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# **Contingency Planning and Risk Analysis**

**Containerships Land OY**

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International Logistics

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### **Contingency Planning and Risk Analysis Containership Land OY**

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### **Abstract**

The Covid-19 pandemic proved to companies that they were not prepared for a pandemic. Logistics chains have proven to be exceptionally vulnerable during abnormal times. Creating contingency plans and analyzing risks that affect companies can help combat disruptions. This research studied the aspects of creating a contingency plan and a risk analysis. Relevant regulation, articles and books were studied alongside an interview. The result was a contingency plan that fulfils the Finnish regulators' requirements and provides Containerships Land OY with a functional plan to combat disruptions with a risk management analysis of their risks.

### **Keywords/tags (subjects)**

Risk Management, Logistics, Containers, Contingency Plan, Supply Chain

### **Miscellaneous (Confidential information)**

Appendices 1, 2, 3, and chapters 4,5,6 and 7 are confidential and removed from the public thesis. The basis for secrecy is section 24(17) of the Act on the Openness of Government Activities (621/1999), a company's business or trade secret. The period of secrecy is five (5) years, the secrecy will end on 1 May 2026.

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## 1 Introduction

Covid-19 caused an unprecedented crisis in mobility and connections (Kwon, 2020). The importance of preparedness towards disruptions in global logistics chains has been acknowledged during the crisis while the importance of risk analysis has further proved its importance. Companies have realized that setting up contingency plans to combat disruptions in logistics and production are the most effective way of countering natural disasters, piracy and terrorism as well as IT system risks (Lam et al., 2016). A preparation plan, also known as contingency plan, is defined by Merriam-Webster Dictionary as "A plan that is made for dealing with an emergency, or with something that might possibly happen and cause problems in the future".

The Finnish Transportation and Communications Agency has published a regulation which requires transportation companies operating in Finland to create a contingency plan (Traficom, 2020). The European union has adopted conclusions calling on the Commission of the union to take up the preparation of contingency plans for all European freight (European Council, 2020).

As seen from the Suez Canal accident of March 2021, a disruption in international container traffic can have a huge impact on the entire world. The estimated cost of a single ship, the Ever Given, getting stuck in the Suez Canal had an estimated impact of 10 billion dollars on international trade, causing fuel prices to increase as well as causing delays in delivery times. The world is already in a recovery state after the shortage of containers in Asia, further deepening the troubles international shipping has had during the Covid-19 pandemic. If the congestion of one canal in Egypt can disrupt the entire supply-chain of the entire world, it is important to look at what dis-

ruptions on a national level can cause to a transportation company. Contingency planning and risk analysis can help mitigate risks that are formed during crucial operations in the supply chain (Theo Leggett, 2021).

A contingency plan is a plan created for an organization that can be taken into use during a major disruption in day-to-day operations. Maintaining the capability of an organization to operate during a major disruption requires the organization to have a clear plan on who is responsible, what steps need to be taken to maintain operability and how to recover. An effective contingency plan has steps that go from implementation to operations during disruptions all the way to describing how to return to normal operations after the disruption has been dealt with. The plan's contents depend on the industry or sector the organization operates in (de Matta, 2014).

Risk management and analysis play a key role in logistics as the industry itself is prone to disruptions and fluctuations in global markets. Creating risk management plans proactively rather than reactively helps logistics companies survive disruptions and possible downtime in logistics service providers (Choi et al., 2016). Creating a functional risk analysis can help create a functional contingency plan.

The company this case study examines is Container ship Land OY (CL). CL operates in the container transportation industry and their focus is on moving containers on land, in Finland. They provide services that collect containers from the customer's requested location and then transport it to the preferred harbor. They operate under CMA CGM, by which they were purchased in 2019. Forwarding is outsourced to another company so CL acts mainly as a cargo operator.

