities to reduce transport damages. By terminal companies it is meant those companies which unload and load and store goods. In this case it is meant harbor employees, because when transporting from Estonia the easiest way to get to Finland is by ship. Sometimes containers need to be left overnight to the harbor because of schedules and haste. One truck driver can leave container to the harbor the day before departure and then continue to some other project and one truck driver that ends his project before the departure can pick up the container from the harbor and take it to its end destination. (Nygren et al., 28.)

In terminal areas there is a chance for theft and other criminality risks, and terminal employees are in account of reducing these risks. Loads and goods need to be protected

well and the terminal area have proper surveillance. Terminal employees do not have permission to search packages, only fix them if it is needed. Also, when handing over goods employees need to make sure that all needed documents are filled in properly. (Finanssialan keskusliitto, 36.)

9.2.2 Risks when transporting in Finnish roads

As mentioned above, Finland is geographically challenging country when talking about transportations. Distances are long, and it might take days until cargo reaches its end destination. Weather is also nowadays unpredictable in Finland. In winter, in south there can be raining, and roads are melt, while in north there is cold, snow and slippery roads.

Roadworks

Everywhere can be met roadworks, especially in metropolitan areas. These are a risk for everybody, but especially when talking about oversized transportations. Roadworks delay transportation, because at roadwork areas the speed limits are lowered significantly, of course in order to decrease accidents. But there is a risk, because often there is some divers that do not obey these lowered speed limits at roadwork areas, and by that they risk traffic safety. When transporting oversized cargos, of course they have their own speed limits, but if there is someone driving insanely and making sudden braking ahead of oversized transportation, there might be serious damage made. (Website of the Liikennevirasto.)

Conditions of road

There can be different damage on roads, that might cause accidents. Trails at roads come from traffic consumption, especially at vivid roads vehicles that have studded tires consume road. Sometimes roads do not hold up due to heavy loads directed to them, this is one factor that causes trails. Trails can be very dangerous for any vehicle. Holes at Finnish roads are also very common. Holes form when water stands on top of the road and it goes to already existing fissures. At worst are winters when temperature goes on both sides of zero, which is usually very common in southern Finland. (Website of the Liikennevirasto.)

At times there can be at roads frost heaving, when roads' capacity and eligibility of passing weakens. Frost heaving originates from ground frosts melting or when it is raining heavily (Website of the Liikennevirasto). In individual and unpredictable cases there can be granted from the Centre's of Economic Development and the Environment a temporary and paid permit for roads that have weight limitations. When permit is granted there is taken into account how necessary transportation is and what is its total weight. For example, from special transportations it is required permit of exception. (Website of the ELY-Keskus, 2018.)

Winter conditions on the road are one risk factor. Unplowed roads, as well as unsalted roads are a risk for any vehicle, and these situations might turn into severe accidents.

Traffic safety

Safety is important at roads; bad driving habits could cause serious accidents or even catastrophes. Accidents cause delays in transportation schedules if a traffic stands because of an accident. At some cases it might take hours for a rescue department to clear the situation. Secure loading is also essential, because sloppy binding or loading might cause serious damage or cause accidents.

Driver's resting time

There are legislated drivers resting time in Finland, that is regulated by the police. Driver can continuously drive for four and half hours and after that he or she must have brake that is forty-five minutes long. If driver breaks this law, he might get a ticket or at worst case imprisonment for three months. (Act on the Harmonization of Certain Social Legislation Relating to Road Transportation and Amending Council Regulations 561/2006, article 4.)

Breakages

Breakages in vehicle are a serious risk that has to be taken into account, when planning a transportation project. Of course, it is obvious that there can be a delay in a schedule, depending on how serious the breakage is, but it might be costly to replace broken truck or trailer.

9.2.3 Risks in traffic directing

Traffic directing is one of the most dangerous tasks done in roads, especially traffic directing at dark is very dangerous. Sun that shines very low distracts the visibility as well does fog. To a traffic director every passing vehicle is a risk, and he or she cannot assume, that driver of approaching vehicle has seen him and is going to stop. Always the vehicle, that is first in line is stopped from headland, in order to avoid accidents. (Website of the ELY-Keskus.)

As mentioned earlier, traffic director must not use any other devices when directing, for example phone or music player. Traffic director has to be totally aware of what is happening around, otherwise there is a risk that accidents or incidents could happen.

Traffic director has to be educated so that work is done properly, there are certain courses that one has to accomplish. Without required expertise there could be a possibility to accidents occur. Traffic director's equipment and clothing must be also as it is required. Without proper clothing traffic director might not be seen by other drivers and if equipment, such as radio phones used for communication are not functional it might cause some serious damage, if one is unable to communicate with other workers. It is also prohibited for a traffic director to use own personal devices, such as mobile phone or music player, because these devices distract their guidance. (Website of the ELY-keskus.)

9.2.4 Information risks

Information is vital in every situation in everyday life, and flawless information is important in transportation. Information flow between companies and authorities is necessary, that risks associated to operations can be predicted and prepared. The project manager who plans according to customers wishes the transportation, has to communicate all needed information forward. Communication throughout the project with all key persons is very vital for the sake of successful result.

Starting from the customer. Information flow between customer and service provider is important. Service provider needs to understand needs and expectations of the customer, and customer has to be aware of different stages of ordered transportation. If in this point there is a lack of information, the whole project might not come off, and company loses not only the customer but the money. Secondly, if the customer does not communicate the important information concerning the load, such as loading place and time, the service provider is unable to start planning the transportation.

Next key person is truck driver, is he or she available for this particular project, if there is in question overweight load has the driver needed skills. There needs to be communicated to the driver project starting date and time, schedule, where is the loading and unloading place, from which harbor does the ship leave, booking number for the ship trip and what time does the ship arrive, permits, cmr and possible information of convoy.

