

# DIVERSIFYING THE SEAFOOD MARKET OF FINLAND THROUGH INTERNATIONAL SOURCING

Master's Thesis

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### Abstract

Finland as a country has been trying to diversify itself on all aspects. Within the recent years, Finland has been taking in more and more numbers of immigrants each year from all around the globe. With that wave of immigrants comes cultural diversity in several aspects such as business conduct, art, technical advances and most of all, culinary. For the sake of culinary diversification, Finland has two options, one of which is to improve its own domestic production. However, such an approach would mean unbalancing the nation's delicate nature and tapping into unknown, unassured ingredient options. The second option for Finland is to increase importation intake. Since traditional importation markets have failed to suffice, Finland must seek its seafood elsewhere.

Due to its geographic conditions, which allow only the major land borderline with Russia and a limited land connection with Sweden and Norway, Finland is quite a way from most of the seafood producing regions apart from its traditional international supply sources, the North Sea and the Baltic Sea. That fact drives the price of imported seafood options many times above their original levels at the production bases. Before, with the quite simple Finnish cuisine and relatively small and prosaic population, Finland as a country has little needs for such expensive sources of food. However, with the current rise in cultural and population expansion, the seafood industry of Finland could really appreciate a more proliferate supply. The only problem remains is to seek to import at higher, more stable volume, and less cost.

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**Keywords** Seafood Industry, International Sourcing, Import, Export, Sourcing Seeker, Supplier, Supply Chain

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# Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
1.1	Research Motivation.....	1
1.2	Structure of the Thesis .....	1
1.3	Objectives of the Thesis .....	3
1.4	The Research Question and Its Sub-Issues.....	3
1.5	Key Vocabulary.....	3
<b>2</b>	<b>Literature Review .....</b>	<b>5</b>
2.1	The Seafood Situations in Finland .....	5
2.2	Methods of Cargo Transportation .....	14
2.3	Establishment of a Logistic Line for Seafood Products.....	17
2.4	Agriculture Importation Regulations of Finland.....	33
<b>3</b>	<b>International Sourcing Strategy .....</b>	<b>37</b>
3.1	International Sourcing Steps .....	37
3.2	Sourcing Optimization Strategies.....	42
3.3	Main Issues of International Sourcing.....	45
<b>4</b>	<b>Data and Methods.....</b>	<b>54</b>
4.1	Research Approach.....	54
4.2	Data Collection in Qualitative Research.....	56
4.3	Qualitative Research Designs.....	57
<b>5</b>	<b>Findings .....</b>	<b>60</b>
5.1	Factors Affecting the Choice of Transportation Mode for Seafood Products.....	60
5.2	The Advantages and Disadvantages of Different Means of Transportation from the Perspective of Finland .....	66
5.3	Priority Selection Criteria of Transportation Mode.....	71
5.4	The Most Probable Means of Transportation.....	72
5.5	Motivations for Finland to Engage in International Seafood Sourcing .....	76
<b>6</b>	<b>Discussions &amp; Conclusions.....</b>	<b>79</b>
6.1	Answering the Research Question.....	79
6.2	Reliability and Validity .....	80
6.3	Limitations of the Study .....	80
6.4	Suggestions for Further Research .....	81

<b>7</b>	<b>References.....</b>	<b>83</b>
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# 1 Introduction

## 1.1 Research Motivation

Finland as a country has been eagerly opening itself to the progress of globalization for the last decade. With such development comes new aspects of business and life. One of those is cuisine. Finnish cuisine has traditionally been simple, using mostly native products and ingredients as well as those imported from nearby countries and regions. Seafood has had certain standing within the Finnish cuisine traditionally. However, seafood consumption, too, uses features native species and offer limited variation of choices. With the progress of globalization, Finnish seafood cuisine, too, must be diversified. The diversification of seafood options in the Finnish market will bring about more choices for the people, cultural and cuisine development as well as economic profitability. One way for seafood diversification to be possible is import them from established regions. While Finland is rich in inland fresh water bodies, it has limited connection to major oceans and that greatly limits its ability to significantly diversify its seafood options within a short amount of time. On the other hand, importing from established seafood regions is rather straightforward, simple and more productive. Importing also helps avoid the costs of having to build seafood processing and culturing infrastructure of scratch, thus saving vast amount of investment and effort. Lastly, importing means Finland will not have to further exploit its delicate environment since no culturing or catching activities will happening within the Finnish border. With all reasons combine, importing seafood can serve Finland's need for diversification as well as is very beneficial on economic, development and enironmental aspects. To establish a function supply chain from established seafood regions to Finland in such a way that it could sustain a whole new economy is easier said than done, yet it is not impossible. This thesis will explore into the topic of seafood diversification for the Finnish market using imported sources and study how such a sourcing and transportation system for these new products could be established and operated.

## 1.2 Structure of the Thesis

Overall, the thesis will be divided into six distinct sections, each covering a main issue of the research paper.

The first part, I will shed the light into matters such as the objectives and structures of the thesis. The first part will also identify the main research question as well as sub-questions as well as a list of key vocabulary that would be used extensively in the thesis.

In the second chapter, I will review the works of previous authors concerning similar topics as mine. First of all, I will review information about the seafood industry in general on a global scale with its realities and characteristics. At the beginning, I will provide an overview in the current Finnish seafood industry. Then the topic moves on to introduce different transportation methods. After that comes an insight into the global transportation industry and lastly the second chapter ends with import regulations of Finland for agricultural products in general.

In the third chapter, I will bring about the topic of international sourcing. The chapter begins with providing an overview understanding of international sourcing. In a more specific approach, the chapter will first cover the steps to be taken when it comes to international sourcing, then strategies and ends with common issues of international sourcing.

In the fourth chapter, I will describe the methodologies used in my research paper. In addition, the fourth chapter will also feature my approach to the research, how I collect and analyze my data. I will also glimpse into my research problems and how I intend to come up with the most realistic and probable solutions to them.

In the fifth chapter, I will focus on analyzing with a focus upon the research questions. First, I will cover the main factors that need to be considered when choosing a mode of transportation for cargos. Then I will list down all prospective choices of transportation systems, investigating their pros and cons and picking out the best preference for hauling seafood to Finland. The chapter will end with discussing factors that would motivate Finland as a country to participate in international sourcing.

In the sixth and the last chapter, I will firstly provide short and condensed answers to my all my main and secondary research questions. Then I will discuss the validity of my research. Next will be about the limitations in range and scope of my thesis as well as the applicable situations and circumstances. Lastly, I will provide some suggestions for future research such that those who have the same interest in the topic can use to dig deeper into the issue and come up with more productive results or for more specific research approaches.

### 1.3 Objectives of the Thesis

For Finland to successfully transform its seafood industry, the market must meet these rough following conditions: (1) a stable and assorted choices of importation product options and suppliers, (2) an economical and effective supply chain and (3) a prominent customer base plus ever-increasing demand.

For the (3) condition to be met, there are generally two ways, either the market develop itself and the demand arises or the market providers come up with a way to entice and convince customers that a new need is eminent. Previous studies in the same matter have indeed come up with the conclusion that seafood demand in the Finnish market is increasing and Finland is a promising and welcoming market for foreign seafood products. With that out of the way, what left to be done is for condition (1) and (2) to be met, meaning new choices of seafood must be developed and a stable supply chain delivering those new choices to Finland established.