## **Objectives**

This thesis will cover the aspects of creating a contingency plan as well as creating a risk analysis for CL. The contingency plan will cover the aspects required by Traficom's regulation "Valmiussuunnittelun järjestäminen liikennejärjestelmässä" [Contingency plan formation in the traffic system] (Traficom, 2020). The regulation will be explained in chapter 3 of this thesis. This thesis will propose a functional plan to ensure efficient operation of CL, during contingencies such as a significant reduction in workforce due to absences, telecommunications blackouts, or loss of power.

Research questions are the following:

**Q1: What risks do road transportation logistics companies face in Finland?**

**Q2: How can regulation help transportation companies prepare for risks?**

Company preparedness for risks and risk management has been examined through extensive qualitative research and interviews. Regulations were examined by reviewing relevant regulations, laws and recommendations by the lawmaker as well as interviewing employees of CL, who these regulations affect.

The final product of the thesis is a contingency plan created to fit Traficom's regulation 308489 (Traficom, 2020) and a risk analysis model alongside. The contingency plan will be presented as a separate document found in appendix 3 and the risk analysis model explained in chapter 6.

## **2 Literature review**

### **2.1 Risk management**

Enterprise risk management has gained significant academic and practical importance through legal requirements and international standards. These require companies to create active risk detection and counteractive measures to fulfil modern-day standards such as ISO 31000 (ISO, 2018). Risk management describes the process of a company creating an integrated process to detect and analyze risks for which counter strategies are then created. Due to high dependency on complex supply chains and the value created by them, classical instruments of risk management are no longer sufficient (Grötsch et al., 2013).

Supply chain risk management has become an objective since creating and maintaining resilient supply chains can prevent worst-case scenarios from happening. Proactiveness is believed to be the most effective measure against incidents. A company creating a plan for a contingency, no matter the probability of it happening, is more likely to stay relevant in its field of business if one were to happen (Tomlin, 2006).

“A firm is not limited to choosing a single tactic, and in many circumstances a combination of tactics might be the appropriate strategy for managing disruption risk.” (Tomlin 2006)

A combination of different risk management strategies will result in a agile and resilient organization. International companies, and ones that operate on the global market, must take their supplier's into consideration when managing risks. The supply of services and products to an international company's is vital to stay in business. Managing relations, creating strategies and working together with suppliers will create value for both parties while creating trust and continuity (Grötsch et al., 2013).

## 2.2 Risks in Supply Chain Logistics

Cavinato (2004) described the risks and uncertainties in supply chains as five differentiated concepts. Figure 1 provides visual representation of the five risk concepts and how they are inter-connected.

**Physical**, the flows and movements between firms, transportation, service mobilization, delivery managements, storage and inventories.

**Financial**, the flows of cash between organizations, investments, incurrence of expenses, settlements, accounts payable and accounts receivable processes and systems.

**Informational**, electronic systems, data handling systems, use and capture of data and market intelligence.

**Relational**, the linkage between the supplier, the organization and the customer, internal supply, all of which are appropriately managed for maximal benefit.

**Innovational**, the linkages and processes between organizations, customers, suppliers and resource parties required for discovering and bringing to market products, services and processes.

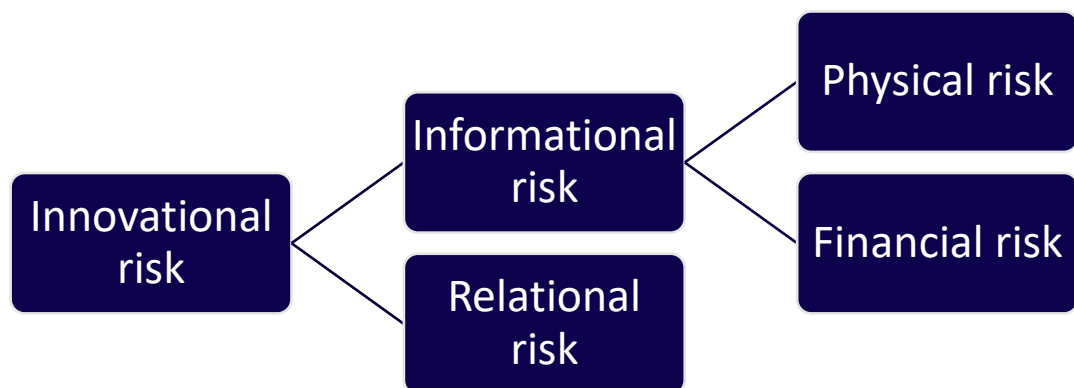


Figure 1. Risks (Adapted from Cavinato 2004)



