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GEOPOLITICAL RISKS IN A SUPPLY CHAIN

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Tutkimuksen aihe on johdinsarajoja valmistavan yrityksen antama ja työ keskittyy hankinnan ja oston saralla tärkeään aiheeseen, riskienhallintaan. Riskienhallinnasta tulee koko ajan entistä tärkeämpää yrityksille toiminnan globalisoitumisen ja kilpailun myötä. Tämä työ on rajattu koskemaan ainoastaan geopoliittisia riskejä ja on kohdennettu alan toimijoille ja erityisesti heidän tehtailleen Euroopassa.

Teoreettinen viitekehys koostuu toimitusketjun ja sen hallinnan teorioista, hankinnan ja ostotoimen tehtävistä sekä geopoliittisesta näkökulmasta. Toimittajavalinnan sekä arvioinnin tärkeimpiä kriteereitä ovat hinta, laatu sekä luotettavuus. Geopoliittisiin riskeihin perehdytään siihen liittyvien tapahtumien ja ilmiöiden kautta, mutta pakoteasiat on otettu huomioon, sillä ne ovat merkittävässä roolissa tehtäessä hankintatoimea. Geopoliittisia riskejä tutkitaan PESTE-analyysin avulla jakoen suorat ja epäsuorat geopoliittiset riskit kategorioihin. Tutkimuksessa käytetään kvalitatiivista menetelmää, sillä se sopii paremmin tutkittavien ilmiöiden selvittämiseen. Teemahaastattelut olivat sopivin aineistonkeruumenetelmä, jolla saatiin kattava kuva hankintatoimesta ja ostosta, eikä tätä olisi yhtä hyvin voitu toteuttaa kvantitatiivisella tutkimuksella.

Tutkimustulokset osoittivat, että riskienhallintaa kehitetään yrityksissä jatkuvasti, eivätkä edes käytössä olevat ohjelmat ole valmiita. Globaalissa toimintaympäristössä riskit muuttuvat koko ajan, eikä vanha riskikartoitus välttämättä enää ole validi. Riskeistä suurimmat kohdistuivat toimituksiin ja hinnanmuutoksiin. Nämä riskit voivat johtua monesta geopoliittisesta tekijästä, erityisesti poliittiset, taloudelliset sekä ympäristötekijät ovat merkittävässä roolissa.

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1 INTRODUCTION

In this thesis the main focus lies on managing geopolitics in a supply chain from the view of a wiring system producer. The study is limited to consider only factories located in Europe. The goal is to collect data and analyze it so that the case company benefits from the results. Because companies on the field are developing their risk management all the time this study is valuable to the case company. The topic for this study came from the case company where the author did her practical training. She did her training at the global sourcing department and therefore the subject was suitable.

1.1 Company and the field

The case company of this thesis is a producer of electrical components for wiring systems. The case company is a subcontractor in the vehicle industry meaning their production is dependent on customer needs. The customer needs affect the case company supplier selection.

The case company is a global supplier of wiring systems and it purchases goods from all over the world. The products they purchase vary from non-critical to highly technical products. The products are a part of direct purchasing where they are used in production.

The case company is a big operator in the field and they manufacture wiring systems almost on every continent. The company has got a good risk management system but when operating globally it needs to be kept up to date all the time.

1.2 Limitations and objectives of the research

Reaching the goal of the thesis starts with the main questions that it will answer. The questions are kept as a guideline through the whole process. The questions are formed into the main question and two additional questions. The main question is *how to predict possible geopolitical risks when supplying material to factories in Europe*. The goal with the main question is to keep the whole thesis together. The main question is endorsed by the two additional questions that are more specific and which makes the thesis easier to limit. The additional questions are *how to deal if there come up some problems with the current suppliers* and *how to notice possible problems in time*.

The research questions give the thesis its structure but the subject would be too wide without any limitations. This thesis will be limited to consider only the case company factories in Europe. This limitation is set because the company operates globally and they have factories all over the world. The decision to leave other than geopolitical risks out of the thesis came from the company. Geopolitical risks include a wide range of events and possible future scenarios and that is why they will be studied only from the sourcing and purchasing point of view.

Geopolitics in this study will be divided to five main categories using the PESTE analysis. The wide range of geopolitical events can this way be limited to consist only of the biggest and most affective events. These events are analyzed with the aspect that they will affect the supply chain and especially purchasing.

1.3 The structure of the study

This thesis will use qualitative research methods. Interviews are considered the best method to get inclusive results to answer the research questions. The whole process will be done keeping the research questions in mind.

The theoretic framework contains the basics of the subject, for example what geopolitics is and how it affects the supply chain situation in Europe. The main thing wanted to bring up in theoretic framework is the problems there appear and how to analyze and get a theoretical solution to avoiding them.

The theory is separated into two sections, supply chain and geopolitics. In the discussion of supply chain the field in which the case company operates is opened up. In the chapter on supply chain the risk rating methods are also brought up before moving on to the geopolitical section. The geopolitical section of the study includes definitions of the study field. The chapter will also include events that have taken place in Europe or have affected its geopolitical situation. These events will be brought up with the sections that are separated according PESTE analysis.

The study is made using qualitative method and theme interviews that are done with suppliers and purchasers who operate in the field. The chapter about research methods includes discussion of the qualitative method and how the theme interviews were executed.

The chapter will be the link that brings together the theoretical frame and the empirical research.

In end there will be a proper conclusion of the results and they will be connected to the theoretic framework. The conclusion is one of the most important sections of the work, because that is where the questions set in the beginning are answered.

2 SUPPLY CHAIN MANAGEMENT

In this chapter supply chain is handled as an area of the purchasing process that the case company goes through. The operations start from the basics of the supply chain and move on to supply chain management and risks management.

2.1 Supply Chain

Supply chain is a combination of organizations and activities that a product goes through before it enters to the end customer. Supply chain adds value to the product all the way from first supplier till the end-user. (Murphy P, Knemeyer A 2015, 92) Supply chain struggles with many different kinds of day-to-day risks that affect directly to the whole supply chain. These day-to-day risks can pop up when doing business with suppliers around the world. Such of risks are, for example, delays, supplier and production problems and security issues during all the operations. Supply chain comprehend of two flows that define the movement inside it. These flows are information and product flows.

Companies with their different operations form a supply chain that adds value to the products all the way through it. Only one company cannot dominate the whole supply chain and that's why there are several vendors who make it functional. (Tilau –toimitusketjun hallinta Digitalisoitumisen haasteet 24.05.2016) A supply chain is always not simple and it can have at least three, but usually even more organizations before the product gets to the end user. A supply chain has got three main functions; getting the materials to the manufacturer and the process itself. The process can include several different suppliers from whom the product is delivered through several organizations to the final consumer. All companies involved in the steps in the supply chain process are a part of the supply chain. (Handfield, Monczka, Giunipero, Patterson 2009, 10)

A supply chain has a lot of internal and external information that companies use. To keep it all as one chain requires planning and communicating with the different parties of the chain. The chain can move globally and still exists as one process that includes several smaller activities. (Handfield, Monczka, Giunipero, Patterson. 2009. 10)

In a supply chain there are two types of flows, information- and product flow. These flows give the supply chain the information needed through the process and add value to the

product. In the product flow the process starts from the supplier, but in information flow the process gets started from a customer need and the chain goes around (Figure 1). This is the first step in the supply chain and it gives the process a time schedule and clarifies the budget for the supplies. Material flow follows the time schedule set on information flow and that is why there is a lot pressure from the information flow. (Sadler 2007, 7)

To get the supply chain work properly it is necessary to make information flow as good as possible (Figure 1). This means that all the parties within the supply chain should know if there is some future needs that needs to be taken into consideration. For example, the information flow between production, purchasing and suppliers is necessary when there is a need to know if some product is running out and when it has to be re-ordered to keep production moving. Actions in information flow could minimize inventories, the product could get to the markets faster, there could be more flexibility and it could get costs down. (Canadian Supply Chain Sector Council 2016)

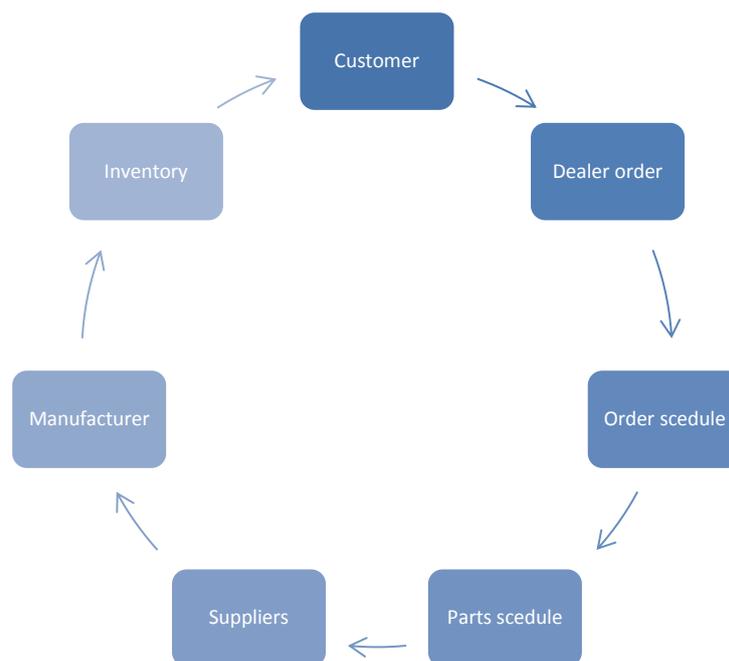


Figure 1 Supply Chain Flow (Canadian Supply Chain Sector Council 2016)

Value chain consists of internal activities that could offer a competitive advantage to companies. The value chain is a combination of support and primary activities that could give an organization competitiveness over others. Porter's value chain presents the primary activities within an organization and when those are done efficiently they can endorse the value of the supply chain. (Handfield, Monczka, Giunipero, Patterson 2009, 11)

Supply chain is a series of organizations that add value to the product by their operations. It consists of the two flows, product and information, these make the process work but when thinking the process as a complete managed process it gets the financial flow in addition. Supply chain management makes the process work alongside the value chain.