Thus, in this paper, I will dissect into seeking out the best course of action for the acquisition of new seafood sources as well as for the architecture and maintenance of a logistics line. The ultimate goal of the entire process is to come up with the most probable transportation solution for seafood products from other countries to be imported to the Finnish market.

### 1.4 The Research Question and Its Sub-Issues

With the thesis' objective identified above, the main research question is:

*“What is the most probable means of transportation for the transportation of foreign seafood products to Finland?”*

In addition, there will be two sub-questions for the research topic, which are:

*“The most important factors that lead to transportation mode of choice as in the main research question?”*

*“What are the motivation factors for Finland to participate in international sourcing?”*

### 1.5 Key Vocabulary

**Seafood Industry:** The industry that includes all sub-industries and activities that has any relation to culturing, gathering, processing, transportation, marketing and selling for

consumption purposes of marine species and products such as fish, crustaceans, squids, seaweeds and sometimes mammals.

**International Sourcing:** This concept refers to the practice of searching the global market for goods and services that originate from other countries. The main goal of this practice is to exploit the efficiency and diversity that the global market has to offer.

**Import:** The activity of bringing goods or services originating from a foreign country into a national market for commercial purposes.

**Export:** The activity of sending domestic products and services to a foreign market for commercial purposes.

**Sourcing Seeker:** The individual or organization that engages in finding seafood sources from foreign markets

**Supplier:** The individual or organization in a market that is the target of sourcing by sourcing seekers.

**Supply Chain:** A system of activities, agents, people, data and resources concerning the moving of products, services and materials from a supplier to a recipient.

## 2 Literature Review

Literature review will feature several theoretical issues concerning the seafood and perishable transportation. The first sub content of literature review will be dedicated to the seafood industry, a short introduction to the industry and an examination of Finnish seafood consumption characteristics and development potentials. After that comes an overview of transportation modes available for the movement of seafood and their practical applications. Then, there will be a detail analysis of factors that affect the establishment of a functional and abiding logistic chain from the sources of seafood to the target market of Finland. Lastly, since the main topic of the thesis concerns with importing seafood from foreign nations to Finland, the import/export regulations of Finland will play a major role in deciding what needs to be done to complete the last steps of the logistic line. Thus, the last part of literature review will be all about import/export regulations of Finland and of the EU, of which Finland is a full member.

### 2.1 The Seafood Situations in Finland

#### *2.1.1 An Introduction to the Seafood Industry of Finland*

The seafood industry, also commonly known as the fishing industry, is a sector of the larger food industry. The seafood industry is primarily concerned with the harvesting, farming, processing, transporting and selling of seafood products such as fish, maritime invertebrates, scallops, seaweeds and sometimes even maritime mammals. The end products of the seafood industry are diverse, ranging from whole, fresh fish sole in the local markets or smoked, canned products in an industrial scale (K-Group, 2017). Nowadays, seafood materials come from two primary sources: wild-catching (commercial fishing) and farming (aquaculture). Of the two sources, commercial fishing has been and is still currently the prevailing method of fish harvest. Still, due to environmental and consumption pressures, aquaculture is on the rise rapidly, becoming more relevant by the years. Figure 1 demonstrates the development in harvest volume of the two methods as below.

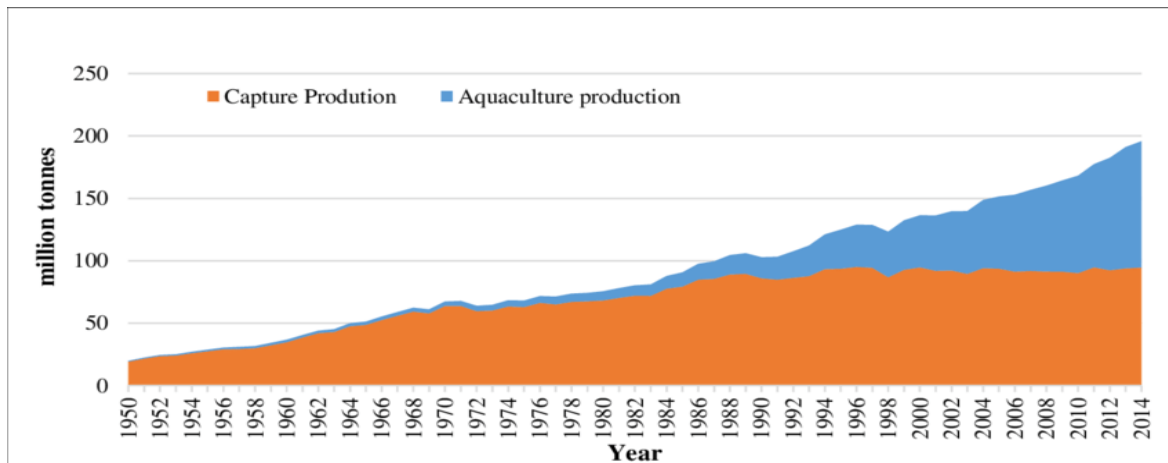


Figure 1: Harvest Volumes of Commercial Fishing (Capture Production) vs Aquaculture Production  
Source: FAO

In Finland, seafood is a common choice for meals and rising in terms of customer demand and choice variations. Before, domestic freshwater catches were the primary seafood supply for the Finnish market. As aquaculture took place, farmed species, especially Norwegian salmon and domestic trout, rose in popularity and have been dominating the market share ever since. Nowadays, while farmed salmon from Norway retains its domination status, lesser and newer choices from other parts of the globe have been making their ways onto the table of Finnish customers (K-Group, 2017).

### 2.1.2 Seafood Consumption in Finland

According to a study by LUKE (the Natural Resources Institute of Finland) conducted in 2018, consumption of fish and other seafood products in Finland is considerable in term of quantity. In 2013, per capita fish consumption in Finland reached 35.5kg, only slightly lower than the all-time high of 36.1kg per capita in 2007. The figure has mostly been on the rise ever since 1965 (18.9kg per capita). Such a trend is not surprising considering the fact that lakes dominate the Finnish landscape with about 187000 lakes all across the country. In addition, Finland is bordered by the Gulf of Bothnia to the East as well as the Gulf of Finland and the Baltic Sea to the South, the water bodies functioning as some of the most proliferate fisheries in the region. A more specific overview of seafood consumption rate in Finland can be seen in Figure 2.