The first risk to be assessed is the most traditional when looking at potential risks, the physical. This contains transportation, according to, warehousing, handling, processing, manufacturing, and other forms of utility activities. Risks here have to do with direct impact disruptions to transportation chains, destruction of goods, inability to access goods, manufacturing discontinuity (Cavinato, 2004).

Second, Financial risks consist of disruptions in payments, fraud, improper investments and unclarity of costs in the overall supply chain. Finances create the base for all operation within the company and between customers. Payments to and from the customer, supplier and relevant organizations should be handled securely and efficiently to maintain a steady cashflow. According to Nason and Chard (2018), stakeholders, regulators, customers are very interested in having plans to combat financial risk.

Informational risks withhold both physical and financial risk as these require informational systems, data gathering and processes to handle the data. The most essential risks involve the security, efficiency and access of these systems. Data breaches can cause permanent damage in loss of intangible capital, PR damage and loss of data. Poor IT systems can cause processes to be inefficient, neglected, and cause more damage to the process than the intended saving in resources (Cavinato, 2004).

Relational risks involve the inter-relational risks between stakeholders within the company and customers. These risks should be treated as end-to-end risks throughout the entire supply chain (Chen et al., 2013). Gaumer and Shaffer (2018) stated that "In an established business, relationships with valuable human resources, such as current customers, suppliers, and employees, must receive the attention they deserve to avoid negatively impacting hard-earned organizational brand equity.". We can gather that relations that an organization have are vital and must be dealt with accordingly, as dam-

ages in relational issues can cause long term harm in all aspects of the business, from acquiring customers and supplier to receiving permits from officials.

Investing in new technology, innovating processes and creating new strategies all involve innovational risk as all the previous aspects of risk in a supply chain are apparent. Innovational risks have often been seen as part of physical risk but more recently, innovations in relational and informational aspects have become more popular. Innovating something new can create significant added value to the company but with this value comes added risk (Cavinato, 2004).

### **2.3 Risks in Marine Logistics**

Looking at risks through a scope of **external-supply-chain-internal** view, can give us an understanding of what risks we can control internally, what is controlled by our suppliers and what cannot be controlled through our close networks.

“Mitigation of these maritime risks should first seek to incorporate a contingency plan.” (Lam et al., (2016). Contingency planning can be seen as the most viable method of combatting larger disruptions and maintaining operability throughout disruptions. Incorporating contingency planning into a company’s portfolio will prove to its customers, suppliers and stakeholders that it is prepared in the event of a disruption.

Each potential risk type listed in Table 1 implies different actions and is seen as a different type of risk due to how it can be handled.

Table 1. Marine logistics risk table (adapted from Lam, J. S. L. & Bai, X. (2016)).

Potential risk types	Potential risks	Description
External risks	Natural disaster	Environment risks, such as adverse weather (windstorm, tornado), fire and ice conditions in winter
	Piracy/terrorism	Piracy/terrorism
Supplier risks	Congestion in port	Capacity problems in port area
	Port state control	Port state inspections, vessel detention risk
	Technical down-time	Downtime resulting from periodical dry-docking and technical maintenance
	Operational risk	Ship collision or sinking, the condition of cargo-handling equipment and problems with document interpretation
Internal risks	Human resource management	Lack of skilled workers, carelessness and a lack of motivation among the workforce
	IT system	Cyber-attack, IT system breakdown

External risks can be seen as global issues that a company cannot combat on its own. A company can mitigate the damage of these risks when they inevitably happen by re-routing during natural hazards and to avoid areas with history of piracy or terrorism (Lam et al., 2016).