2.1.1 Supply chain management

Supply chain management consists of coordinating and integrating the supply chain. This kind of management is done to reach the goals that are set for the supply chain. Supply chain management makes the supply chain more united by managing the different areas and coordinates the process to make it as efficient as possible. (Handfield, Monczka, Giunipero, Patterson 2009, 10)

The management can be categorized to three flows. The first one is information flow, the main point in it is to get the need from a customer to production and to keep updated the status of delivery. The second one is product flow, which includes the product moving between different parties, finally reaching the end user. The third one is financial flow that includes for example payment. These flows together form supply chain management. (Rouse, M 2010 24.5.2016)

Information flow often demands a good enterprise resource planning system (ERP). The system helps the company to connect their main actions into one system and make information flow easier this way. In a supply chain this information flows inside the company making it easier for sourcing to find the missing items on time and at a good and reasonable price. The stock can be followed through the system as well as deliveries. If both companies have a system like this the information flow in the companies should be working relatively well and it leaves only the communication between the two companies to sales and purchasing. (Ritvanen. 2011, 56)

In the product flow the process of the concrete product moving from the factory to another is taken into closer examination. The field of electrical component production is continual production of identical products. This kind of a production field demands a great number of sales. (Ritvanen 2011, 47) Stock Management is a notable area of this material flow. There can be, for example, a so called cycle stock where the amount of goods changes according to purchasing and use. When having this kind of stock where

the goods come and go fluently, it is good to have safety stock. Safety stock is a backup for the company if there is some delay or price changes that could affect production. (Ritvanen 2011, 80-81).

The leadership of the company has to be aware of the supply chain and how to manage it. The global environment gives operations a challenge but the company still aims to be a successful and a competitive operator. The leadership team does investigation of what markets are available and how competitive the company is compared to other operators. They also make budgets for all of the teams inside the organization's business unit. One of the aims on operating is to achieve long and short term goals. Management is also trying to make the company work better all the time. Supply chain management is strongly connected to the value chain, which includes primary activities inside the company that make the company a competitive operator. (Handfield, Monczka, Giunipero, Patterson. 2009, 190)

The supply management requires to have goals to achieve. Usually there are only objectives like *to be more a competitive operator in the field* when the goals should be formed for example, as *to reduce costs by 5% in a year*. The goals are not defined in advance but those come up when the objectives are studied. These goals are a step in creating a commodity strategy that helps the company to operate as efficiently as possible. (Handfield, Monczka, Giunipero, Patterson. 2009, 193)

2.1.2 Sourcing and purchasing as a part of value chain

Purchasing is a series of actions that form an important area of the value chain. This way it is easier to negotiate new contracts with the supplier. A long term partnership is valuable because the purchaser knows beforehand, for example, the delivery times. Purchasing is mostly based on negotiating and building trust between suppliers. (Ritvanen 2011 s.32)

In purchasing there are three (3) types of materials; non-critical, bottleneck and strategic. The non-critical materials have little risk to supply and those are easy to get and low profile products. Bottleneck materials have a bigger risk to supply but those are still low profit products. Last the strategic materials that are high profit products. With strategic products it is good to have relationships with the suppliers and possibly also partnerships. (Waters. 2009, 326)

Every purchase starts with a need and leads through ordering to evaluation (figure 2). The need comes usually from production where the product is built from the purchased items. Sometimes the need can also come from the customer, and these kind of situations are common when the case company is a subcontractor. When the need is defined there become a need for a good supplier. In this point requests for quotation (RFQ) will be sent to suppliers that could be qualified to supply the item. The most qualified supplier is chosen usually according negotiation and the RFQ. When the contract is made the company place an order and maybe expedites the delivery. When the delivery arrives to the case company, the purchasing manager has the possibility to make an evaluation of the supply process.



Figure 2 Purchasing process

Some components can have more suppliers to choose from. When there is a possibility to invite tenders should price, delivery terms and later co-operation with the supplier later on have an effect on the situation. If there are only a few suppliers that fit to the current need the purchasing should be made with the best possible quality price ratio. When doing purchasing it is important to try negotiating what the case company wants but it is also important to know when to be adaptive.

The iceberg model present costs that appear in the sourcing process. The top of the iceberg present the purchase price and the rest of the iceberg includes direct and indirect costs. Direct costs happen during the process itself and those are quite easy to recognize. These costs come, for example, from ordering the product, transportation, storage and bills. Indirect costs are the costs that affect the organizational level and planning more. These costs together with the purchase price form the complete cost of the purchase. (Sakki 186) Indirect cost can also be mentioned as MRO-purchasing (Material, Repair, Operating). This costs are mainly around 40% of total costs (Ritvanen V, Inkiläinen A, von Bell A, Santala J 2011, 33).

When purchasing components and other semi-finished products appear a great risk and responsibility when aiming for good quality and on time deliveries. The pressure according to price is not the only part of the cost efficiency of the case company, but also the customer affects it. They might have a specific product to which the parts are purchased for and it is possible that those products have already been sold forward for a specific price. (Handfield, Monczka, Guinipero, Patterson 2009, 70)

In sourcing the aim is to make sure that the continuance of deliveries is secured. Sourcing persons follow the markets and what those have to offer for them. They also evaluate the results. There is always the possibility to get new suppliers. Sourcing categories is a helpful tool when organizing sourcing in a company. The aim with the categories is to plan and finish the purchases properly and taking the whole supply chain into consideration. (Sakki 184-185) First the product should be identified. If it is a high profit product is it most likely that a well-known supplier gets the request for a quotation. If it is a bottleneck product the delivery terms should be evaluated alongside the quality. (Waters. 2009, 331)

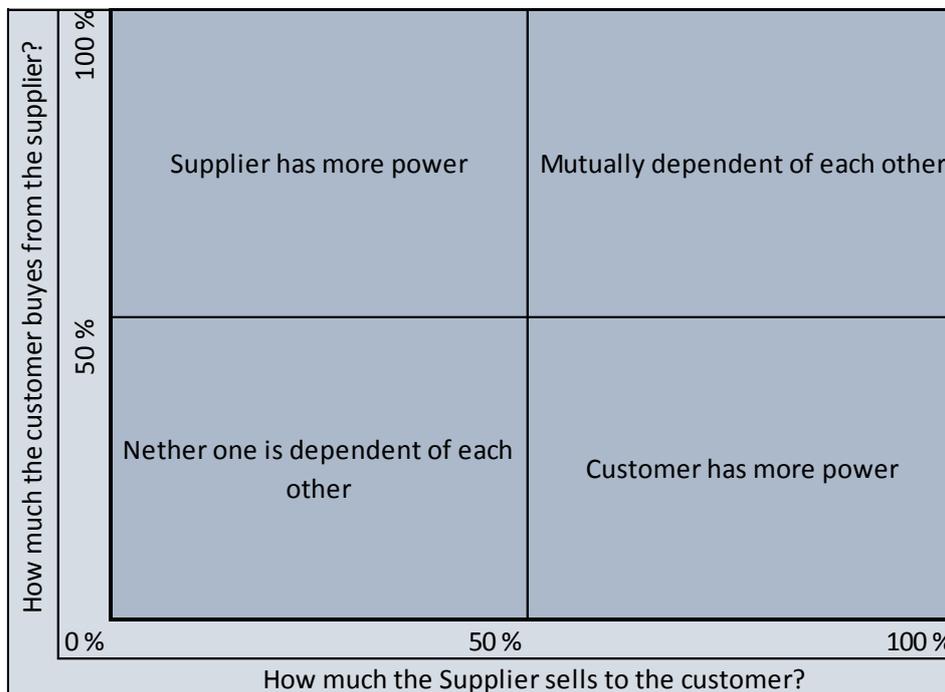


Figure 3 Supplier power (Waters. 2009, 313)

When picking up a supplier or when looking for a new one it is important to think about the future and how the supplier will affect the trade later on. When the company buys a lot from the supplier, but the supplier sells the same product to others as well and the

company is only a small part of it, the supplier has more power. The more the supplier has power the more likely it is that it will keep prices high, the product is dependent only on a few suppliers and that is why it's important to keep good relations to the supplier. When the supplier has only a little power and the company buys from that supplier only a small amount of items it means that the customer has more power. When the customer has more power it is easy to negotiate and that way get the item at a better price or with better delivery terms. As shown in Figure 3, both the customer and the supplier can also be mutually dependent on each other or not dependent of each other. (Waters 312-313) (Figure 3.)

The current suppliers are mostly good choices when looking for suppliers for a new product. Current suppliers are familiar with the purchasers and they know how to manage them. The time and resources spent on a new supplier evaluation might not always be the best option when trying to find the best alternative. This is because time might be limited and doing business with old suppliers is easier and contracts might be easier to make. Current suppliers can be quicker and easier, on the other hand, there might be a potential supplier left without notice. Because of this several companies have expanded their search also globally. (Handfield, Monczka, Giunipero, Patterson. 2009. 10)

2.2 Becoming aware of risks

Risks are most usually connected to costs that can cause the case company damage. In a risk analysis the value of a risks has been evaluated. The expected value of a delay can be calculated by how likely the risk is going to happen and the consequence. The value can be calculated by formula: $\text{expected value of an event} = \text{probability} * \text{consequence}$. (Waters, 480)

The product groups that are advantage, strategic, noncritical and bottleneck have all different kind of risks in the procurement process.