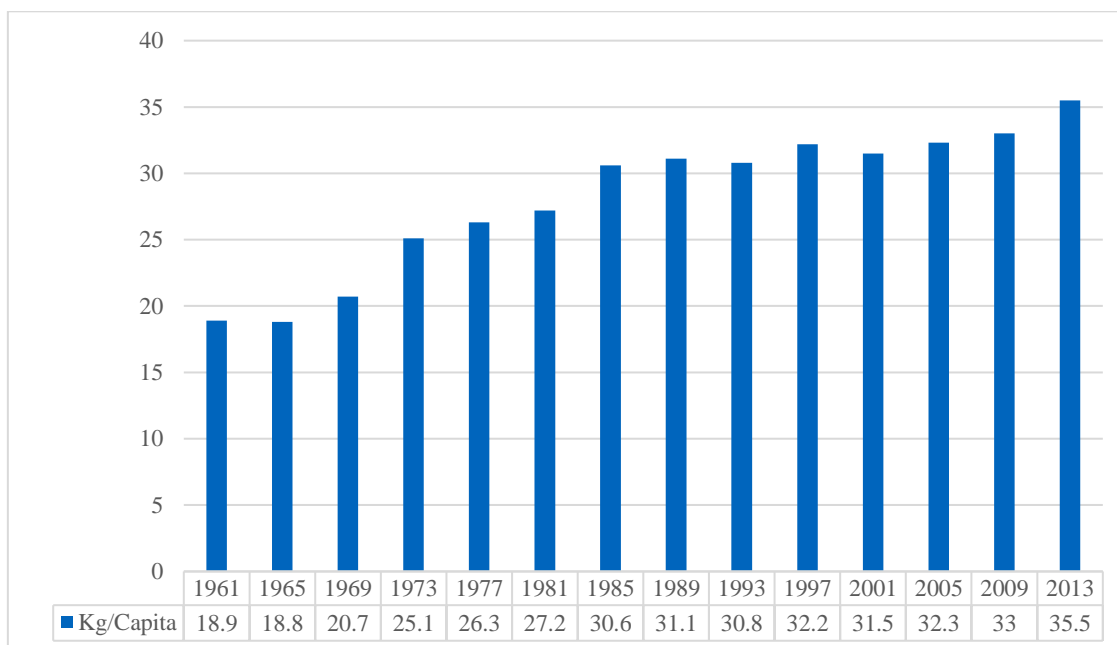


Figure 2: Seafood Consumption per Capita across the Finnish Population  
Source: LUKE

Traditionally, Finnish seafood consumption has mostly been about Baltic herring and inland domestic freshwater species. In the 1980s, farmed salmon and trout from Norway began making their way into the Finnish market and have been rising as one of the major fish supplies ever since, changing the eating habit and menu of Finnish consumers greatly. Nowadays, most fish available in the Finnish market today can trace their origin to foreign sources. During the 1980s, about half the seafood market supply came from domestic sources. Now, more than 80% of seafood available in the market are imported. The fact is that the consumption figure of Norwegian salmon alone exceeds all domestic fish consumption rates combined. While it can easily be agreed that domestic, fresh-catch fish will be a healthier choice for the consumer, the only stable supply of domestic fish come from Baltic herring and rainbow trout, limiting the development of cuisine and culinary diversity. What is more, even those two most prominent fish choices are no match for Norwegian salmon in term of value for price. The meatier and often regarded healthier salmon cuts can be processed into a large variety of dishes and are usually easier to prepare than the smaller-in-size domestic counterparts are. Other popular imported seafood choices include tuna (fillet and canned), pollock (fillet and frozen), shrimps (frozen) as well as the processed products of these species (K-group, 2017). Figure 3 illustrates the percentages of seafood consumption in Finland in accordance with seafood's original sources.

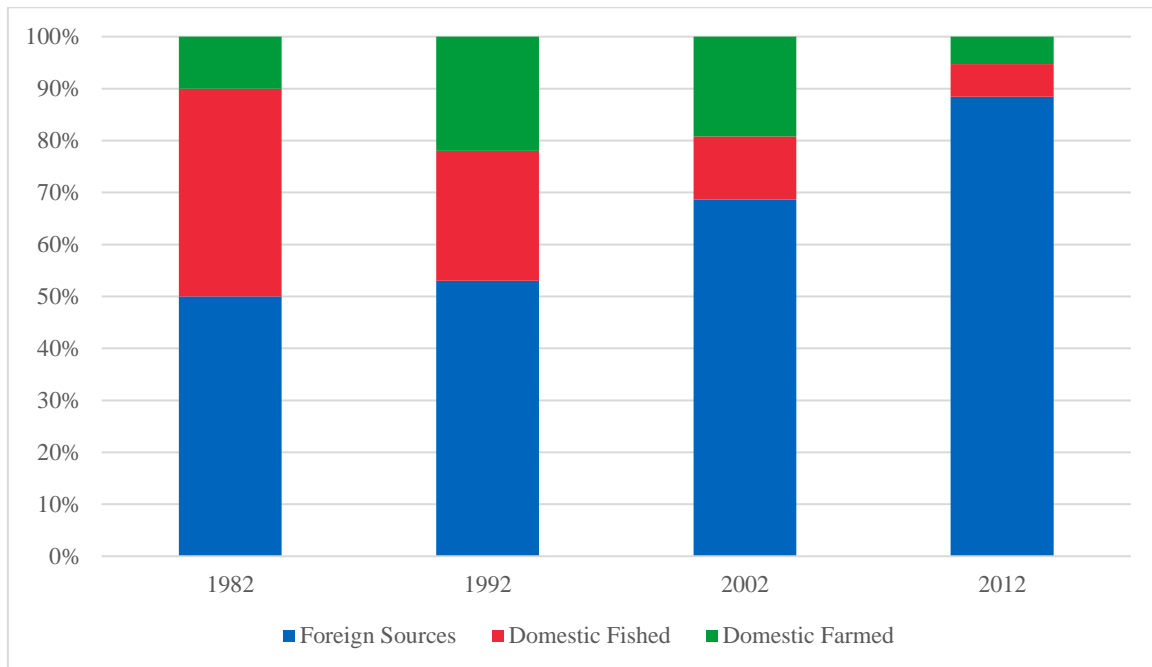


Figure 3: Consumption Trends of Seafood Products in Finland  
Source: LUKE

Despite some decrease signs for domestically produced seafood, it can be seen that the Finnish consumers are in general very fond of seafood products. As mentioned above, consumption per capita has been on the rise in the few past decades and the taste of Finnish consumers for more diverse seafood options has grown. According to a study conducted by K-group at the end of 2017 (a major Finnish corporation operating in the grocery, building, technical trade and car trade industry), Finns are now eating fish on a regular basis, about once a week and a greater than ever variety of fish are being picked by the Finnish consumers. While salmon is still by far the dominant choice, accounting for about 60% of K-Group seafood sale, and top sale items still coming from traditional options such as herring, sander and white fish, more and more choices of fish are being put on the shelf and customers are welcoming them with increasing sale on those new and more diverse options. Overall sale growth of seafood products made by K-group has also risen 12% compared to the sale figures last year (2016).

Interestingly, also according to K-group research the purchase pattern of Finnish consumers has suggested that Finnish consumers largely favor highly processed products such as filleted or smoked fish. Such products are characterized as easy to access, buy and prepare added with constant supply and standardized quality. Still, whole fish, mostly domestic freshwater species, still in great demand and has been showing signs of growth as health concern is in the rise. Considering domestic species consumption, the favorite

among Finns are vendace (muikku), pike, perch etc. as well as and seasonal crayfish. More information about the most consumed types of freshwater fish can be seen from Figure 4.