Supplier risks can be seen as risks that a supplier forms with its operative actions. Congestion, state control, technical downtime and operational risk can all be seen as concepts the customer cannot control but ones that are in the hands of another entity, such as officials, or operators. The risks however, can be minimized through co-operation of different stakeholders using the services, creating efficient processes and peer reviewing each others processes and continually improving upon them (Lam et al., 2016).

Companies operating in the maritime industry see internal risk as the greatest hazard. Having a lack of workers or downtime on IT systems will have immediate and possible long term effect on the efficiency of operations. HR risks can be mitigated by having a flow of skilled workers. IT system risks can be dealt through continuously reviewing and updating ERP systems and data handling systems used. At the same time, the risk type which is most controllable through contingency planning, is internal risks (Lam et al., 2016).

A company can prepare for possible external risks through forecasting and efficient operative planning. Reducing the possibility of internal risks can be done by creating contingency plans to combat risks with human resources or IT systems. Working together with supplier stakeholders will combat possible risks that the company might face due to inefficiencies or problems with operations (Lam et al., 2016).

## 2.4 Risks in Road Transportation

Trucks play a predominant role in today's lean and agile markets. Trucks provide logistics companies a way to supply customers with products in large quantities with vast geographical reach.

“Considering the importance of road freight transportation susceptibilities and the severity of negative consequences, practitioners, as well as researchers, have begun to explore the various facets of risk management in the sustainability of the business.” (Kumar Dadsena , Sarmah and Naikan, 2019).

In Finland the trucking industry moved over 250 million tons of cargo in 2019. Trucking is seen as the backbone of the country as it has a long history in Finland due to relatively low accessibility and poor rail-freight infrastructure. The reduction of risks in road transportation is seen be companies to be the most effective way to counter costs related to road transportation (Nygren et al., 2011).

In national road transportation research, it has been studied that the most efficient way of combatting road transportation risks is through planning and risk analysis. It has been estimated that 70% of road transportation damages could be negated through planning and only 30% of damages are unpredictable and therefore almost impossible to plan against (Nygren et al., 2011).

## 2.5 Risks in Container Shipping

Container shipping accounts for over 60% of world seaborne trade, accounting for 12 trillion dollars, with an annual growth rate of 4%. (Statista 2020). Marine trade accounts for 84% of all Finnish foreign trade (Finnish customs, 2020). This makes container shipping a huge portion of global logistics and any disruptions in operations will cause major delays in global supply chains. Looking at the Table 2 that there was a drop of 9% during 2020 concerning container freight in Finland, a huge amount of cargo going both in and out of the country.

Table 2. Annual container traffic in all Finnish harbors (Statistics Finland, 2021)

Marine Container Freight in Finland				
	<b>Tons</b>	<b>TEU</b>	<b>Tons, change in %</b>	<b>TEUs, Change in %</b>
<b>2017</b>	13 316 624	1 630 106	8,7	7,9
<b>2018</b>	13 185 757	1 596 690	-1,0	-2,0
<b>2019</b>	13 002 201	1 617 879	-1,4	1,3
<b>2020</b>	11 875 779	1 494 014	-8,7	-7,7

Container shipping involves multiple parties, including shipping companies, forwarders, terminal operators, officials, haulers, and multiple other parties. These different entities work together to create a long-distance physical process which can be incredibly complex. Various risks can affect this lengthy process and mitigating these risks should be employed as it is the most efficient way to reduce costs related to container shipping (Chang et al., 2015).