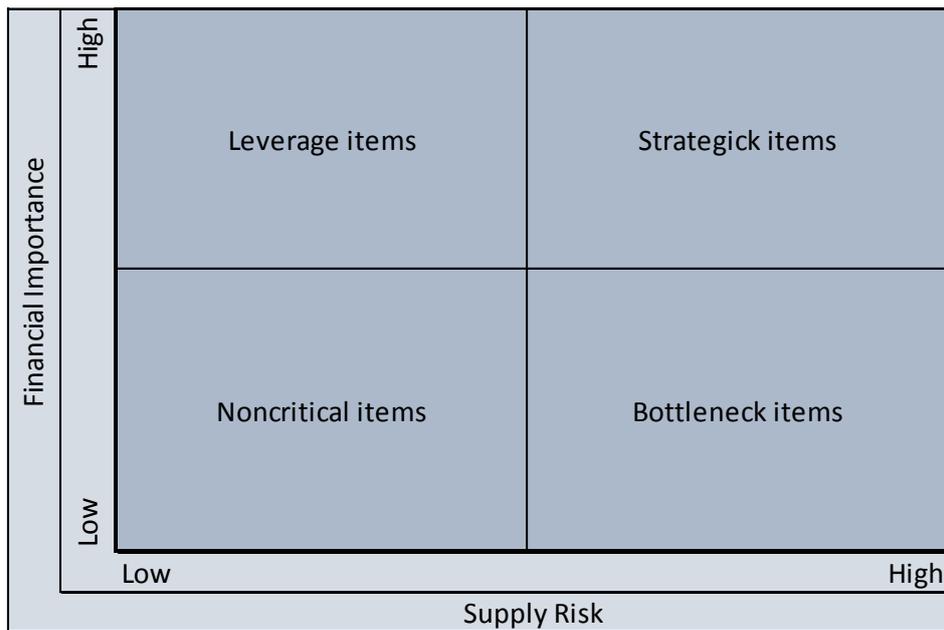


Figure 4 Risk rating; items (Waters 2009)

The risks can also be categorized to groups A, B and C. In category A the risks are very likely and need a lot of attention and effort to be prevented from occurring. Category B needs normal attention and category C needs just a little attention. (Figure 5.) This categorizing is made because in every activity a company makes has got risks, but not all of them are critical enough to put as much effort in. (Waters, 2009. 482) Euler Hermes, a company that does different kind of studies, have done a risk rating of countries using the scale AA to D, in the scale AA is the best grade and D the lowest. The grades work the same way than the risk rating in figure 5, but have got more possible grades making the rating more relevant. According to these grades the counties risks have been grouped as low, sensitive, medium and high level of risks. (Euler Hermes)

		Potential consequence					
		Negligible	Minor	Moderate	Serious	Critical	Catastrophic
Probability of the risk	Very high	B	B	A	A	A	A
	High	B	B	B	B	A	A
	Medium	C	B	B	B	A	A
	Low	C	C	B	B	A	A
	Very low	C	C	C	B	B	A

Figure 5 Structure of a probability-impact matrix (Waters, 2009. 482)

When calculating the likelihood of a certain risk there should be some background information available. The risks should be evaluated and some relevant information from specialists should be considered as valuable resource of information for example as an interview.

When we know the risks and what products are most open to risks is time to figure out how to deal with those. It depends mostly how high a risk is but most likely the high risk products get more attention than the ones that have a very small risk. It is time to think if whether to change the old supplier to a less risky supplier. (Waters, 2009. 482)

2.3 Risk Management

The easiest way to start doing a risk analysis in the supply chain is to group the risks into two categories, external risks and internal risks. The internal risks are the activities inside the company that can lead to problems during the supply. External risks happen most often outside the company but are internal to the supply chain process. (Manners-Bell 2014, 5)

Internal risks come from outside the supply chain but can have a major effect to operation inside it. Such of risks are, for example, geopolitical risks. These risks cannot be prepared but the purchasing operation can be designed in such way that these risks can be minimized. Internal risks, on other hand, can be caused from inside the company and the supply chain. (Waters, 2009. 474-475)

Risks in supply chain can disturb the way things happen and it can cause delays. The external and internal risks should be taken into consideration when doing risk management. Risk management starts with identifying the risk and analyzing it. Identifying the risk contains the field of risk that is taken into consideration, for example political or environmental risks. Analyzing the risks is important because the more information there is about possible risks the more there is that can be done to avoid those. The final step is to response to the risk in an appropriate way. (Figure 5)(Waters, 2009. 477-478)

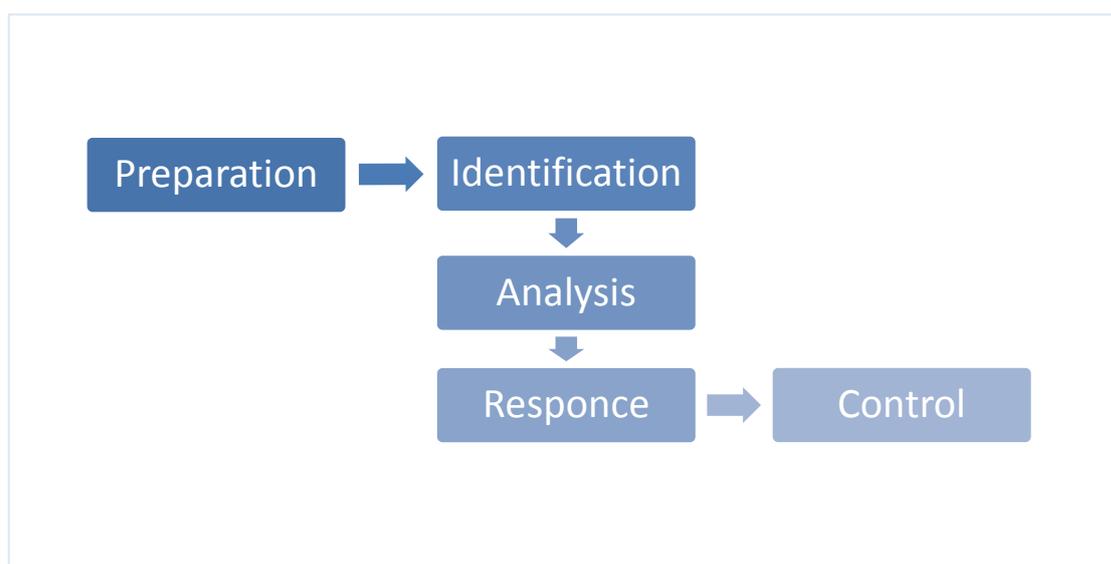


Figure 6 Risk Management (Waters, 2009. 477)

When taking a closer look at the supply chain risks and grouping those only to the ones considering geopolitics we get the field we want to do the risk analysis of. When being aware of field of risks that have to be taken a closer look at, we need to select the area that is very important when talking about geopolitics. (Waters, 2009. 477)

To get the most of the results, the analysis should include geopolitical factors that can affect the supply chain negatively. This is why the biggest risks and possibly the no risky alternatives should come up and help making up alternative decisions. The target is to get information about possible risks and in which section of the supply chain they appear so they can be avoided.

Communication between suppliers and the purchaser is in a great role when looking for possible risks in the supply chain. The investigation of who is responsible and what kind of delays or cracks are replaceable. Usually when doing business companies make an

agreement not only of the sale, but of the terms of delivery as well. This helps to find out who is responsible and when most used terms of delivery are in Incoterms 2010. (Melin 2011, 57)

When having a third party involved, for example a forwarding company, it is important the communication is efficient also to and from it. To the forwarding company the client is the company that orders the service. Forwarding companies can do all kinds of jobs from paperwork to organizing the whole transportation, it depends on how big part of the job they are asked to do. (Melin 2011, 235)

3 GEOPOLITICS

Geopolitics is explained to mean the politic security in a country. The main concept in geopolitics is how geology affects the politics. In this chapter the history and the present state of geopolitics will be explained. Geopolitical events can be directly or indirectly connected to geopolitics. These events are examined by using a PESTE-analysis. (Harle & Moisiso 2003, 7-8).

3.1 The meaning of geopolitics

Swede Rudolf Kjellén (1864-1922) first used the concept of geopolitics. He wrote how a nation is a bigger organism than any other political organism. The organisms defined the people living in a country. Another researcher who studied geopolitics in the early 1900 was Ratzel, a German scientist. He created a theory of political geography. The theory included war, transport and geography of nations. He emphasized that nations were living creatures which had their culture inside. He also claimed that the nations had their birth, life and death, just like humans. In early geopolitics the main belief was that the bigger a nation was by its region the more it had power. Unfortunately the term got a drawback when Nazi Germany put the theory into use it as one of their main theories. (Harle, V. Moisiso, S. 2003. 18-20)

During the Cold War the study of geopolitics became more global and strategic. The economic and political situation and foreign policies have led to new aspects in geopolitics. The political strength of the US alongside globalization have led to a situation where geopolitics have become a more global study. Peter J. Taylor created a model that observes nations and their changing position in the world order critically. This model was the spur to geopolitics as we know the study today.

There are two ways to observe geopolitics, the critical and the realistic way. Critical geopolitics are made to break rules and think outside the box. Realistic geopolitics is based on traditional sciences. In realistic sciences the already existing theories and the findings from investigating the topic are compared to each other. In critical geopolitics the theories are questioned.