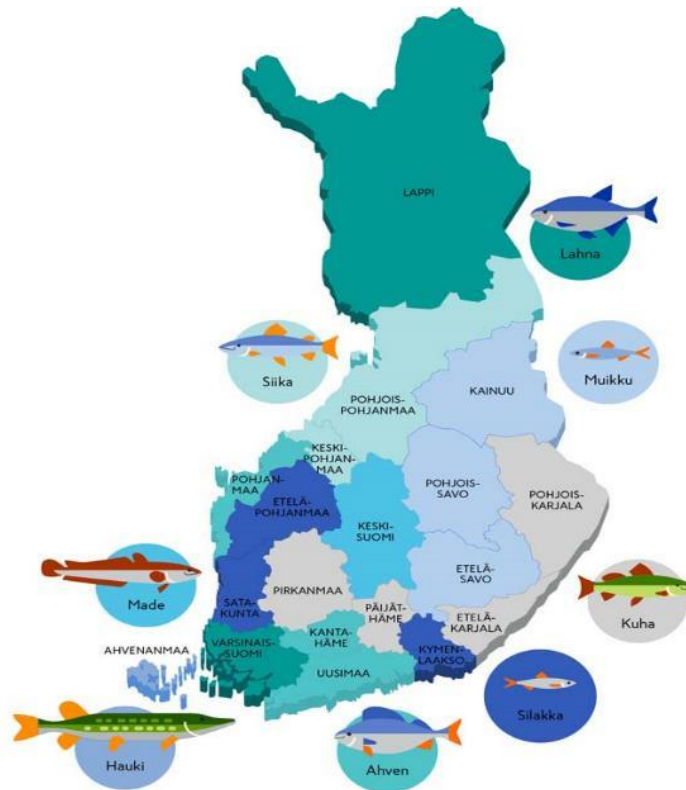


Figure 4: Finnish Favorite Types of Domestic Fish According to Regions  
Source: K-group

### 2.1.3 Domestic Seafood Production in Finland

Seafood production in Finland, as with many countries, comes from either wild catching or farming. Wild catching happens in both the inland freshwater lakes and the Finnish oceanic territories. LUKE, the Natural Resources Institution of Finland, records most of the data concerning the harvesting and farming of fish. Figure 5 shows a tonnage comparison between seafood production between wild catching and aquaculture.

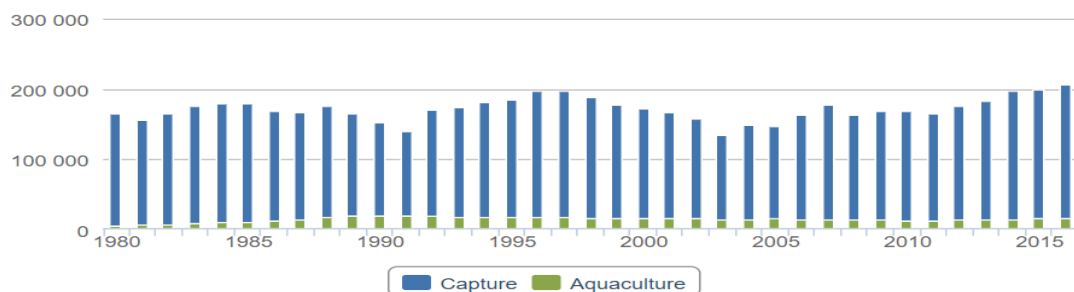


Figure 5: Volumes of Wild Catch vs Aquaculture Production in Finland (unit: Ton)

Source: FAO FishStat

### a. Inland & Maritime fishery

Figure 6 provides the data concerning the production levels between marine and inland water catches by Finland in the year 2016. It can be seen that the two figures are comparable at the beginning in 1980. However, marine catching grows dominant over the years and become the majority for most of the studied period.

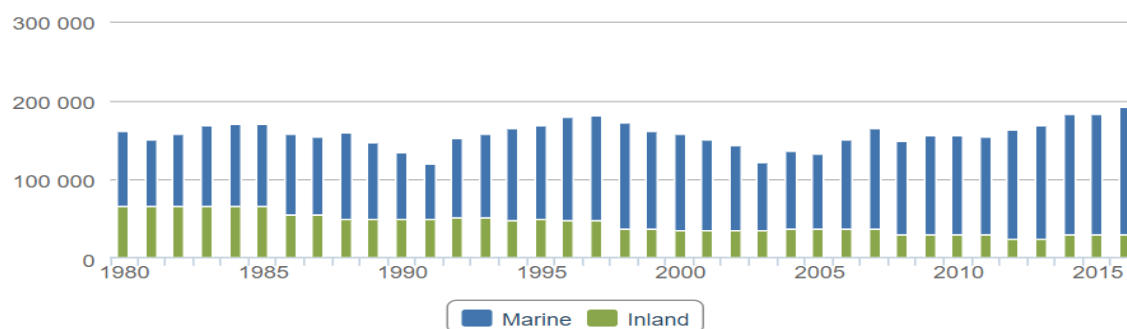


Figure 6: Volumes of Marine vs. Inland Wild Catch Production in Finland (unit: Ton)  
Source: FAO FishStat

According to LUKE, production levels yield from Finnish inland water reached 5.8 million kilograms (5800 tons) in the year 2016 and 6.5 million kilograms (6500 tons) in the year 2017. The most popular and most important inland harvest is the vendance, which accounts for half the total catch volume as well as about 42% total inland catch commercial value. Vendance also experiences the most stable catch volume ever since the 2000s. Next come pikeperch, the second most valuable inland species and crayfish, the third most valuable. These two species combined, while not significant in term of catch volume, account for about 30% of commercial value of all Finnish domestic harvests. Inland fishery activity usually happens in Finland's various lakes. Figure 7 provides detailed information about the quantity and euro values of freshwater seafood harvesting in Finland from 1980 to 2016.