Information for authorities is also important. Permits need to be granted on time, because there are certain times that authorities handle permit applications. In Finland permits are granted normally in four days, but if there is granted several routes at a time, it can take longer. Permits for very overweight transportation are pursued to handle within two weeks. It takes longer in this kind of permits because there has to be done precise calculations of bridge capacities. Also, applications must be filled with care, if there are blank spots, it will take longer to clarify missing information (Website of the ELY-Keskus, 2017). Project manager must also be aware of situations when there is congestion in permit applications, if permits are not granted in time and transportation does not have a valid permit, there is a risk for delay in planned schedule.

Information communicated regarding loading cargo to engineer who is calculating how to securely load transportation is important. If there is lack of information very serious risks could occur during the transportation.

9.2.5 Humane mistakes

When talking about logistics, humane mistakes are remarkable reasons to accidents. Typically, these are mistakes done in cargo handling and controlling vehicle. Mistakes can derive from different backgrounds, such as organizing working tasks, working environment, experience, education and condition and suitability of tools. These are such factors that no single employee can always influence. Commonly it is talked about, that work is done in hurry and with required pace and when employees carefulness can be slackened it outcomes as humane mistakes. (Nygren et al…, 22.)

9.2.6 Risks in environment

Natural disasters

In Finland natural disasters are very rare. Climate change can be seen also in Finland, there has been mild earth quakes and windy storms are more common nowadays. These cause risks and might be dangerous when transporting oversized loads.

Mechanical strains

Mechanical strains arise when assembling transportation, loading and unloading. Also, when employees hurrying in these situations mechanical strains can accrue. Actual mechanical strains are dynamic strains, which are for example when transportation unit starts off and there is targeted different forces to the cargo, which strive to move it. In road transportation, worst mechanical strains arise from bumpy roads that cause vertical strikes and sudden deceleration. Vehicle's springing and driving habits have also effect on transportation strains. (Nygren et al…, 21.)

Loading and unloading

When loading or unloading transportation there can be many risks associated. How well the loads are handled, depends typically on staff's expertise. Are they enough educated? Do they know all needed standards? Do they use proper equipment, when handling loads? It is very important that people handling loads know what they are doing. To mention few strains that concern loading/unloading: strain that comes from

pulling or pushing, pounds to other goods, declension of product that comes from lifting the item, binding equipment used for the cargo might cause compression and compression that crane might cause. (Finanssialan keskusliitto, 5.)

Securing loads

Load that is secured incorrectly is very dangerous for environment and people. If the load is secured incorrectly it might fall off, have impact on vehicles controllability or at worst cases the whole vehicle and trailer could crash to the ground, and by that do damage to other people as well. (Website of the European Commission 2017.)

Proper planning of load securing is key to effective, secure and safe transportation. Especially in oversized transportation, load securing is vital. When load is properly planned, loaded and secured as well as taking into account strains targeted to load during transportation, can achieve major savings. (Website of the European Commission 2017.)

In road transportations there are different factors that have an influence on load, such as braking, acceleration and fast moves in steering. Load strives to move forward when transporting, and springing, speed and condition of the road have an impact in strains that appear in road transportation. (Website of the European Commission 2017.)

9.2.7 Contract risks

As a base for proper contract is a plan of mutual understanding and where has been included all essential clauses. At some cases contract parties are acquaintances or even friends and still disagreements might come up. So, at every situation a well-done contract is necessary.

To mention few typical contract risks: when there is no contract done at all. At these cases if there arise disagreements, it is very hard to try make an agreement since it is one's word against another. Next risk is contract does not come off, meaning if contract parties do not obey agreed terms. Risks arise also, if contract comes off inadequate or

with misinformation. Also, if contract does not come off in schedule, it is a risk. Contract has to be finished before starting of a project, otherwise disagreements are hard to settle. Lastly, a typical contract risk is when the subject of the contract is causing harm to contract party or a third party. Especially for SME's it is essential to make sure that, when negotiating a contract, it will not pledge on such liabilities that are greater than its risk capacity is. (Website of the PK-RH-Riskienhallinta 2018.)

9.2.8 Risks concerning criminality

Safety of cargo

In Finland cargo is usually parked in any parking areas, and usually these areas have public surveillance. Cargos are parked both loaded and unloaded. Criminality towards transportations has increased worryingly. One must still be sure when parking loaded cargo that there is surveillance in the parking area.

Transportations made inside of EU countries do not need TIR (Transports Internationaux Routiers) claim, but for the sake of cargo safety, cargo needs to fill corresponding TIR claims. Doors has to be lockable and when using trailers with cover, they need to be tightly protected with TIR cable or with other similar way. Locked doors and seals prevent criminality towards cargo, or at least it can be known when a thief has tried to enter the trailer. (Vesterinen, 251.)

Also, vehicles suffer from vandalism in many ways. They target to tires, brakes, walls etc. These kinds of vandalism can be a very serious threat to traffic safety. If a driver is not aware of vandalism done to brakes and starts driving, something very serious can happen. (Vesterinen, 251.)

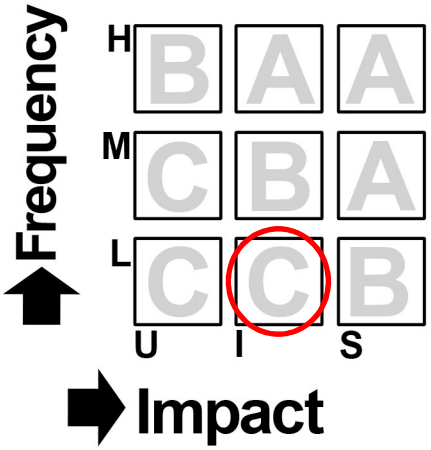
9.3 Risk evaluation and reduction measures

There is huge amount of risks when talking about transportation. Now when most of possible risks that could occur when transporting oversized loads from Estonia to Finland are identified, next step is to evaluate these risks.