The risk cannot be removed but a company can create new ways at how to do a risky operation in another way. Using another supplier or strengthening the connection to the current supplier are common tools used. Even though many risks can be predicted there is always some risks that cannot be. In some cases it is best to let knowledge speak for itself. This doesn't always mean that the company needs to have faced all the risks. The knowledge can also come from a study or other companies' experiences, for example from the news. (Walker, R. 2013, 10)

Global risks are events and conditions that happen and have negative impact on several countries in a time period. In 2016 Marsh listed top 10 risks in terms impact and likelihood. Geopolitical risks are, for example, an interstate conflict, failure of national governance or terrorism. The risks can be obligated but can also be caused by some risks indirectly.

The best way to get the most risk groups studied, is to use PESTE- analysis. PESTE analysis helps companies to observe events around them and how those affect their business. PESTE analysis consist of politic economic, social and environmental factors. (Pusa, A. Reijonen, H. Juuti, P. Laukkanen, T. 2012, 41)

This categorizing is good for the future examination and in this thesis when looking for the interconnections within risks. Risks groups can also be connected to each other and that can make a less risky event more critical because it has got a strong connection to another risk. By observing risk categories also a strong connection between two groups can be pointed out and therefore preparation to new risks is even more relevant. In Marsh Global Risk Report the research of geopolitical risks was grouped by using geopolitical, economic, social, technological and environmental risk groups.

3.2 Political

Politics in PESTE analysis defines laws and rules as a frame when doing business within one's own and foreign countries. The section includes for example taxes and restrictions the vendor country might have considering the trade (Pusa. 2012, 41). As in Figure 7 the risks can vary from war and terror attacks to unstable situation inside a county or region. (Figure 7.)



Figure 7 Geopolitical risks

The European Union (EU) is an economic and political union, whose 28 member countries cover a large part of the continent. The EU was created after the Second World War, when the first construction began with economic cooperation. The idea was to get countries to trade with each other, and become economically dependent of each other. This was done to avoid new conflicts. (Perustietoa Euroopan Unionista 2016)

3.2.1 Brexit

One of the most notable events in the EU in 2016 was Brexit, the referendum held in June about Britain's future in the European Union. The majority of people of the U.K voted for Brexit. The votes were 51, 9% against 48, 1%, meaning that the government of David Cameron had to neither deal with it nor recede from the position of prime minister. Cameron was all along against Brexit and he decided to recede from the position. The government of the new Prime Minister, Theresa May, was planning to present the legislative proposal for the parliament by the end of March. The proposal has to go through House of Commons and House of Lords before it can be sent future to the parliament. The process will be done according the section 50 in the EU framework agreement by the end of March and it should be completed in two years. According to this time schedule the process should be completed spring 2019. (Annamari Sipilä HS. 24.1.2017)

When the process started in March 2017 the Prime Minister of the United Kingdom wrote a letter to the European Council President Donald Tusk. The main message in the letter was about the values of the UK and how those were not against the values of the European Union. She also pointed out that there was no aim to cause any harm to other European nations.

Causes of Brexit are still somewhat unclear, but when the news about Brexit winning the referendum came out was the first big notable thing was the drop in the value of the pound. Other causes that have been speculated are, for example, the laws of the EU being no longer existent in the UK. There have been speculations that the laws of the UK would be changed more to the direction of the EU laws.

3.2.2 External countries

The U.S has got a lot of power on the world politics and that is why it is taken into consideration in this thesis. The U.S is a military force and a NATO member. The US does a lot of business and co-operation with the European countries and that is the reason it cannot be left outside the examination. Through the Balkans Europe has good access to Middle East and in the same way the US has an access to the Middle East where they have military forces. In Europe there are some regions that the US is especially interested in a tactical military fort.

In 2016 the US got a new president, a well-known businessman and television face Donald Trump. The republican president differs from the previous presidents in many ways, most notably by showing warmer relations to Russia. The new president has been in his position only for a few months, but has already caused a lot of different opinions all around the world. Only time can show how he will manage the job and what kind of effects it will have on the US, Europe and the global geopolitics. (Philip Rucker, David Filipov 28.1.2017)

NATO is a global political and military alliance that has got 28 member countries around the world with the mission to defend security and peace. It is a military force that, for example, helps in crisis-management operations and helps parties to negotiate with each other. (NATO). NATO has lately got new members from old areas of the Soviet Union in Eastern Europe. The area is important to NATO because of the pressure they have had from the Russian side. One of the biggest reasons is be the occupation of Crimea peninsula. The tension between the US and Russia is remarkable. US driven NATO haven't had so large presence in Eastern Europe since the Cold War. (Marjo Näkki 2016)

The crisis in the Middle East is caused mainly because of the civil war in Iraq and Syria. The government and opposition are fighting against each other for the fifth year now.

Civilians from the area are escaping the war to Europe, which has caused problems as well when countries have not been prepared to such a huge migration. The government and opposition aren't the only ones fighting in the civil war. Russia has taken the place of the government side and the US supports opposition. These two nations have been negotiating about the situation, but any solution that would lead to peace hasn't been found. There are also extremist movements that fight in the area, which make finding peace even more difficult. (Jukka Huusko HS 2015)

3.2.3 Terrorism

There have been several big scale terror attacks in Europe during the past few years. The risk has become more concrete when looking at Paris, Berlin, London and Stockholm to name some of the most notable during the past few years. Because of this threat the countries in the EU have made stricter border inspections at the outer borders of the Schengen area. These inspections have been causing for example traffic chaos in the border of Slovenia and Croatia. Airports in Spain and Greece have also suffered from this security measure. There have been delays since also EU citizens need to prove their nationality when travelling. (Kähkönen, V, HS. 2017)

In the beginning of May the US announced a travel alert to Europe, because of the threat of terrorist attacks. The reason is based on several attacks made by extremist movements from the Middle East, for example by ISIS and al-Qa'ida. Terror attacks have taken place in popular tourist sights and because the holiday season was about to start, the US saw necessary to make an alert to inform its citizens about the risks. (The Bureau of Consular Affairs, U.S. Department of State. 2017. Europe Travel Alert)

3.3 Economic

Economic risks get most often started from a situation of one or two nations and spread wider. These risks are big scale risks in the EU and the control is not always easy. In the EU and especially in the Euro countries the effects are often spread to the whole euro area. This is because the countries are economically dependent on each other. Economic risks can include global events as well as regional. Most dangerous risks that could affect the case company could be the ones related to illegal trade and price changes (Figure 8.)



Figure 8 Economic risks

The EU is an economic and political union. The currency that most of the countries use is ruled by European Central Bank. The countries that are a part of this money union are called EMU (European Money Union). These countries use the mutual currency euro. European Central bank controls the Euribor. One of the most important things the Bank does is to keep the price level stable in the Union.

3.3.1 Depression

Depression, which started from US in 2008, affected the whole world. The depression got started from US price bubble that was caused by low interest rates, and actions that were made because of it. The banks who had given loans sold those to investment banks. Investment banks made the loans a part of derivatives and sold those to investors all around the world. This was how the problem became global. (Eurooppatiedotus. 2012)

Derivative is a tool in the financial world. The tool have been created to make investments using a target, which in this case is the mortgage market. This method has been called also a weapon of mass destruction on the field of finance. (Sijoitustieto. 2015)

Because of the depression banks became more careful of who they wanted to loan money to. This made the depression more visible also in Europe. The reason was that companies tried to push their supplies future to the future. The depression decreased tax incomes, but at the same time countries spent more and more. This lead to situation where the

countries in Europe became more indebted all the time. One of the most indebted countries in Europe was Greece. Greece had announced that its deficit was smaller than it really was. This led to a situation where investors could not trust the country anymore and it didn't get new loans. When Greece was suffering with their situation, the EU gave the country a loan of 45 billion euros. This was not enough and later on the EU had to loan 105 billion more. The EU had some terms that Greece had to agree to get the loan. These terms consisted of savings that the country had to make to turn their economy around. (Eurooppatiedotus. 2012)

3.3.2 External countries

Russia has a lot of potential to grow economically and make its businesses more profitable. As well as the US, Russia has a big field of industry within war industry. Even though Russians got resources its economy is not doing well (Figure 9). The Russian situation with the crisis in Ukraine led to sanctions from the EU and the US. The sanctions have taken Russia to a situation where it has to become more independent all the time. This kind of independency has led to disliking foreign skills and experiences. This is one of the main factors that slows down the economic growth in the country. Russia has the concept that the country itself alongside the US and the EU are equal territories and it should be kept that way. Russia has also claimed that the US has got a military frontline in Europe, meaning NATO. (Iloniemi 2015,66,72)



Figure 9 Russian GDP per Capita

3.4 Social

Social effects are often related to different kind of trends and culture, those differ according to people and how they see the world. Also health systems of an area and how well a country takes care of its people are social factors. Social risks usually start from people living in certain area and there cause damage. The social risks can appear as companies with unsteadiness and co-operation problems (Figure 10).



Figure 10 Social Risks

Migrant crisis when spoken of today is result of major conflicts and war in the Middle East. The war and unstable situation in the area has led to a massive migration to other countries, especially Europe. There have always been migration but not as big and fast as it has now come in the past few years. Most of the immigrants in Europe come from Syria

but also from Afghanistan, Iraq and Kosovo. Germany is one of the countries that has got the most migration by receiving over 476 000 asylum applications. (BBC News. 2016)

The crisis has caused economical and other struggles to countries in Europe. One of the main struggles is because huge amounts of immigrants come illegally to these countries. The goal is to get migration into control and get people to apply for asylum in a legal way. (Ulkoasiainministeriö. 2016)

3.5 Technological

Technological risks are relatively new in larger scale and those are also not that easy to predict. These kind of risks have wider affects when the target is a large network or government secret information. The internet and all technical devices are in bigger role all the time and an attack against those devices could cause a huge crises. Technological risks are changing all the time and therefore also listed risks can change during a relatively short time (Figure 11.)