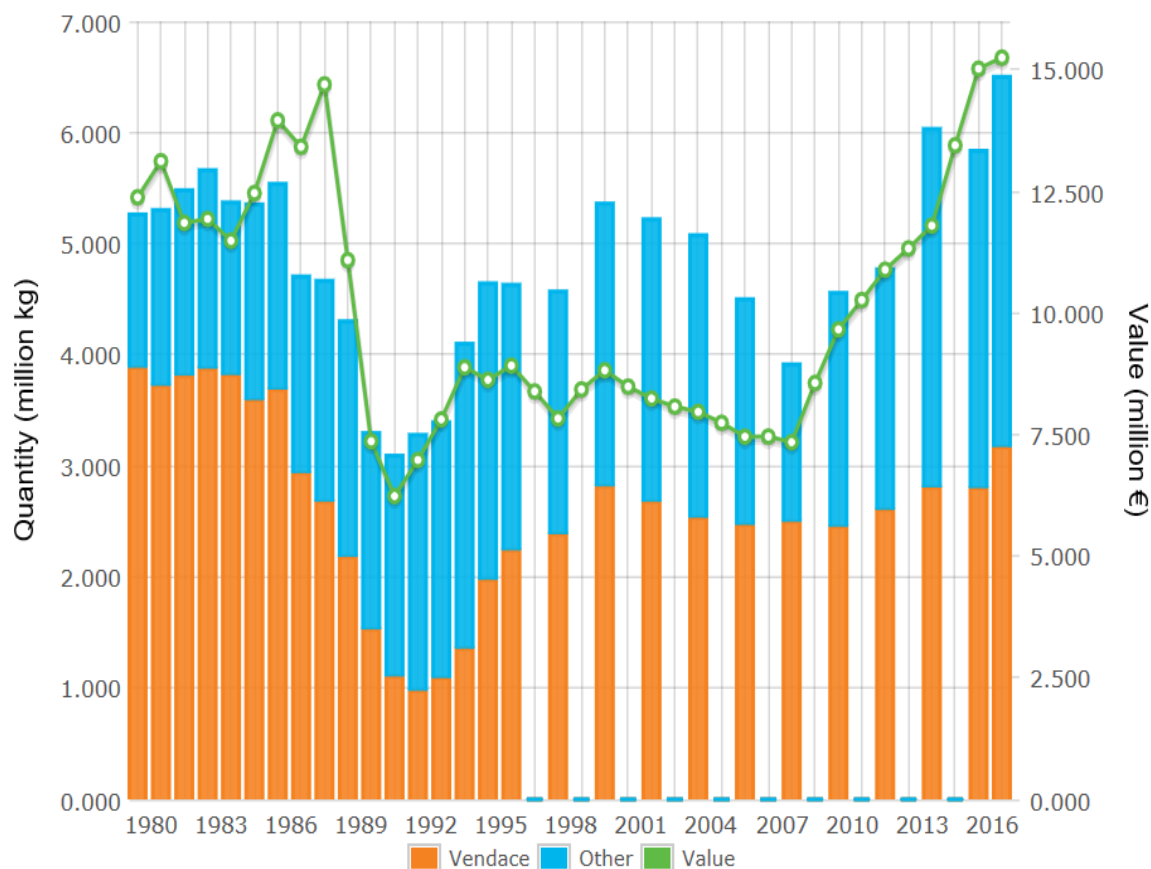


Figure 7: Freshwater Seafood Harvest in Finland  
Source: LUKE

In the year 2017 alone, Finland harvested 155 million kilograms (155000 tons) of marine seafood, with a total commercial value of 36 million euros. The majority of the catch volume, unsurprisingly, is Baltic herring at 134 million kilograms. Herring has always played a major part not only in the food industry but also in the animal feeder industry as well. A large part of the herring annual harvest are processed into livestock feeder to raise the Finnish stock of fur yielding animals. Other important catch from the Finnish water are cod, European whitefish and smelt. However, those types of fish most usually end up in foreign markets such as Denmark and Germany. During the past few years, due to preservation purposes, catching focus has shift from the Gulf of Bothnia to the Archipelago region in the Gulf of Finland as well as the Finnish Basin (LUKE, 2018). Traditionally, the Gulf of Bothnia has been the major fishing ground for Finnish fishing fleets. Figure 8 provides data concerning the quantity and euro values of marine seafood harvesting in Finland from 1980 to 2016.

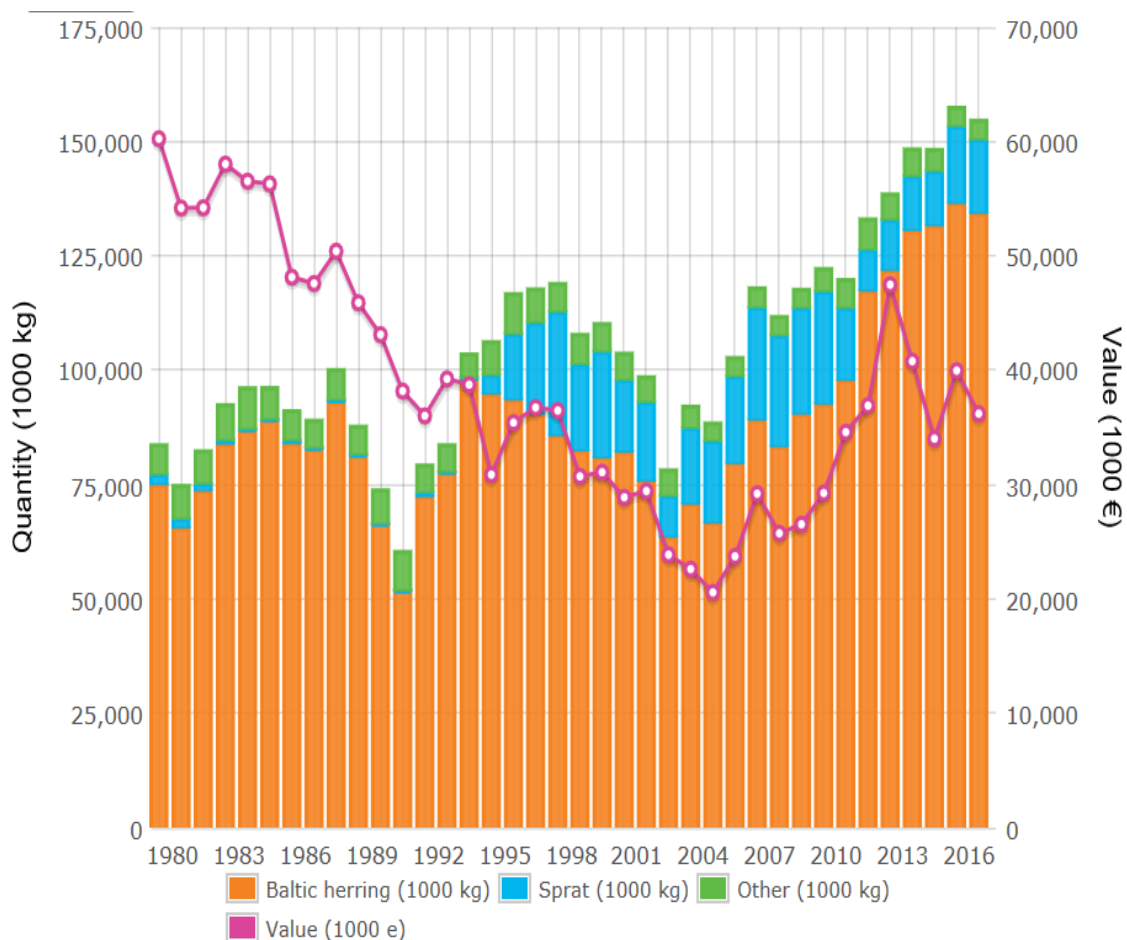


Figure 8: Marine Seafood Harvest in Finland  
Source: LUKE

### c. Fish farming

Fish farming in Finland began in the 1950s and boomed in the 1960s with rainbow trout being the most farmed species. The first farms were set in inland water bodies and later farming operations expanded into the Baltic coastal region. An interesting fact, in most other European countries, rainbow trout farming usually outputs portion-sized individual while in Finland, rainbow trout are fatten up to 1-3 kilo per individual. Still, farmed fish in Finland has been somewhat slacking behind in comparison to imported salmon from Norway due to harsh competition and the general better values the salmon brings about. Lately, there has been several attempts, with various degrees of progress and success, to rejuvenate the Finnish farming industry in term of technology innovation, species diversity and economic feasibility. It has also been stated that fish farming in Finland is more environmentally sustainable than traditional livestock raising are, as well as more economically profitable. Fish farming, apart from economic advantages, can also provide

healthy and controlled population to remunerate endangered species in the natural habitats (Finnish Fish Farmers' Association, 2018). Figure 9 shows the levels of aquaculture production in Finland in different water habitats from 1980 to 2015.