In this chapter there are listed most important risks from each subheading, that were identified in chapter 9.2, and they are evaluated with the help of risk map tool. Risks are evaluated based on their frequency and impact. On frequency is evaluated how often do these risks occur, and H is for high, M is for medium and L is for low. Impact means how much of a loss can risk do, U is for unimportant impact, I is for important impact and S is strong impact. Letters A, B and C show how significant the risk is for the company, for example risk that is evaluated as A risk it should be handled immediately.

Risks in harbor

First risk covered is concerning employees lack of skills. Imaging a situation where cargo is arriving to the Tallinn harbor from loading place and it is left there to stevedores to move it to the ship. But because lack of employee's education trailer gets damaged and therefor is unable to be moved to the ship. There has been booked a place to the cargo from ship operator Tallink. Employee handling the cargo is new and has worked only few days.



Picture 8. Risk map of risk evaluation of employee's lack of skills at harbor. (Perälä, 2018.)

This risk is evaluated as low frequency and impact is important, this is because usually employees are educated when they start working, but for some individuals it takes more time to become expert in their job, so considering these incidents do not happen often. And impact is important, because now due the damage in cargo it is unable to leave on time and is late for schedule. Damage is repairable, but it would take time and

next departure is booked full. Now, it is possible to get another trailer from Kaarlaid's yard relatively fast, since distance between yard and the harbor is approximately 15 kilometers, but loading would take some time. Due to these circumstances the impact is important for all parties.

The only solution for this risk is to retain and accept it. Since these risks occur rarely, the only chance is to accept it. In this case, as mentioned above it is possible to get another substitutive trailer to continue journey. Luckily, there is a benefit in Tallinn harbor. Firstly, Tallink has three ships that operate between Tallinn and Helsinki every day, one of them is a cargo ship that goes to Vuosaari. But, as seen in Picture 9 below, D- and A-terminal are close to another, so for example in this case, project manager could try to book place from Eckerö or VikingLine and then loss of money would be tolerable.

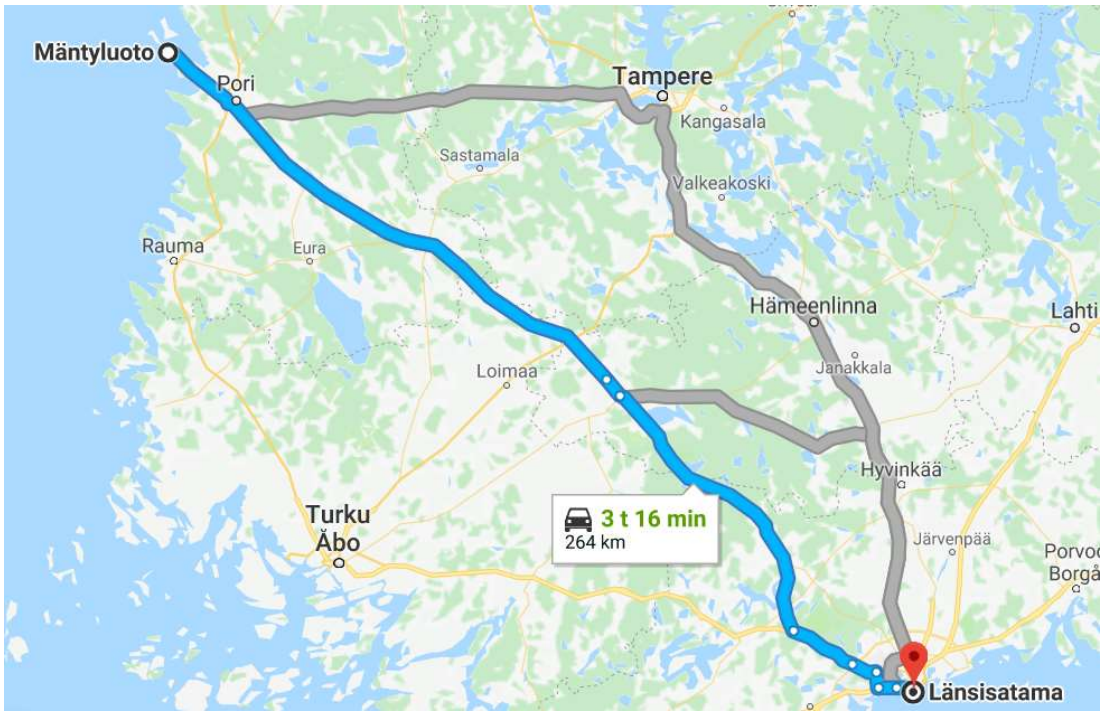
Picture 9. Tallinn harbor. (Google Maps 2018.)

Risks at Finnish roads

At winter it is important to plow and salt roads, in order to ensure safe travelling. Unfortunately, this is not always possible, because weather can be very unpredictable.

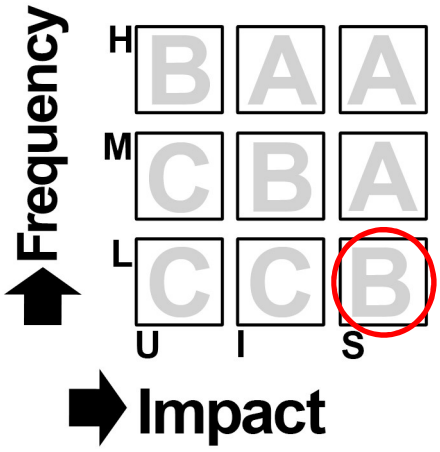
Next there will be covered risk, which occurs in situation where transportation is leaving from West Harbor Helsinki travelling to Mäntyluoto Pori. Weather is very snowy and windy, and roads are very slippery. From picture 10 can be seen the directional total distance and route. Of course, it needs to be taken into account, when transporting

oversized loads, there are certain route assigned in permit. So, the distance and route might differ from what is shown in picture x.