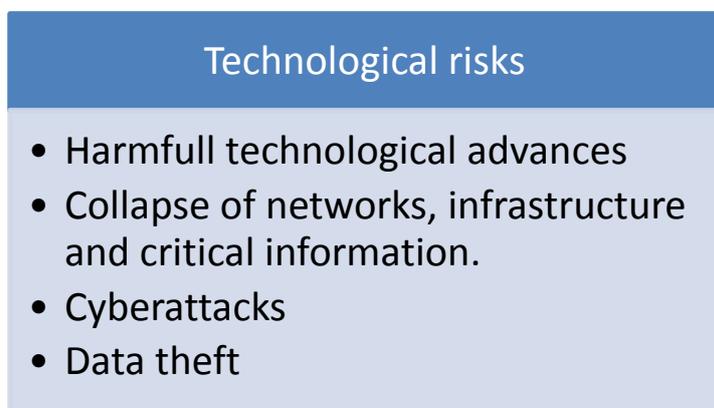


Figure 11 Technological risks

Cyber-security control in the EU is ruled by Cyber Europe 2016 (CE2016). It started in April 2016 giving experts on the field the possibility to work together and to predict for example cyber-attacks. The scenarios the CE2016 have painted are not very good.

The security system has predicted a few large scale risks that can affect to cybersecurity in Europe dramatically. The biggest fears are for example Blackout in a European country

and cloud computing. These risks are strongly connected to political and economic risks and the effects work both ways.

Today when almost all of the critical information of companies is on computers cyberattacks have become more common. There have been attacks that in practice steal information from computers and blackmail to buying a key to get the information available again. These ransoms have become more common all the time. They get into the computer by e-mails or for example via Facebook. They lock information from the computer and blackmail the computer owners to pay them to get their information back. (Teittinen, P. HS. 2016)

3.6 Environmental

Environmental risks, for example man-made catastrophes create, a huge risk group. Companies are all the time more and more aware of their position in environmental protection all the time and they aim to have a better tomorrow. When a company has environmental issues as a part of its vision it's also important to operate like it. This is why a company should be aware of environmental risks. A risk for the supply chain is also for example earthquakes and volcanic eruptions, those could stop transportation for days or even weeks (Figure 12.). Man-made catastrophes are easier to predict and companies can do something to avoid those, but natural catastrophes cannot be avoided however, technology helps to create more and more effective devices to predict these catastrophes.

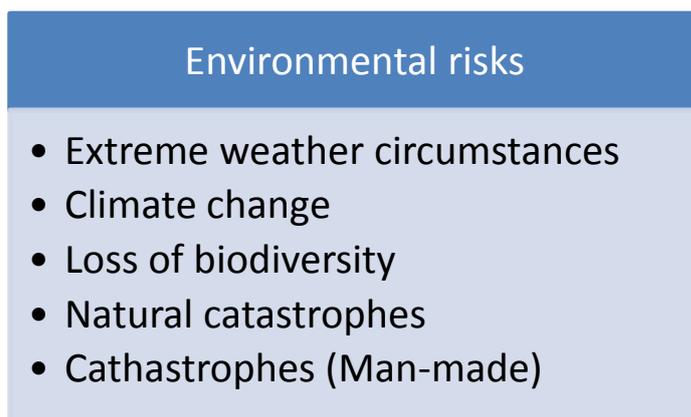


Figure 12 Environmental risks

Europe is luckily a geologically in a very safe location. There are no earthquakes or active volcanos that are likely to explode, but climate change and company awareness of environmental issues are more and more important in business. In the Arctic area climate change could also be a way to avoid risks by getting the Arctic rode available as a shipping route to Asia.

In 2010 the air traffic in Europe was stopped when the volcano Eyjafjallajökull in Iceland erupted and released a huge amount of ash in the air. The volcano have erupted only three times during the past 1100 years before 2010. Because of the small amount of knowledge of the volcano, scientists did not know what to expect when the volcano erupted. The eruption started out harmless but eventually it stopped almost all the flights in Europe. The area around the volcano was evacuated and the eruption was followed closely. The eruption lasted ten days and no big harm was caused, but only a few days later a new eruption took place under ice. The combination of hot lava and ice caused a huge amount of ash that is dangerous to air traffic. The ash cloud was followed and reported to media so that the threat of air crashes could be prevented. The lava hadn't only caused the ash cloud but also flooding in the area. The reason the ash caused problems in such a huge area was caused by strong winds and the ash being fine-grained. (Kaasinen, H, Tiede. 2010)

Manmade catastrophes are actions made by human that have a negative impact on nature. These actions can be made on purpose or by accident. Oil spills or other pollution of nature have impacts long after the event itself. One of the most notable events has been

the nuclear accident of Fukushima in 2011. The disaster was partly also caused by a natural catastrophe, because there had been an earthquake and a tsunami that led to the disaster. What happened afterwards can be put under manmade catastrophes, because the accident caused damage after the event itself also. There is still today radioactivity in the area and the waste that the disaster has caused still cannot be removed. (Motoko, R. 2017)

3.7 Sanctions

Russia has got a strong vision that someone is trying to threaten it. There is a lot we don't know about the country but it is playing a great role in the geopolitics globally. The role of Russia and its foreign policy in the global geopolitics is remarkable. A great number of the European countries have decided to join Nato and as said Russia takes it as a threat against their nation. No one really knows how Russia views the situation or how for example the sanctions against it are affecting geopolitics and the economic situation in the world in long term.

In 2014 the EU imposed sanctions on Russia on, for example, exports of defense supplies, fire arms and services. The sanctions were made because of Russia's actions in Ukraine and the sanctions stand still today. Because of these sanctions Russia placed sanctions on the EU and for example groceries were forbidden to be imported to Russia. (Eurooppa Neuvosto 2016)

As mentioned before the sanctions against Russia and the situation in the Krim peninsula have caused many countries trouble because their exports to Russia have been significant. This happened in 2014 and for example milk products were forbidden to be exported and that caused economic trouble especially in Finland. The sanctions have caused a dramatic drop in export and therefore in economy. In Finland exports to Russia decreased by 44% because of the sanctions. In Finland the biggest problem was not the sanctions the EU had set for Russia, it was the sanctions on groceries that Russia set for the EU. (Etlä Muistio 45 2016)

4 RESEARCH METHODS

This chapter is for designing the empirical research and explaining how it is realized. The main points of the theoretical framework are reviewed and the whole chapter explains how the research question is answered.

4.1 Theoretical framework

In this thesis the theory can be grouped to three different areas and these parts are:

1. Supplier selection and sourcing
2. Risks in sourcing
3. Risks in the future

All of these are viewed from the perspective of geopolitics and the goal is to get a good framework for the empirical research. The first area discusses supplier selection and sourcing is obvious because the whole work is done from the sourcing point of view. This section is used to show how the actual process and research results differ from each other and how the combination of theory and practice could work together as well as possible. The second theory in the framework is risks and how to observe them and events that might have had an impact on the purchasing process earlier and this will then be compared to risks that come up in the empirical research. These events that have happened are separated according to PESTE. The goal is to get results that are comparable with the theoretical research and that the research question “*how to observe possible geopolitical risks and avoid them when having suppliers in Europe*” will be answered.

4.2 Research methodology

The two methods that are mostly used in research are qualitative and quantitative. To know which method to use it is important for answering the research question and the problem properly. The aim is to get as reliable information as possible and this starts with taking the field into closer observation. (Kananen, 65) The experts in different study fields might differ from customers to suppliers and so does the sampling. The research question is the one that defines how the problem should be solved or if it is necessary to use multiple methods. The aim is to solve the research question by using the information that is collected and refine it. (Kananen , 65)

Quantitative research is good for research that is carried out as surveys, for example among customers. This method requires more specified understanding of the theories, all the variables should be acknowledged as well as the connections between those. (Kananen, 197) In quantitative research the goal is to generalize the research results and the sampling that is picked should present the whole group that is studied. The answerer cannot explain the answers given because the questions are designed to get as many and as comparative answers as possible. This type of research is good for example for researches who want to know how certain customers work or feel. (Kananen, 2015, 200)

Qualitative research differs from quantitative for example by the amount of answers. In qualitative research the amount of answers is not standard, the answering amount is acknowledged by doing so many interviews the answers start to repeat each other. Unlike in quantitative research the research does not have the knowledge, and therefore, the answers cannot be predicted. The goal in qualitative research is to answer the research question and the cycle between research collection and analysis ends when there is no more knowledge to be collected. This situation is called saturation. (Kananen, 2015, 128)

Qualitative	Quantitative
<ul style="list-style-type: none"> • Material collection <ul style="list-style-type: none"> • Documents • Observation • Theme interview • Analysis methods <ul style="list-style-type: none"> • Content analysis • Modeling etc. 	<ul style="list-style-type: none"> • Material collection <ul style="list-style-type: none"> • Surveys • Statistics • Analysis methods <ul style="list-style-type: none"> • Straight distributions • Cross tabulation • Correlation • Regression analysis etc.