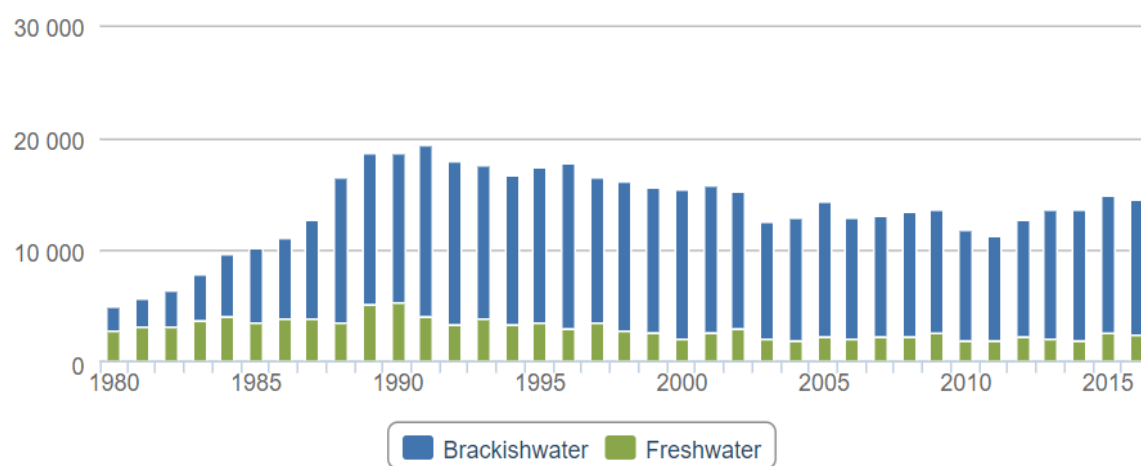


Figure 9: Volumes Cultured Seafood in Finland (unit: Ton)  
Source: FAO FishStat

#### 2.1.4 Current Seafood Importation Situations in Finland

On an industrial scale, Finland imports more seafood amount and value than it produces and exports. Most recently, in 2017, Finland imported about 116 kilograms of seafood products, scoring an increase of 15 million kilograms compared to the previous year 2016. The key importation partners of Finland include Norway, Sweden, Denmark and Estonia. Of all the partners, Norway has always been the most prominent. In 2017 alone, Norway has exported a total volume of 65 million kilograms of seafood products to Finland, 65% of which (42 million kilograms) are whole salmon. Seafood importation from Norway that year reached EUR 290.000.000, almost doubling the importation figures from the next three nations, Sweden (EUR 79.000.000), Denmark (EUR 29.000.000) and Estonia (EUR 19.000.000) combined. Of all the volume of salmon importation from Norway, about one third (15 million kilograms) were to be re-exported to other markets (LUKE, 2018).

Apart from those major, well-established and long-term export markets, Finland is also experiencing an influx of newer seafood variety from other small-scale and minor sources. Importation of frozen shrimp and prawn from Brazil, Thailand and Vietnam is on the rise due to cuisine diversification and rising demand for Asian food. Mollusk species such as scallop, snail and oysters are imported in small quality from France and Spain to cater for gourmet restaurants and household consumption. The pangasius catfish fillet, a

specialty Vietnamese export, is also a common sight in the Finnish market recently. Before, the pangasius catfish is a common importation item of several developed Western nations such as the USA, Canada and France. The flesh of the pangasius is generally tasteless and odorless, making it ideal to develop into a great variety of cuisine since it takes in almost every taste and smell of seasoning provided (LUKE, 2018).

Figure 10 provides a comprehensive glance at the tonnage and euro value of seafood importation activities from the year 2002 to 2016.

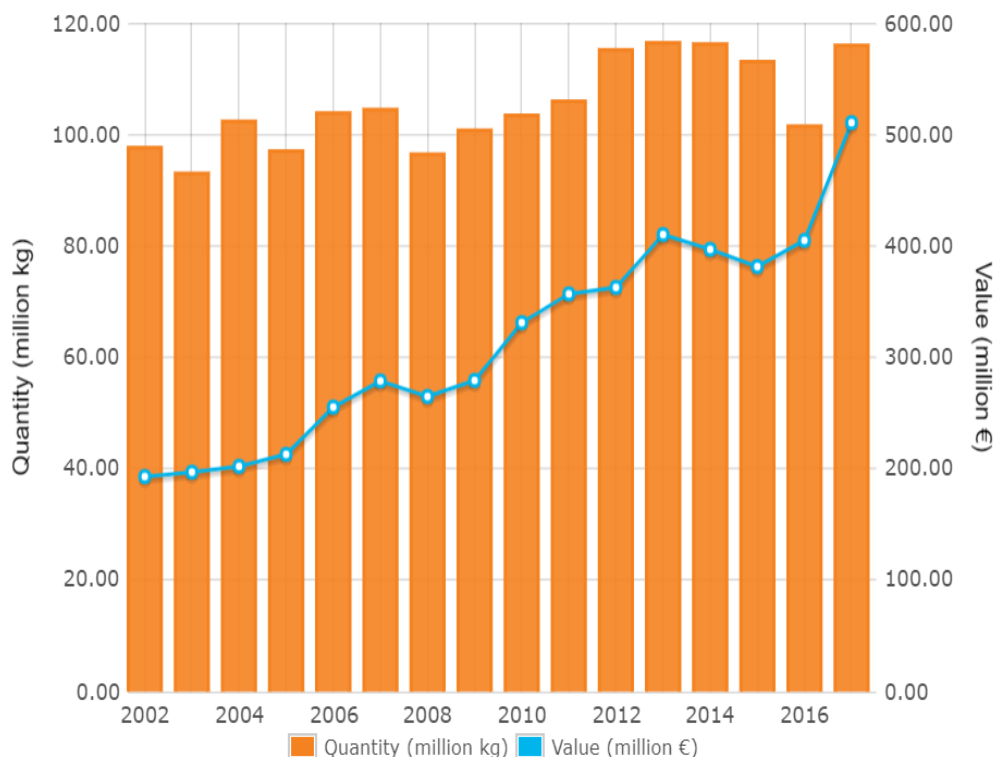


Figure 10: Seafood Importation in Term of Quantity and Euro Value  
Source: LUKE

## 2.2 Methods of Cargo Transportation

Transportation will be a major concern since harvested and processed seafood must be transported from the original export country to Finland. There are several transportation methods available for different effects and productivity scales, each method having its own advantages and drawbacks. To be able to come up with the best transportation method for goods movement to Finland, a study must fully comprehend the characteristics and potentials of each of all the methods.

### 2.2.1 Road

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Road transportation, probably the earliest means of cargo transportation, serves as the primary method of carrying goods from one destination to another. Before, roads are constructed to support un-motorized means of transportation such as walking, cycling and animal carts. Ever since the closing of the 19<sup>th</sup> century, road construction is in accordance with the waves of motorization that shaped the characteristics of the time. Road transportation employs a variety of wheeled vehicles and is ideal for short and medium distances. Road transportation offers a large degree of movement flexibility as wheeled vehicles such as trucks, vans and cars can carry goods independently across almost every paved road routes and are not limited to concentrated ports or pre-defined routes (except for certain overly harsh terrains or large vehicles that cannot move beyond paved roads). Road transportation is also among the most affordable means of transportation currently available (Bookbinder, 2012).