Picture 10. Distance between West Harbor Helsinki and Mäntyluoto Pori. (Google Maps, 2018.)

It is raining snow heavily, roads are unplowed and unsalted, which makes travelling very dangerous. Due to this situation at halfway of journey driver loses the control of the truck, and it crashes to line of vehicles coming from opposite direction. Because of the crash truck ends up falling off the road. Risk mapping of this accident can be seen below.



Picture 11. Risk mapping of accident at Finnish road. (Perälä, 2018.)

This risk can be evaluated as B class risk, it's frequency is low but it's impact is strong, and should be taken care of. Accidents do happen, but not all the time, that is why frequency is evaluated as low. But, accidents can have serious consequences, and because of that the impact is strong.

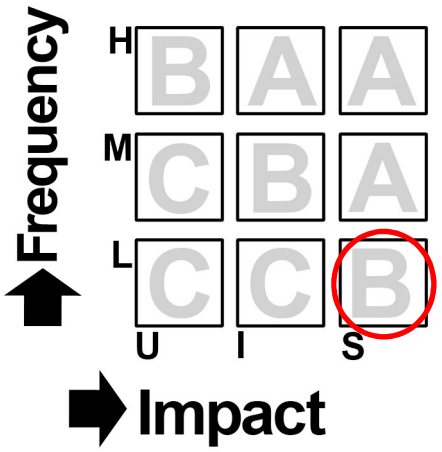
Even for experienced driver these kind of weather conditions can be crucial and in these kind of accidents outsiders could get harmed too. In Finland, usually roads are first plowed, and slipperiness is handled after. According to Liikennevirasto, it is pursued that on busiest roads there would not be more than few centimeters snow. After snowfall has ended, busiest roads are plowed within 2-3 hours. Also, as soon as slipperiness has been detected, busiest roads are salted within 2-3 hours. (Website of the Liikennevirasto, 2018.)

Risk reduction measure for this kind of incident is risk is risk sharing. Insurance companies usually compensate to all parties that include in accident. Of course, in this case truck driver at minimum gets a fine, when no one got hurt, but situations where happens worse damage, might not only fine cover the accident. This is a B class risk meaning that it does not need immediate concentration but has to be taken seriously and be aware that these kinds of accidents can happen anytime. Taking care of maintenance of equipment is crucial and is a key to prevent this risks from occurring.

Traffic directing

In traffic directing there is a possibility of risk occur when traffic director is unskilled and has poor equipment. There is required certain courses for traffic director to execute, but this does not always guarantee individual's expertise.

Now, imaging a scenario where a team of traffic directors are working on a project, where they are directing oversized transportation and removing needed road signs from transportations way, because it is over height. One of the employees who is removing signs, has just started working, but has completed all required courses. Experienced employee is in a hurry due to tight schedule and does not have time to check what new employee has done. New employee attaches poorly road sign back to their places which are above tunnel and is not aware of it, as a result road sign falls off on a vehicle. Luckily no one is harmed, but the vehicle is unusable.



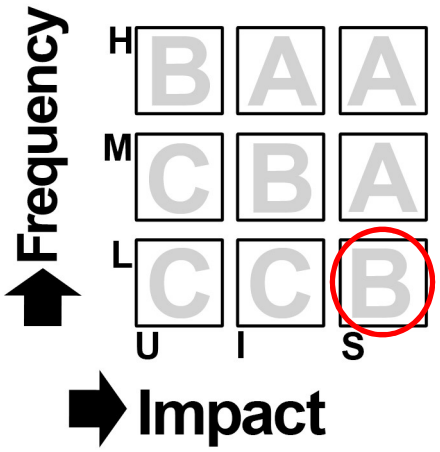
Picture 12. Risk in new employee in traffic directing. (Perälä, 2018.)

Normally, these kinds of risks do not occur often because there are certain courses required for traffic director, but mistakes happen. That is why frequency of this risk is low and impact of it is strong, because an outsider could have got hurt seriously in worst case scenario. Company has to compensate for the damage, and in this situation, it is wise to approach for insurance company. So risk reduction measure for this risk is to transfer risk to an insurance company.

Information risks

Information risk could occur at any time on a project, for example there might be misunderstandings in the schedule of the project or if project manager has forgot to grant permits on time.

Taking as an example for risk evaluation, an information risk where a customer has requested an offer for oversized transportation from Estonia to Finland and offer has been accepted and everything has been prepared. For some reason unloading schedule changes and customer/contact person has forgotten to inform about these changes to the project manager. Now, transportation is loaded on time starts driving towards the end destination. Changes in unloading schedule is informed when transportation is only two hours driving away from unloading place. The unloading time is moved to next day and now the driver must wait.



Picture 13. Information risk mapping. (Perälä, 2018.)

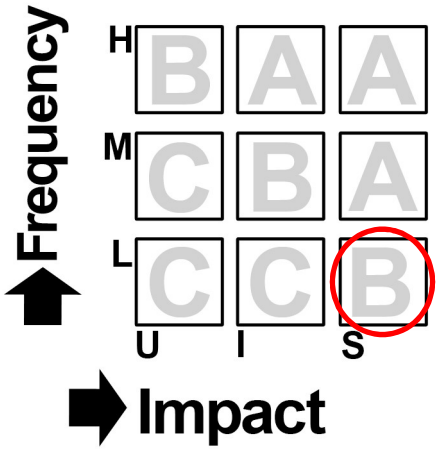
Frequency for this risk is low, because this kind of risks do not happen on a daily basis. There is the same pattern which by most of projects follow, and are done the same way, so when there is misinformation it is usually a humane mistake. Impact is strong, because for example on the case described above, now one truck has to wait and time is lost, maybe there could be booked already another project for this particular truck and it has to be rescheduled. It causes extra work to the project manager.