Figure 13 Research methods

In this thesis the research question is how to observe possible geopolitical risks and avoid them when having suppliers in Europe. Only persons who deal with this kind of threats every day have knowledge that is needed. From the beginning it was obvious that the

material collection in the empirical study of the research would be done by interviews to specialists in the field of wiring systems dealing with suppliers. As Kananen tells in his book “Opinnäytetyön kirjoittajan opas” the whole thesis process starts from a problem and the method used leads to a solution, which is the goal of the thesis. In this thesis the main risk is handled by a small group of people, purchasers or suppliers, and when taking into consideration the number of them in the field this thesis covers it become obvious that there weren’t enough sampling to do the research as an quantitative research. Qualitative research was also more accurate for the purpose because of the analysis methods (Figure 14.). (Kananen. 2015. 64-65)



Figure 14 Research motion

4.2.1 Theme interview

The research will be made using theme interviews to purchasers in a company that produces wiring systems. This type of interview is usually made when the goal is to define a problem or evaluate the results or effectiveness. (Kananen 110) In this research the goal is to define the problem and evaluate the results. This kind of an interview can be done as individual or group interview (Figure 15.). Both methods have their positive and negative sides but the structure of the interview is the same in both. The interview has got themes around which the questions are built on. The idea of theme interview is to ask the interviewees questions around the theme and if needed there is a chance to make more questions to fill the answer and to get the best possible results. (Kananen 110-111)

Individual interview	Group interview
<ul style="list-style-type: none"> • Done to one person at a time • Target to get a discussion with the person • credible information 	<ul style="list-style-type: none"> • Done to a group • Everyones opinions are equally considered • Condensed information

Figure 15 Interviews

As mentioned this research is done using a theme interview to purchasers who operate in the field of wiring systems. The interviews will be done as individual interviews because the purchasers might have got different areas they are responsible for and they might have faced different kind of risks and there be a risk that they would influence each other's replies.

The interviewees are selected by the field and by the fact they were purchasers. The meaning was to interview individuals in the case company and at another company that operates at the same field and compare them to each other, persons from both companies will be interviewed. When selecting an interviewee the person who knows the most of that phenomenon is always the first to be contacted, but if that source is not possible is the next person who knows as much as possible of the subject. (Kananen 111)

The themes used in this interview were about supplier selection, risks in purchasing and threats in the future. First there are questions to the interviewee about his/her experience and responsibilities and other important but easy questions compared to the rest of the interview. The questions were sent to the purchasers before the interview and they had time to think about answers already before the interview. During the interview more questions according these themes came up and made the method an interview and not a questioner. When choosing the themes and questions in it should cover the whole phenomenon moving from easier questions to more detailed ones. (Kananen 112)

4.3 Aspiration of the research

To reach saturation is the key to a successful qualitative research. Saturation means that the interviews start to repeat each other and that collecting more data does not give any more value to the research. This means that the interviews have got the main points that are considered the themes. (Kananen, 2009. 128)

To reach saturation the first thing to do is to transcribe the theme interviews. The transcribing can be made in two different ways, by writing the answers down exactly or only picking up the main points of the interviews. The answers should start to repeat themselves and the points should be collected to answer the research question. The answers can also be summed up and taken into smaller sections depending on how many interviews there are and how long answering will take. (Kananen, 2009. 129)

5 RESEARCH RESULTS

In this chapter the answers from these interviews are explained. The interviewees are anonymous, but they operate on purchasing.

5.1.1 Background of the buyers

Five persons who did or had done purchasing or sourcing in the field of wiring systems were interviewed. These interviewees will be named A, B, C, D and E. A, B and C operate in a growing business and D and E in a bigger scale business. Persons A and E had been in superior positions and others in various tasks connected to purchasing and/or sourcing. Person B had been working in the current position for eight years and others had been in their latest position less than five years. Components with which the persons had operated were components for wiring systems, for example adapters and cables. The persons did not have suppliers only from one area but the production units they did operate with were in Europe. The ones who had worked in superior positions operated also with product units outside of Europe.

5.1.2 Supplier selection and purchasing

Persons A and B had got specified instructions on how the supplier selection should be done. They also did a lot of the selection with the end customer which influenced these actions. Persons A, B and C didn't have instructions yet but they were charting this type of actions and the goal was better risk handling. All of the interviewees said that important things in supplier selection are quality and price, also fast deliveries came up as important point. Contracts came up with some interviewees and this was strongly connected to price, deliveries and preparing to risk situations. In supplier selection persons D and E pointed to risk rating and tools used in it and person A was developing a risk rating system for their purpose and B and C would also use these rating tools when developed. Usually supplier selection wasn't done only by using one factor, it was a combination of several different factors and according to the case the priorities in the selection are modified.

All the interviewees had been operating with component suppliers for wiring systems. They had all kind of components under their responsibility from standard goods to more

strategic items. The ones who purchased standard goods could negotiate better prices because there was more competition on the field, unlike the ones who purchased strategic items. With strategic items D and E had certificates that they had to follow them self as well as all the other parts of the supply chain. The growing business didn't yet have instructions but they were about to develop this area of their business.

The persons who had worked for a bigger operator had only a few suppliers for whom they were one of the biggest customers but they tried to get rid of them. They should only have a certain percentage of the production made for them. The growing operator was not aware of such of suppliers, but it was on the list of things they were going to investigate. The smaller operator, on other hand had, a few suppliers that produced some product for them that they could not get anywhere else. For the products of this supplier they had a calculator that made sure that the production did not stop even though there would come up some problems with suppliers. The bigger operator also had many such suppliers and they also had risk ratings done for them. They had the end customer doing supplier selection and it would help if there were more accepted suppliers. All of them saw the biggest risks connected to price and availability of components.

5.1.3 Risks in purchasing

The interviewees had all had problems with suppliers and deliveries. Most of the problems were about delays caused by various things. The interviewees told that the causes were strikes, problems in the supplier manufacturing and in the worst case the bankruptcy of the supplier. Material deficiency was also a big cause of delays. Even though such events always caused problems, anything too dramatic had not happened. Interviewee D stated that every time a delay comes to action it causes problems for them and their client. If the situation is worse it would make the whole production stop till more material would be managed to get and this always leads to costs. Most of the interviewees told that the problems in the other areas of the supply chain also caused problems for them and that it also affected their end customer. They expressed that some risks were predictable but not all.

When some risk is realized the first thing the interviewees do is to try to manage it together with the supplier and if needed more persons involved into the process. They also pointed out that every case is different and they have to be handled that way. The persons

who had experience of a bigger operator had a specified guide on how to handle these situations and those were used. The smaller, growing operator had planned to make a continuity plan and enhance their risk management plan. The goal is to ensure the continuity of their manufacturing, even though their supplies might have problems at their end. All of them had a minimum quantity that they should have in stock of certain component in case of some problems in the supply chain.

5.1.4 Possible risks in the future

All of the interviewees told that they saw current supplier risks as possible risks in the future also. These were realistic in their perspective, but they also mentioned other risks that could come true in the future. These risks differed from tsunamis to Brexit and almost all of them had some connections to geopolitics.

Political risks that they saw which could possibly affect their operating were strongly connected to world politics. There is terrorism, wars and as the unstable situation in the Middle East. Brexit came up as well. The reason these risks came up were that those can affect the price and availability of some components. Some of the interviewees said that the suppliers are good at handling these situations and that there is no big need for actions. It also came up that the risky areas should be acknowledged.

Economical risks are one of the most notable ones, because in the role of a subcontractor the price is very important and there is a lot of economic factors that affect the field. The increase of copper and oil prices would be a big risk for the price and availability of some goods. Depression came also up and it was considered probable.

Social factors consist also infrastructure, and roads are one of those. One of the biggest issues that mentioned were about delivery problems. These are likely at the moment and in the future and a risk like this could cause delays.

The interviewees mentioned nature catastrophes as a very likely risk and that the risks can be predicted but in most cases are not. The natural catastrophes that discussed were volcanic eruption, earthquakes and tsunamis. The causes for such risks were mentioned to be a risk in countries where there is a higher risk to happen something like it. The catastrophes would cause problems if it caused damage to the supplier's factory or the

transportation routes. This could be covered by the supplier other factories, but then there would be a problem of who would be prioritized to get the goods that would not be available as easy as before.

6 CONCLUSIONS

In this chapter the results are analyzed by using the theoretical framework as the layout. Theories and interviews are brought together and answers to the research questions are answered. The research questions are *how to predict possible geopolitical risks when supplying material to factories in Europe, how to deal if there appear some problems with the current suppliers and how to notice possible problems in time.*

6.1 Sourcing and purchasing

Within sourcing and purchasing operators are developing better risk handling tools all the time and those tools are developed for a need. All is combined to purchaser-supplier relationship where the supplier is considering its customer as an important operator who develops their product one step closer to the end customer and the purchaser takes its supplier as a worthy operator. There are also differences between old well-known suppliers and the new ones. There is always a need to get the products at a better price and get better risk ratings and this means that the suppliers are to be tendered once in a while.

The field of purchasing is under pressure because the operators are subcontractors and they need to focus on responding to their own needs alongside getting their own profit for the business. This means that risks should be minimized and taken into consideration when considering where to get the best price and how to negotiate timeschedules, effort put into supplier selection and details about the delivery. In the bigger company these tools and guidance of operations were explained in more detail and in the growing business these were soon to be updated to correspond to the current situation of their business.

In purchasing the need usually comes from the production unit that needs the components to make finished products to be moved forward to the customer. When a subcontractor gets a purchase request it can come from production, but the request can also be placed by a customer that has only one approved supplier and that means that the purchaser has also only that one supplier when purchasing products for that exact order. These products are usually the ones that are more technical and critical for the production.