Still, road transportation has its own setbacks. Maintenance costs for both the road and the vehicles are considerable and fuel efficiency is not always the case. In average, trucks consume about 4 liters of fuel to cover a 95 km distance (for comparison, rail compartments cost about 325 km with the same amount of fuel). In addition, wheeled vehicles are not the best options when it comes to covering large distances due to several factors. First of all, most road systems around the world support speeding at 80-120km per hour. Road conditions are also not always in the best conditions, added with traffic congestion and human factors (accidents, fatigue, road confusion, unstable driving performance). In addition, wheeled vehicles are also unable to transport certain categories of goods such as fully assembled machineries and other vehicles (Rodrigue et al, 2009).

Still, it cannot be denied that road transportation is a vital, irreplaceable mode of transportation, considering the fact that a large percentage of human settlements are located inland without or with limited access to other means of transportation. The sole approach to transportations toward those locations is via roads. In addition, the level of flexibility road systems can bring about means that almost every single household or destination unit can be reached with trucks, vans or cars, meaning every sort of customers anywhere can be served logistically.

### *2.2.2 Railway*

Railway is sometimes counted as part of road transportation, providing the geographical similarity railway transportations have with road transportation. Traditionally, rather than on paved roads, rail compartments run on traced rail paths and are bound onto those paths.

Recently, with technological advances, rail compartments now have the expanded options of running on monorails (railways that consist of a single rail track rather than the original double rail track systems) or maglev (abbreviation for magnetic levitation, a double-track rail system that use magnets to maintain the balance of the train compartments and push them forward) (Rodrigue et al, 2017).

As of common knowledge, rail transportation is greatly limited in term of location reachability since the rail compartments are constrained, almost permanently attached to the railways that they run upon (Kasilingam, 1999). That also means that different neighboring countries with different railway infrastructures, especially gauge size, such as Russia versus China may have difficulty integrating railway systems. However, to compensate for such limitation, rail transportation is capable of carrying great amount of goods, almost unlimited in term of size and weight. Trains can cover great distances with average speed of 30-60 kilometers per hour depending on national legislatives and railway infrastructure. While seemingly slower than vehicles running on paved roads, trains do not generally suffer from problems that paved road vehicles have to face so the range of road coverage by train can be very much greater provided the same amount of time (Zhang et al, 2016).

### *2.2.3 Maritime*

Thanks to the physical characteristics of water and low friction effects, maritime transportation can be considered the most effective method of transportation, especially when it comes to large amounts of goods and great distances. Mostly, maritime transportation refers to shipping activities taking place in the oceans. However, maritime shipping can also include inland water bodies such as great lakes or rivers and channels. The most obvious advantage of maritime transportation is that freighters can carry unthinkable amount of goods with heavy and bulky goods that could not have been able to be transported otherwise riding comfortably on shipping lines. In fact, sea-faring cargo lines transport almost 90% of the global trade goods. Ships also do not experience congestion while at the open sea and thus can avoid delay and ensure timely delivery. That also means there are only a few cases of accidents, which further helps with avoiding delays and boosting delivery rates (Weinrit, 2009).

However, maritime shipping takes a lot of time and is not ideal for products that have short life spans such as perishable goods or quick fashion items. Shipping through the open sea also subjects the freighters to severe and extreme climate conditions such as storm and

tornados at sea. A lot of countries do not have access to the oceans and shipping goods via maritime means to such countries requires passing through the territories of others, which may be greatly hindrance during periods of political unrest or war (Golinska & Hajdul, 2012). Lastly, port facilities to support maritime shipping are among the most expensive to construct, maintain, repair and update. That surely cause additional costs to cargo lines. However, considering the volume of goods shipped on a single freighter, such costs may be possibly well compensated, reducing individual storage and processing costs for single to good items to a very low level (Zhang et al, 2016).

#### *2.2.4 Air*

Air shipping can be done either via free space on passenger airliners or via dedicated cargo planes. Air shipping takes advantage of the speed that airliners have to offer to transport high-valued goods and urgent items across the globe. There is, however, a limit to what an airliner may or may not accept. Obviously, air shipping cannot carry overly large and bulky items that cannot fit the cargo area. Due to the sensitive nature of air travelling, dangerous goods such as explosive materials, toxic agents and weapons also do not enjoy a straightforward air shipping process but have to rather undergo thorough assessment or rejected outright. In fact, the most common cargos that enjoy air travel are postcards, travels and food items since they are time-sensitive and thus require speedy delivery (Sales, 2016).

Despite speed and the level of ease air shipping has to offer, not all locations across the world can be reached by cargo airliners. All thought nowadays, almost every country is serviced by one or several international airports capable of receipting airliners. However, the majority of settlements and landmasses do to have access to airports of considerable sizes and thus still rely on other modes of transportation to ferry the goods from the airports to the destination locations (Notteboom, 2011).

## **2.3 Establishment of a Logistic Line for Seafood Products**

### *2.3.1 Harvesting*

As mentioned above in the thesis, seafood supplies nowadays come either from the natural environment or from controlled farm. Due to diversity in term of the number of species, their dwelling habitats as well as the technological availabilities of each region, the methods of catching and harvesting seafood are highly variable.

#### a. Wild Catch

Wild catching is carried out in fisheries around the globe, mostly in the ocean but several sizable ones also exist in lakes and rivers. Fishing ships of various sizes would roam established fishing grounds or into unchartered water to seek seafood sources. Ships can be miscellaneous, equipped with nests capable of catching a variety of seafood species or specialized (mostly multiple species of fish), designed to catch only to catch certain types of seafood (mostly king crab, tuna, whale, squid). Currently, only distant offshore fishing can yield enough production quality and profit to satisfy the demand of the global market. Thus, fishing ships often have to venture very far in search of new fisheries (Flick & Martin, 2012). Wild catching offers a diverse of choices as the number of species in the natural environment are numerous. That also means a great variety of catching equipment and methods. For a great majority of fish, netting is the answer. Long fishing lines also work on fish. Those lines tend to catch larger species with high commercial values such as blue fin tuna, sharks and mackerel. For crustacean species such as lobster and king crab, caging is the most common methods since they have powerful claws that can cut through nets.

Industrial fishing has before and recently raised environmental concerns across many countries. As seafood demand has been on the rise, catching methods and practices in some countries have been very indiscriminating, harvesting even reproduction and immature stocks. Since they thrive in the wild without any direct means of population and quality control, species are highly volatile in those terms and are highly susceptible to natural factors such as weather, seasons as well as other ecological balance factors (Baldwin, 2015). Still, nothing is more devastating to wild species population human overfishing, which could decimate a fishery to the extent of permanent extermination. Without a sustainable population to breed, several fish populations simply vanish from certain regions, forcing commercial shipping fleets to abandon those regions and search for new fisheries. The cycle of over-catching and population demise happens and repeats every now and then, leading to rapid decrease in biomass preserve and overall catching possibilities (Anderson, 2003). Thus, to ensure continuous catching opportunity, governments tend to impose catching quotas and heavy fines upon violators can be expected. However, in practice, some developing countries seem to turn a blight eye on the issue, reducing biodiversity and commercial activities of once thriving seafood regions.