Reduction measure for this risk is acceptance, in this case there is nothing to do, but to wait for the unloading day. All risks cannot be treated, and this is that kind of. Now

the truck driver can rest for a little bit longer, of course driver has to find a place to rest which causes extra costs.

Contract risk

Contractual risks are common, because sometimes they are made in a hurry and signed, and this leads into breaches in contract.



Picture 14. Contract risk. (Perälä 2018.)

In this imagined scenario, two parties have signed a contract that has been negotiated, but it is done in a hurry, due to project schedule. In this contract relevant matters are not agreed at all, and there has not been prepared on possible delays.

In this case, delay happens because there is a breakage in ship, and that is why transportation is unable to leave on time and every other departure is fully booked on other ship operators. There is agreed only certain time when transportation should be on unloading place. Not what happens if there are delays, and who pays for delays.

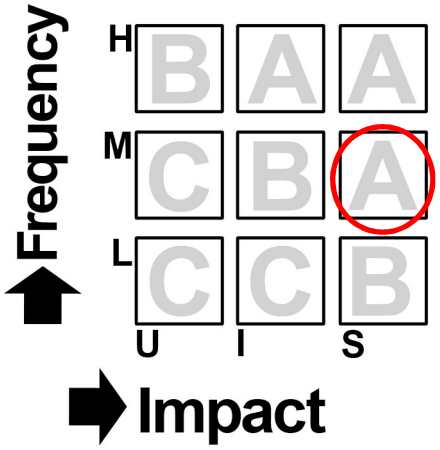
Frequency would normally lay for somewhere in between of medium and low, because it depends on the company and contract parties, how well are parties willing to negotiate and agree the relevant matters in contract. But imagined that in this case it is only in question rarely happening event, so frequency of this risk is low. Impact for this risk is strong, because there is a possibility that disagreements are not settled. If parties do not end up for mutual understanding of breach of contract, they might have to consult specialist in order to achieve agreement.

There are three possible reduction measures for this kind of risk. The best solution is to share the risk between parties, in this way if there is a mutual understanding that both share extra costs. If there cannot be achieved mutual understanding, both parties have insurances, and approach to insurance companies, who will compensate the costs. Lastly, it is possible for either one of parties to accept the risk and deal with extra costs. For service provider it would be advisable to pay for extra costs in order to maintain customer satisfaction.

Criminality risks

Criminality towards oversized loads is somewhat rare, because they are hard to stole due to their huge size. But vandalism is possible in this situation, for example tires can be pierced or attachments could be harmed. As a result of vandalism could occur serious accidents, if driver does not notice this. Also, vandalism towards the load is possible and could harm the product, whereupon it might be unusable or would need repair.

There is done vandalism towards truck and trailer. There has been pierced one tire from back and trailers lights are violated so that they do not work anymore. Truck driver does not notice this and starts driving. When tire is broken it can usually be noticed while driving, but within small distance accidents can occur and a risk is if trailers lights will not work, especially in the dark it might cause accidents.



Picture 15. Risk mapping of vandalism towards transporting vehicle. (Perälä, 2018.)

Frequency is medium because these minor offenders hit from time to time and there is no chance of preventing them. Of course, safety in vehicles improves all the time, but it does not guarantee that vandalism will not occur. Impact is strong, because if thinking situation where transportation is abroad, in this case in Finland, it might be hard to get substitutive trailer or someone to repair broken truck. Especially if vandalism happens in the dark, which is usually the case. This risk goes into A class and needs immediate attention and actions.

Risk reduction measure for risks concerning criminality is always risk transfer, because insurance companies compensate the damage.

10SUGGESTIONS

As mentioned, Kaarlaid has their own software where they keep all information concerning every transportation project that they execute. It has kind of risk management there, but they do not update information of risks there as often as it would be essential. Below are some suggestions that would help them to create more effective risk management.

Evaluation of risk management

In order to have effective risk management, it would be suggested to evaluate the current state of company's risk management. Preferred would be that an objective individual would evaluate risk management, by this company has realistic picture of risk management's present state. With evaluation can be stated that risk management replies to company's objectives and goals, and it is a tool that helps if changes and improvements are needed in risk management. (Helander 2013, 16.)

To list few principals for the evaluation of risk management:

- Risk management creates value and maintains it
- Risk management is essential part of company's processes
- Responsibilities are specified
- Objectives are clear

- With risk management, factors that create uncertainty can be identified
- Employees are risk-aware on every level of the company
- Risk management is a tool to help in decision making
- Risk management is built to meet company's needs

(Helander 2013, 18.)

Defining risk culture

Risk culture can be hard to determine in a company, usually it is "generally accepted that it is a reflection of the overall attitude of every component of management within a company" (Hopkins, 105). Company's culture defines how people behave on certain situations. A good risk culture is a combination of individuals' and groups values and attitudes, it will result as commitment towards company's risk management objectives. It would be suggested to pay more focus on different risk factors concerning oversized transportations and this can be done by launching so called awareness campaign where is included LILAC components (see table 3). LILAC comes from leadership, involvement, learning, accountability and communication. It creates a culture where risk management is effective and an integral part of the way how employees work, and for the most companies it is long-term goal. (Hopkins, 105.)

Table 3. Risk-aware culture. (Hopkin, 106.)

Leadership	Strong leadership within the organization in relation to strategy, projects and operations
Involvement	Involvement of all stakeholders of the risk management process
Learning	Emphasis on training risk management procedures and learning from events
Accountability	Absence of an automatic blame culture, but appropriate accountability for actions
Communication	Communication and openness on all risk management issues and lessons learnt

It would be recommended for Kaarlaid to define their own risk culture. By this, employees would be aware of possible risks arising when planning oversized transportation projects. There could be held regularly training sessions concerning risk matters

and how to deal with them in terms of what has been set in company's risk management. When employees are aware of risk policies in the company they can actively participate in improving it, and learn how to eliminate, reduce and turn risks into company's benefit.