## 2.6 National Transportation Regulations

The Finnish Traffic and Communication Agency (2020) established a new regulation to administrate a contingency plan for road transportation companies. The regulation is enforced by Traffic law 503/2005. Road transportation companies play a key role in keeping the Finnish society functional during any circumstances. The regulation ensures that vital companies can operate during disruptions in day-to-day operations as well as during times when the Emergency Powers Act 29.12.2011/1552 is enacted. The purpose of the Emergency Powers Act is to protect the public, ensure functionality of national business, maintain order, basic and human rights, while ensuring independency and territorial integrity (Finlex, 2011). Disruptions in day-to-day operations cover situations where the financial functional ability is threatened by loss of turnover, a significant number of employees are absent, or during a large-scale telecommunications or electricity blackout.

The regulation does not only serve the company applying the contingency plan in the event of a disruption but ensures the supply of logistics services to customers. The Defense Ministry of Finland (2020) sees that regulating a consistent contingency plan is important and that the regulation will promote the co-operation between the Ministry of Defense and transportation actors.

Another relevant aspect that was discussed in the explanatory memorandum (Perustelumuistio, Traficom 2020) was that creating regulations for contingency planning helps authorities communicate with private businesses during disruptions.

One of the most relevant aspects of the Emergency Powers Act is the right given to Ministry of Transport and Communications to control the operations and property of private businesses during times when the Emergency Powers Act is taken into use (Finlex, 2011).

Driver rest time regulations were changed to allow for drivers to drive for prolonged periods during March and April of 2020. This was done to secure vital transportations despite the lockdown of spring 2020. This effected CL positively as drivers were able to drive more hours during a period of one week, resulting in more transportations completed during the time period. (Finnish government, 2020) The Finnish regulator can be seen to adjust its regulations in times of severe disruptions, or in preparation for one.



### 3 Research Methodology

Case study research is adapted to many different forms of research. In logistics research, the field is dominated by quantitative research through simulations, survey based research and mathematical modelling (Alex, Näslund, Jasmand, 2012). "Case study research is inquiry focusing on describing, understanding, predicting or controlling the individual (i.e. process, animal, person, household, group, industry, culture or nationality)" (Woodside, Wilson 2004). A case study can be considered a new way of looking at a process or a problem. Case studies use data to study a phenomenon in real life context. Taking a study approach such as case study research, gives a multi-methodical, broader and deeper understanding of what is being research (Alex, Näslund, Jasmand, 2012).

According to Tuomi and Sarajärvi (2002) the most common ways of conducting qualitative research is interviews, questionnaires, observation and gathering information from different documents. In this thesis, interviews, and information gathering was conducted to create a wholesome understanding of the topics at hand.

"In qualitative studies, researchers follow a flexible research design" (Marshall & Rossman, 2011, P.37). This is especially true when creating a product for a company that has not been created for, while examining the challenges and phenomenon around the product. Qualitative research normally follows a specific methodology, and possible research interest. However, specifics of the research evolve as the process of the research proceeds (Taylor et al., 2015). Following a specific research design and structure proved to be a challenge as the final product was created while conducting research at the same time.

Interviews were conducted with different representatives of the company, from managers to operative employees. The interviews were semi-structured to fit the design and timetable of the research. Tuomi and Sarajärvi

(2002) stated that the more formal and structured a research design is, the more structured interviews must be. In the case of this thesis this means semi-structured, as the focus of the research is to create a feasible contingency plan and a risk analysis.

Both group and individual interviews were conducted as different employees within the company wanted to express their views on the contingency plan through different ways. A team handling the operative side were interviewed as a group while the individuals that were working in managerial positions were interviewed individually. The request came from the company's end to have both group and individual interviews. The author of this thesis acted as a moderator in group interviews as this leads to a productive but dynamic interview (Brinkman, 2013).

The responses were documented through short sentences as the aim of the interviews was to create understanding of the topic, rather than how individuals react or express their feelings on the topic at hand. (Brinkman 2013)  
The number of interviewees rarely affects the quality of the research, according to Brinkmann (2013).

Translations can cause discrepancies in research if a large part of the information available is written in Finnish and translating the information can cause misunderstandings as not all concepts such mean the exact same things in different languages. If the interviewee and interviewer are from the same cultural background, a mutual understanding is formed (Pietilä 2010).

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## **Appendices**

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