The need can also come from the production. These products are usually non critical or then there have been some problems with the supplier and the reasons that have led to it

should be examined. The cause can be in stock management, but supplier problems are not unusual. The operating in these kinds of situations where the supplier has got problems with the delivery it is always critical and the products should be available in the manufacturing as soon as possible.

When thinking about what is important in supplier selection and the process of purchase, the main focus is on getting the deliveries and prices to be in harmony with the reliability. The factors to be taken into consideration are mainly price and deliveries, but also contracts and the effort and time that is needed in the process are things that should be considered. The main idea is that even though the factors of supplier selection are clearly visible and easy to think of the selection is always a combination of all of these and modifications are always made case by case.

Handling the process is challenging and purchasing should have the knowledge about the materials in production, availability of suppliers' capacity and the customer's request according the supplier. Information, products and finances should move smoothly in the process and they should be manageable. One of the reasons companies aim to get a better risk rating systems is that they want to secure the process.

6.2 Preparing to risks

Risk rating is an important part of purchasing. Things like unstable countries, unreliable suppliers and late deliveries are risks that receive more and more attention all the time. The countries with a big risk are defined by country risk maps and the sanctioned countries receive always more attention and sometimes it might be best to start looking for a new supplier.

The most effective ways to prepare for risks are safety stock and, if possible, having two suppliers for a product. This and clear by structured instructions that the whole unit follows make the observation of the whole process easier and everyone knows what they should do in a certain situation. The cases might differ from each other and not to all of those have step-by-step instructions on how to handle the case. Even though cases differ makes the instructions make the operating more logical and the process more efficient.

Suppliers who produced parts that could not be purchased anywhere else were more common than suppliers for whom they were the biggest customer. For these suppliers the risk rating is important, the whole production could stop if some difficulties appeared with the parts from a supplier like this. One way to prepare for these risks is to do the rating and a plan on what to do if the production is in danger to stop because of such suppliers and try to find a substitutive supplier. The interviewees said that those parts are usually critical components and that the best option for preparing would be that another approved supplier is also available. This might cause difficulties because the company is a subcontractor and they have to take customers' needs and wishes as a part of their operating.

The main thing when starting risk management is that it is important to know the problem, for example; *how to observe possible geopolitical risks and avoid them when having suppliers in Europe*. According to the problem the objectives should be clear; *to make the risk management more efficient*, but the objective is not enough as there should be a clear goal or vision that all of the employees should be reaching for. Making objectives to goals is a step towards a better resource strategy.

6.3 Risks management as an operative part of supplier management

Risk management is one of the most efficient tools when trying to build a competitive position against other companies in the field. The company makes its profit from sales but that would not be enough without safe and cost efficient purchases. Safety during the whole supply chain does have a huge effect on how the customers see the case company. To be a reliable subcontractor is the key to success. Good risk management is a part, of the reliability customers look for in a supplier. Risk management can be measured for example, with certificates. Supply chain management is necessary when all supply chain risks are measured. Today many companies approve only suppliers that share and operate by their values.

Almost all of the interviewees saw risk management as a tool that they would use in the future. They also pointed that they are improving risk management all the time. Risk management can give financial steadiness and reliability to the operations. This is important when thinking about the end user and consumer awareness. Suppliers need to get their deliveries on time to customers and that is why purchases need to be well planned. Safety stock is an effective way to secure the continuity of production and deliveries.

Alongside safety stock, supplier evaluation is an effective way on keeping risks low. It is always better to have a backup for the product that needs to be purchased. When there are more suppliers, it is easier to get the products if there appears problems with one. The production of wiring systems need different kind of parts. The non-critical items are easier to get than highly technical ones. There are suppliers who are the only ones who produce one item or are the only ones approved.

Based on the interviews it can be said that there are three main things to take into consideration when doing risk management. Reliability is the key to a good quality supply chain. It also gives a limitation to suppliers. There are certifications that are required from suppliers who operate on the field of wiring systems. Supplier selection needs approval not only by certificates, but also the end user. End users can have a major effect on the operations and therefore also suppliers. All of these things are somehow connected to suppliers. When they form the supply chain any weak part can harm the whole supply chain (Figure 16.).



Figure 16 Risk management

6.3.1 Future risks

The interviewees thought that the biggest risks in the future are most likely the same ones as the ones today. There came also up some risks that might have happen like nature

catastrophes and risk ratings of some countries. One of the interviewees said that when some event happened it is likely it will happen again.

Political risks were noticed only by some interviewees. Most of the political events or risks they saw as possible threats for their industry were Brexit and the risk of terror attacks. The case company is a subcontractor and it is dependent on suppliers, and on the other hand their customers are also dependent of them, which means that the case company is under pressure from two sides.

No one knows what Brexit will bring when brought to action in 2019. What is known now is that the value of the pound has dropped, but not as much as first predicted. The most notable effect to the field might be possible changes in the free movability of products and people. Now when shipping products from the UK to other EU countries there has not been duties to pay. The situation is dependent of how good agreements the UK and the EU will negotiate.

Terrorism was mentioned almost with all of the interviewees and it is understandable because of the many attacks which have taken place in Europe. If attacks will take place in flights or in traffic, it would have immediate effect on deliveries. Situations in countries where the attacks have taken place might be disorganized and therefore affect the case company factories or vendors.

Natural catastrophes were mentioned by many of the interviewees. Some mentioned the possibility that the 2010 kind of a volcanic eruption would take place in the future as well and that would cause trouble in the air traffic and the air carrier. The risk is possible since there are many active volcanos close to Europe and it does not take more than one eruption to cause problems in air traffic. Other risks that were mentioned as possible in the future were tsunamis. Tsunamis can damage a supplier factory and if the product they produce is critical to the case company there might be difficulties in finding a substitutive supplier and the competition for goods would increase.

Economic factors that was mentioned in the interview were mostly connected to the cost of goods they buy. The depression was mentioned as well with some interviewees and it has a remarkable effect on companies. When there is a big risk in investing it usually is left to wait for a better time if possible. The situation has got better then what it was in

2008 when the crisis started but as the interviewees pointed out a once happened risk have a huge potential to happen again.

6.4 Abstract

The goal with this thesis was to answer to the research questions; *how to predict possible geopolitical risks when supplying material to factories in Europe, how to deal if there come up any problem with the current suppliers and how to notice possible problems in time*. The study showed that Europe is quite safe, but different geopolitical events make the area unsteady. The biggest worries are connected to finance and possible price changes. The other directly geopolitical event is the war in Middle East that is causing massive migration to Europe. The geopolitical events consist also of natural catastrophes and infrastructural factors. Those are more transportation risks.

All risks cannot be predicted, but the procedure what to do if there appear a risks should be well planned. The risky areas should be noted and there should be another supplier to choose from. Other possible way to predict risks is to have two or more suppliers to one item as this way a stop of production would be prevented. Another risk management tool is to manage stock. It is especially important when purchasing critical items. Suppliers needs to be certified and their operating needs to be reliable. In supplier selection the main focus is on price, quality and delivery terms. These, alongside with certifications and end customer requests, are used when selecting a supplier. The facts are not always considered equal when selecting suppliers. It is a combination of all those areas and done especially to the case considered at the future.

If there should be problems with current suppliers it would be good to have another supplier that can deliver the missing items. The situations where the risks might happen can be anywhere. If natural catastrophes are located close to a factory, it is possible that it would affect also the supplier production. The current suppliers are usually reliable but there has to be a backup plan if were to happen something. In the worst case scenario the supplier factory would be destroyed but if it has another factory in a safe area it could be used. The only problem with this kind of an event is that the other factory might be unable to produce enough of items. This means those companies that are the most important ones to the supplier will be chosen to get the products. The other companies might have to pay a high price or they will be left without any items. This could be solved if the companies

got at least two or more suppliers to each item. That would make the purchases safer and therefore be a good risk management procedure.

The best way to keep up to date with of geopolitical risks and think about how they might affect to business. This could also include searching for information from risk reports and following sanction countries. There are risk maps which show how big a risk there is for a certain event. These maps are not enough without any procedures. When there is a supplier at a high risk area and other suppliers have not been found, it is good to take some action. Supplier selection should be started to get another supplier to supply goods alongside the current one.

6.4.1 Benefits and reliability of the research

The case company gets benefit of the PESTE analysis and the use of it in a research like this. The study has a good base to build an effective risk management system also considering other risks than geopolitical. Not only the case company benefit from this study, also other companies handling with similar problems can use it as a model when building their own system.

This study has answered to the main questions set for it and the interviews reached saturation. The interviewees were experts on the field and knew how to answer the questions with expertise. Their answers started to repeat themselves and therefore can be said that the study reached saturation.

6.4.2 Future research suggestions

The field of this study is quite a new and there are only a few thesis made about it. Geopolitical risks should be studied continuously, because the situation is changing all the time. One of the future research suggestion could be *Geopolitical risks when doing business with European countries*. The risks were now studied from purchasing point of view, but the risks can also appear in sales. The study might focus more on geopolitical scenarios and how to prepare for those.

Another future research could be the same topic with wider limitations, for example *Global aspect of geopolitical risk management*. This could give the topic a more global

view and focused only on the company view. The limitations could be actions inside the company instead of its customers or suppliers.