Risk architecture

In this case, by risk architecture is meant shared roles and responsibilities concerning risk management and its communication and reporting. Shared roles and responsibilities in risk management engage employees to be more risk-aware and follow company's risk policies. (Helander 2013, 25.)

Risk management can be organized with two different ways, centralized or decentralized. It depends on risk nature and the meaning of risks to the company that which of these practices will be chosen. In centralized risk management the responsibility is on one individual or department, and in decentralized risk management responsibilities are divided to those individuals who deal with risks on a daily basis. (Helander 2013, 25.)

In Kaarlaid's case, it would be preferred that every project manager would be responsible for risks that are affecting their projects, but at the same time every employee of the company would be included in risk management and their risk-awareness would be increased as high as possible. Everyone would be included to risk management.

Risk register

It would be ideal that every risk would be marked in to the system; what has happened on projects, so that risks could be easier to monitor and control. For example, reporting, compiling statistics and covering danger, accident and "it was close" -situations, auditing and observing work and working environment, regularly performed risk mapping and investigating accidents and incidents. First three of mentioned are most effective, because monitoring focuses on factors that cause risks. Dangerous situations can happen even for hundreds of times towards every event with harm arising, by organizing and handling effectively these "it was close" -situations' reports, companies can have much wider range of material than from incidents that really did happen. Especially in SME's incidents and accidents do not happen so often, that monitoring

reports gotten from them do not alone help prevent from future incidents. (Nygren et al…, 19.)

Use of risk register is also recommended. It is a document that usually project manager creates in the beginning of project. In this document there is done risk identification of those risks that might arise in this particular project, analysis of risks' severity and evaluation of how possible solution can be applied. With risk register it is easy to monitor matters and to handle arising problems. This document is shared between project stakeholders, in order to make sure that everyone is aware of possible problems and matters that may arise and how response to them. Risk register enables projects stakeholders in decision making and lets them to deal with arising risks with the most effective way. Risk does not have to be seen as a threat, it can be only a problem that arises during the project; and when it is managed effectively, it will not avoid achieving goals and objectives. (Website of the CIO.)

In general

Lastly, here is listed few key points to remember in SME's risk management:

1. Risks can be categorized into internal and external.
2. In evaluation process there should be listed all possible events and resources that impact on company's operations.
3. It is important to always weight the costs that it takes to minimize or insure a risk and comparing it to the possible impact.
4. Business continuity plan should be a part of company's business plan.
5. In risk avoiding strategies there should be included: staff training, communication, contingency plan, risk evaluation and system support.
6. Being honest in every part of risk management.
7. Always try to find support from other parties.
8. In business plan there should be included an exit strategy and it should be revisited regularly, in order to make changes if it is needed.

11FINAL WORDS

The topic for this thesis arise when the author was completing her internship in the case company. Together with the supervisor in the company it was agreed that this topic would help both, the author and the case company. Topic strongly is associated to the working tasks that author completed during her internship, and it made possible to gain more knowledge on matters concerning special transportations and risk management. Risk management and special transportations are topics that very much interest the author, so it was clear that this topic was chosen, hoping it as well would help in working life in the future.

Once the project plan was approved by the thesis supervisor, writing of the theory part started in the spring of 2016. Due to some factors in author's personal life, the schedule of the thesis delayed. First seminar was held in March 2017, by then author had already had much time to write the theory part. Few months later in May 2017, author held her second seminar and in March 2018 all seminars were held.

Overall it took a bit over year and a half to complete the thesis. Because the entire process has been slightly long and author working full-time among thesis writing process, it can be said that the result is what was planned in the beginning and a bit more, and the author is very pleased how well this thesis turned out. Objectives and goals set to this thesis were achieved. The writing process has overall been very fascinating and educating and feeling towards the thesis is very pleased and positive, taking into account how much time and effort there has been invested in this thesis.

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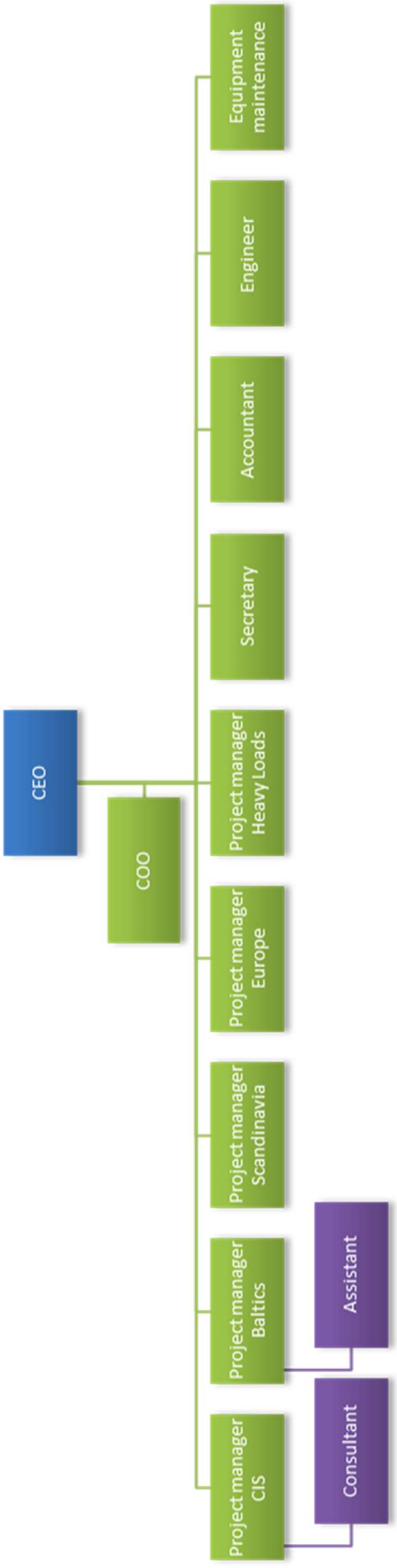
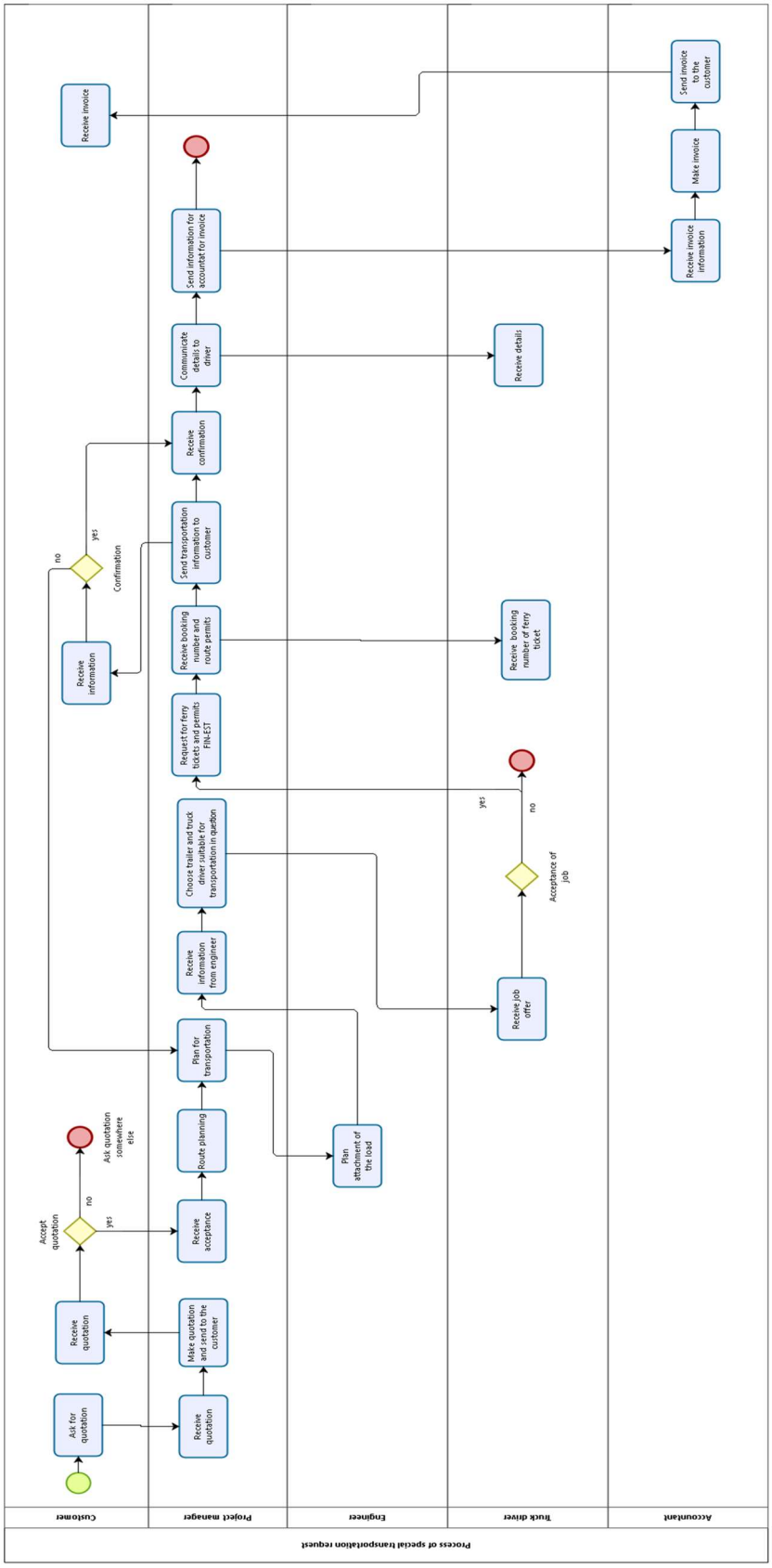
APPENDIX 1