REFERENCES

- Arjan J. van Weele, 2010. Purchasing and Supply Chain Management. Hampshire. Cengage Learning EMEA
- Baker Michael, Hart Susan, 2007. Product Strategy and Management 2nd Edition. Harlow. Pearson Education Limited.
- BBC News. 2016. Migrant crisis: Migration to Europe explained in seven charts. Accessed 7.5.2017. <http://www.bbc.com/news/world-europe-34131911>
- Berg-Andersson, B. Kotilainen, M. ETLA. 2016. Pakotteiden vaikutus Suomen vientiin Venäjälle. Accessed 3.11.2016. <https://www.etla.fi/wp-content/uploads/ETLA-Muistio-Brief-45.pdf> Etna Muistio 45 2016 Viitattu 3.11.2016
- Canadian Supply Chain Sector Council. 2016. SUPPLY CHAIN DEFINITIONS. Accessed 24.5.2016. <http://www.supplychaincanada.org/en/supply-chain>
- Euroopan Unioni 2016. Perustietoa Euroopan Unionista. Accessed 3.11.2016. https://europa.eu/european-union/about-eu/eu-in-brief_fi
- Eurooppa Neuvosto. 2016. EU:n rajoittavat toimenpiteet Ukrainan kriisin johdosta. Accessed 4.11.2016. <http://www.consilium.europa.eu/fi/policies/sanctions/ukraine-crisis/>
- Eurooppatiedotus. 2012. Euroopan talouskriisin taustat ja kulku Accessed 7.5.2017. <http://www.eurooppatiedotus.fi/public/default.aspx?contentid=242190>
- Harle Vilho, Sami Moisio, 2003. Muuttuva geopolitiikka. Helsinki. Gaudeamus
- Huusko, J. HS. 2015. Euroopassa on nyt pahin pakolaiskriisi sitten toisen maailmansodan – ja se voidaan ratkaista vain Syyriassa. Accessed 3.11 <http://www.hs.fi/ulko-maat/a1440130669607> Viitattu 3.11.2016
- Iloniemi Jaakko, 2015, Maantieteelle emme mahda mitään. Jyväskylä. Docendo
- Kaasalainen, H. Tiede. 2010. Tulivuori, joka pysäytti Euroopan. Accessed 7.5.2017. http://www.tiede.fi/artikkeli/jutut/artikkelit/tulivuori_joka_pysaytti_euroopan

Kananen Jorma, 2013. Design Research as Thesis Research. Jyväskylä. JAMK University of Applied Sciences

Kananen Jorma, 2015. Opinnäytetyön kirjoittajan opas. Jyväskylä. Jorma Kananen and Jyväskylä University of Applied Sciences.

Kähkönen, V. HS 2017. EU:n uudet rajatarkastukset aiheuttivat kaaoksen Slovenian ja Kroatian rajalla – Schengenin ulkorajoilla syynätään nyt myös EU-kansalaisia. Accessed 5.5.2017. <http://www.hs.fi/ulkomaat/art-2000005171908.html>

Manners-Bell John, 2014. Supply Chain Risk Understanding emerging threats to global supply chains. Kogan Page Limited

Melin Kirsti, 2011. Ulkomaankaupan menettelyt vienti ja tuonti. Tammertekniikka/Amk-Kustannus Oy

Motoko, R. New York Times. 2017. Struggling With Japan's Nuclear Waste, Six Years After Disaster. Accessed 7.5.2017. https://www.nytimes.com/2017/03/11/world/asia/struggling-with-japans-nuclear-waste-six-years-after-disaster.html?_r=0

Murphy Paul R., Jr, Knemeyer Michael, 2015. Contemporary Logistics. Harlow. Pearson Education Limited

NATO. 2016. What is NATO. Accessed 1.11.2016. <http://www.nato.int/nato-welcome/index.html>

Näkki, M. 2016. Nato virittelee Itämeren alueelle ansalankaa – Sen toisessa päässä on Suomi. Accessed 3.11.2016. <http://yle.fi/uutiset/3-9014946>

Pejic, I. Watson, E. Lane, R. 2016. The Geopolitics of America's Military Presence in Europe. Accessed 28.1.2017. <http://www.globalresearch.ca/the-geopolitics-of-americas-military-presence-in-europe/5510426>

Ritvanen Virpi, Inkiläinen Aimo, von Bell Anders, Santala Jouko, 2011. Logistiikan ja toimitusketjun hallinnan perusteet. Helsinki. Suomen Huolintaliikkeiden Liitto Ry, LOGY ry

Rouse, M. 2010. Accessed 25.6.2016. <http://searchmanufacturingerp.tech-target.com/definition/supply-chain-management>

Rucker, P. Filipov, D. 2017. Trump orders ISIS plan, talks with Putin and gives Bannon national security role. Accessed 28.1.2017 https://www.washingtonpost.com/politics/trump-holds-calls-with-putin-leaders-from-europe-and-asia/2017/01/28/42728948-e574-11e6-a547-5fb9411d332c_story.html?utm_term=.1d8a53f6b889

Sakki Jouni, 2009. Tilaus-toimitusketjun hallinta B2B – Vähemmällä enemmän. Helsinki Jouni Sakki Oy

Sijoitustieto. 2015. Johdannaiset - Suojausta, spekulointia ja arbitraasia. Accessed 7.5.2017. <https://www.sijoitustieto.fi/johdannaiset>

Sipilä, A. 2017. Britannian korkein oikeus päätti: Pääministeri Theresa May ei saa käynnistää brexitiä ilman parlamentin lupaa. Accessed 28.1.2017 <http://www.hs.fi/ulko-maat/art-2000005058527.html>

Teittinen, P. HS. 2016. Kaikkien aikojen suurituottoisin kiristysohjelma leviää myös Suomessa – asiantuntija neuvoo, miten pidät tiedostosi turvassa. Accessed 7.5.2017. <http://www.hs.fi/talous/art-2000004884140.html>

The Bureau of Consular Affairs, U.S. Department of State. 2017. Europe Travel Alert. Accessed 6.5.2017. <https://travel.state.gov/content/passports/en/alertswarnings/Europe.html>

The European Union Agency for Network and Information Security (ENISA). 2016. Cyber Europe 2016: the pan-European exercise to protect EU Infrastructures against coordinated cyber-attack. Accessed 1.2.2017 <https://www.enisa.europa.eu/news/enisa-news/cyber-europe-2016>

Tilaus –toimitusketjun hallinta Digitalisoitumisen haasteet

Ulkoasiainministeriö. 2016. Muuttoliike ja pakolaiskriisi Euroopassa. Accessed 7.5.2017. <http://www.formin.finland.fi/Public/default.aspx?nodeid=49795&culture=fi-FI&contentlan=1>

Walker Russel, 2013. Winning with Risk Management. Singapore. World Publishing Co. Pte. Ltd.

Waters Donald, 2009. Supply Chain Management: An Introduction to Logistics. Hampshire. Palgrave Macmillan

World Economic Forum. 2016. The Global Risks Report 2016 11th Edition. Accessed 28.1.2017. <https://www.marsh.com/content/dam/marsh/Documents/PDF/US-en/The%20Global%20Risks%20Report%202016.pdf>

APPENDIX 1.

Ostajan tiedot

1. Kuinka kauan olet ollut tehtävässä?
2. Minkälaisia komponentteja hankit?
3. Mitä tehtäviä työnkuvaasi kuuluu?
4. Onko sinulla jokin tietty maantieteellinen alue, jolla toimit?

Toimittajavalinta ja hankintoimi

1. Mitä asioita painostat erityisesti toimittajavalinnassa?
2. Miten otat toimittajan tehtaan sijainnin huomioon valitessanne sopivaa toimittajaa?
3. Eroaako toiminta erilaisten komponenttien hankinnan suhteen?
4. Onko teillä toimittaja/toimittajia, joille olette suurin tai yksi suurimmista asiakkaista?
 - Osaatteko sanoa kuinka suuri osa toimittajistanne ovat tällaisessa tilanteessa?
 - Miten tällaiset toimittajat eroavat muista?
5. Onko teillä vastaavasti toimittaja/toimittajia, joilta tilaatte tuotteita, joita ette saisi muualta?
 - Osaatteko sanoa kuinka suuri osa toimittajistanne ovat tällaisessa tilanteessa?
 - Miten tällaiset toimittajat eroavat muista?

Hankinnan riskit

1. Millaisia riskitekijöitä olet kohdannut päivittäisessä työssäsi hankinnassa?
 - Ovatko nämä riskit olleet ennakoitavissa vai ovatko ne tulleet teille yllätyksenä?
2. Ovatko toimittajanne kohdanneet vastoin käymisiä, jotka ovat vaikuttaneet myös teihin?

- Millä tavoin ovat vaikuttaneet?
- Ovatko vastoinkäymiset aiheuttaneet suurta vahinkoa?

3. Kun olet kohdannut tällaisia vastoinkäymisiä, miten olet selvinnyt niistä?

4. Oletko muuttanut jotakin toimintatapaa vastoinkäymisten ilmennyttyä?

- Onko toimintatapoja muutettu koko organisaatiossa, vai onko se mahdollisesti ollut oma päätös?

Tulevaisuuden uhkakuvat

5. Osaatteko arvioida mahdollisia riskejä joita saatatte kohdata tulevaisuudessa tehdessä yhteistyötä toimittajien kanssa?

- Miksi uskot jonkin riskin mahdollisesti käyvän toteen?
- Miten uskot uhkakuvien toteutumisen vaikuttavan yhteistyöhön?

6. Uskotko että jokin organisaationne tai toimittajanne organisaation ulkopuolinen tapahtuma tai kriisi voisi aiheuttaa myös teille ongelmia?(esim. terrorismi, cyberuhat, deflaatio yms.)

- Miten uskotte näiden uhkakuvien vaikuttavan toimintaanne jos ne käyvät toteen?
- Uskotko että näihin olisi mahdollista varautua ennalta?