COMPANY STRUCTURE OF KAARLAID OÜ



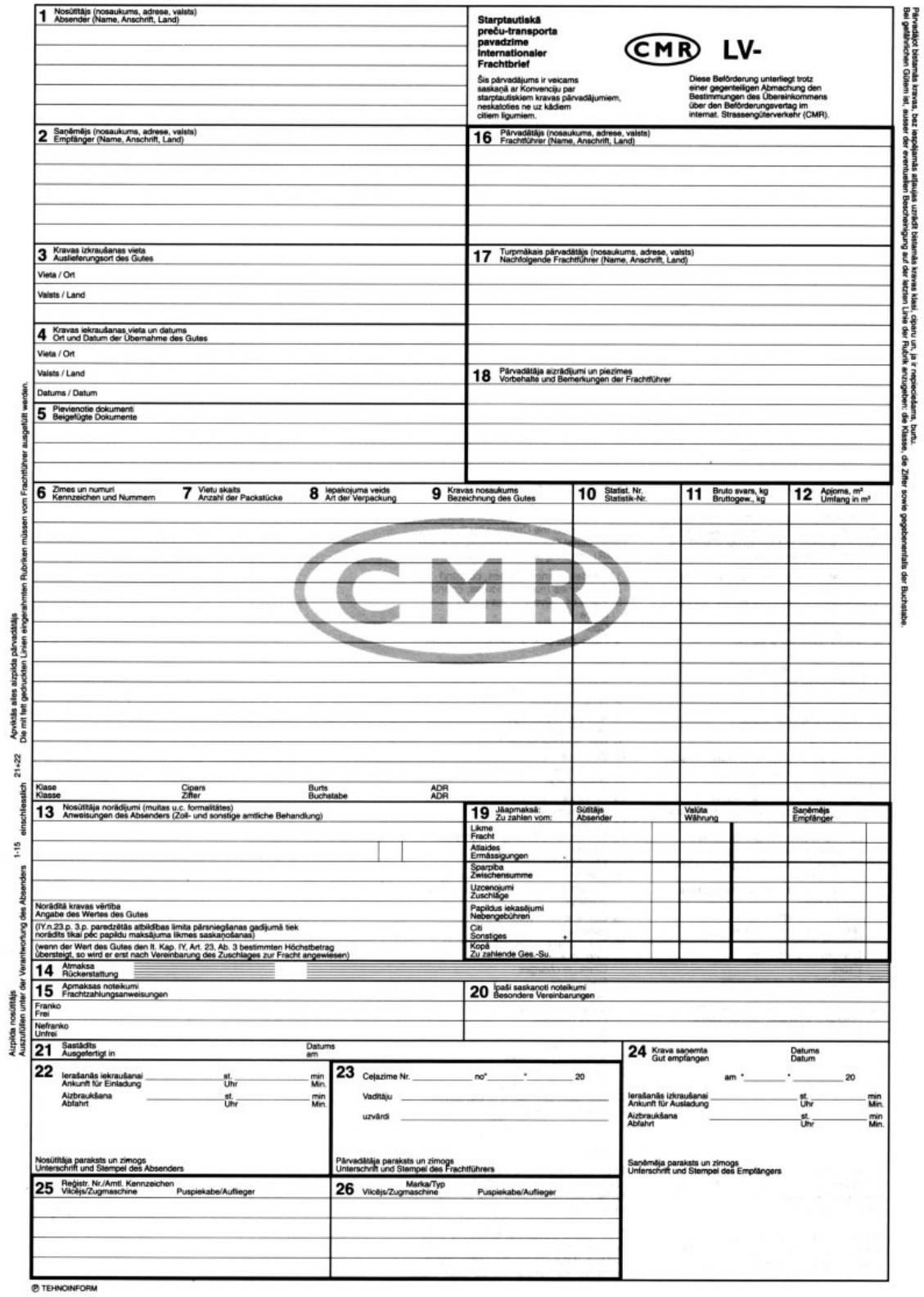
APPENDIX 2

KAARLAID'S TRANSPORTATION PROCESS



APPENDIX 3

CMR DOCUMENT



APPENDIX 4

WAYBILL DOCUMENT

RAHTIKIRJA FRAKTSEDEL

KL-DEMO OY AB
METSÄLÄNTIE 2
00620 HELSINKI
TIINA TILAAJA 050 1234 567

11223344
11223344-20
8003051709

3.1.2013

141009553365

VASTAANOTTAVA OY
TOIMITUSKUJA 6
80100 JOENSUU
VEIKKO VASTAANOTTAJA 050 7654 321

KIITOLINJA

NOUTO-OSOITE OY
NOUTOTIE 3
00100 HELSINKI

141009553365

SAAPUMISESTA ILMOITETTAVA ENNAKKOON
VASTAANOTTAJALLE, PUH. 050 765 421.

VASTAANOTTAVA OY
TOIMITUSKUJA 6
80100 JOENSUU

LÄHETTÄJÄ

Merkki/nro	Kollilku ja -laji	Sisältö	(Koodi)	Brutto, Kg	Tilavuus, m3
	1 EUR-LAVA	KOIVUKLAPEJA		500	

Lähetyksen tiedot yhteensä	Kollit		Lavametrit	Brutto, kg	Rahtimaksu
	1		0	500	

NOUTO-OSOITE OY

1

APPENDIX 5

SPECIAL TRANSPORTATION APPLICATION

Centre for Economic Development, Transport and the Environment

APPLICATION FOR SPECIAL TRANSPORT PERMISSION

Renewing the license nr: 1234	(license number is located on the upper corner of the permission, e.g. 04/1234/2013)	
1. Date of transport	25.7.2017	
2. Applicant's name	Long and Heavy Ltd	Social security number or business ID (Finland) or VAT-number (other EU countries): 123456-7890
3. Address (also billing address if other)	Mailing address: Abnormal Transportation Road 99 28240 POR	Billing address: Abnormal Transportation Road 99 28240 Pori
Copy of the permit sent by:	☐ fax ☒ email contact@longandheavyltd.com ☐ post	
4. Further information can be obtained from	Name: Theodore Transportator	Telephone: +358 45 123 4567

5. Vehicles or combinations (If combination is registered outside EU/EEA, the VIN-number of the towing vehicle is needed)	Registration number (or other identification) of vehicle(s) used in over-weight transport	Nationality sign (if other than FIN)
	☒ Truck ABC-123	FIN
	☒ Semitrailer DFG-456	FIN
	☐ Drawbar trailer	
	☐ Dolly	
	☐ Center axle trailer	
	☒ Towed device Nordberg LT300GPB, manufacture number 987	EST
	☐ Mobile Crane	
	☐ Other	

6. Object to be transported and objects weight	machine, towed device
7. Total weight of transport by axle and wheel base	The weights must not exceed the maximum indicated in the vehicle registration

8	8	14	14	15	15	15				axle load
	2,95	1,35	1,45	6,9	1,36	1,36				axle distance

8. Total weight and dimensions of empty and loaded transport, also weight and dimensions of cargo	Empty vehicle	Cargo	Loaded vehicle
	Weight 80 t	5 t	85 t
	Height 4 m		4,5 m
	Width 3,5 m		5 m
	Length 27 m		27m
9. Enclosures	Vehicle license and connection certification of towed device		
10. Transport route(s)	Points of origin and destination given with name of street and city, and proposed route with intermediate points. **The route is valid only in one direction.** Pori: Mäntyluodontie 345 - Vaasa: Kulmakorventie 7		

Pirkanmaa Centre for Economic Development, Transport and the Environment
Customer Service, Abnormal transports
erikoisku@etukset@ely-keskus.fi
www.ely-keskus.fi/erikoisku@etukset
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Signature