## b. Aquaculture

Contrast with commercial fishing, which focus on catching seafood in the nature, seafood farming cultivate seafood species, both freshwater and saltwater species, in controlled underwater environments. Aquaculture can happen either in fabricated facilities or in existing natural habitat, depending on the raised species and geographical availability. The most common types of farmed seafood are fish. The most farmed fish are usually freshwater species such as carp, tilapia and catfish. Likewise, salmon is the most farmed saltwater. In aquaculture facilities, the fish stocks are raised from egg to adult fish in an enclosed production circle (Lucas & Southgate, 2012).

Usually, seafood species' younglings are hatched from controlled hatchery and then released into aquaculture sites for growing and fattening. They are kept in artificial enclosed areas, depending on the species. For example, large fish such as salmon are kept in pens, a series of nets or cages that cover an area of natural water, usually oceanic. Smaller, freshwater fish types are kept in inland freshwater ponds or in manufactured pools if the area is too dry to sustain a body of natural water (Asche & Bjorndal, 2011). Shrimps and crabs are also farmed in ponds, mostly near coastal regions. In any case, aquaculture habitats are highly regulated and controlled to make sure that the harvest within grows fast, reaches commercial standards and is free of diseases and infection. There also exist some forms of semi-farming. In the Mediterranean Sea and the Southern coast of Australia, blue fin tunas are netted in the while and moved toward underwater cages where they are fatten and cultivated later (Lucas & Southgate, 2012).

Apart from fish, crustaceans and mollusks species are also farmed, especially in Asia and Latin America where demands are high. Shrimp is the main crustacean farmed species with Thailand, Vietnam and China being be main producers and exporters, all accounting for about 75% of worldwide shrimp production, the remaining 25% being from Latin America, especially Brazil. Abalone is one of the most profitable mollusks to be farmed. Nowadays, natural abalone stocks have been so depleted or commercially prohibited that farmed abalone has become the main supply sources, mostly for the Asian market (Lucas & Southgate, 2012).

### *2.3.2 Processing & Preservation*

#### a. Processing

Due to the geographical distances and time nature of import and export, fresh seafood harvested from an original country cannot be shipped directly to Finland as spoilage and

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decomposition will surely take place. A highly developed and strictly regulated like that of Finland will not show any tolerance in importing rotten, unqualified products. The shipment will very likely be turned away at the expense of the exporter, causing not only financial loss but also loss of trust and chances for future business. In addition, the Finnish market is one that prefers highly processed foods. Supplying whole fish and seafood with guts, gills and inedible organs still intact will surely not appeal to the Finnish export enterprises, much less the customers. Therefore, seafood items must first be processed in several manners before being sent for exportation to Finland. Although different types of seafood and different customers require different processing approaches and practices, the framework as proposed by Boziaris in 2013 below is of the most common.

The first step of processing is cleaning. This is the most basic requirement when it comes to seafood processing. As industrial seafood is harvested in large batches, there is a high chance that physical contaminants such as dirt, stone or pieces of vegetation have made their way into the catch. Thus, seafood must first be cleaned to remove any of those possible contaminants. Usually, seafood cleaning is done with clean water only and the use of any cleaning chemical are strictly regulated or simply not allowed at all to reduce the risk of cleaning chemical residue on the seafood, which is very damaging to the health of the consumers (Bremner, 2002).

The second step is gutting. After facial cleaning, seafood, especially species of fish, will undergo gutting, or the removal of inedible parts and organs. For most species of fish, a straight line will be cut in their belly so that all the gut and internal organs would fall out clean. Another cleaning step will then apply to clean the inner abdomen of the gutted fish to wash away all the bodily liquid and any traces of organ left. In gutting, special care will be given to female individuals during spawning season so that the egg sacks, considered a delicacy in many parts of the world, can also be harvested intact. For some other types of seafood rather than fish, gutting also applies (Hall, 2011). The practice is commonly seen in the processing shrimp (removing the gut line on the back), squid and octopus (removing internal organs and ink sack) or sea cucumbers (removing guts). For mollusk species, gutting does not usually happens. In addition, several small species of fish such as the anchovy also do not undergo gutting due to their sizes making gutting almost impossible (Bremner, 2002).

Another processing step, while not always required in seafood processing is filleting & deboning. Fish fillet usually fetch very high commercial value in the market due to its ease of processing in the kitchen. Depending on the demand of the target market, fish may or

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may not be filleted prior to international shipping. In any case, filleting nowadays is done either with hand or on an automated filleting line. By filleting, the processor keeps only the best cuts of fish flesh while removing the bone, fins, gills and sometimes the skin. Still, due to the high price fish fillet may cost, several high value species such as salmon and halibut are not filleted on the spot but rather at the end sale points in the destination markets. Crustacean (shrimp, lobster, crab) and mollusk (shellfish, snail) species will usually be de-shelled. That is a process through which their hard outside covers will be removed and only the soft meat inside will be left. Again, due to the high price de-shelled products may cost, deshelling may be optional, depending on the market demand (Borda et al, 2017).

All steps of fish processing do not necessarily happen at the same place. Different steps can take place at different times and locations, depending on the processing approach and the nature of the catch. For example, deep-sea blue fin tuna is usually processed and preserved right on the boats due to the lengthy sea faring journeys to catch the fish. Several Japanese fleets even have canning facilities on board their enormous fishing barge. Farmed fish and near coast catches can be transported inland and brought into processing plants for processing within 24 hours of harvesting. They arrive at the processing facility while still fresh and sometimes even still alive (Boziaris, 2013).

#### b. Preservation

Preservation can happen at any stage during the seafood's life cycle, from catching to handling to the customers. Preservation is very important concerning seafood in general because most of them are highly perishable and will spoil very quickly if not maintained correctly. The main idea of preservation is to preserve and maintain the quality of the seafood while waiting for the next processing step. Excess produce is a common reason. Not every batches of harvested seafood can find a buyer immediately and the batches will need to wait for some time before an order is placed. Long transportation distances and times also require proper preservation approaches. This happens when the stock is harvested at one place and is destined to reach a buyer far away. By all reasons, seafood products need to undergo preservation at some points. However, not every method is applicable for all kinds of situations. Seafood preservation can be classified into short-term and long-term methods. Short-term methods are applied when the products need to be kept for only a short amount of time, usually when transported from the harbors to processing

plants or from sellers to buyers nearby. On the other hand, long-term preservation will take place when the destination is far away.

Short-term preservation includes either dry salting or chilling. In dry salting, seafood will be placed into open containers, usually boxes and trays. Then, salt will be used to cover the seafood, layers of seafood separated by layers of salt, in question to block away the seafood's contact with outside agents. The salt also helps kill or deactivate bacteria and fungi. This method most commonly applies on small fish species; different species of seafood will require different ratio of salt. When the batch reaches the next processing step, the salt will be washed away with water (Sen, 2005). Another method is chilling. This method is similar to dry salting. Instead of salt, ice will be used to cover the fish to restrict bacteria activities. However, the temperature of ice must be carefully regulated because water from melted ice will mess with the seafood's taste, flesh content and texture, reducing the quality of the batch (Alasalvar et al, 2011).

Long-term preservation methods are more diverse. In this study, the major four methods of long-term preservation will be discussed. Those are (1) dehydration, (2) freezing, (3) canning and (4) pickling. First of all is dehydration. The general idea of dehydration is to completely remove the water component from the seafood flesh. Two most common methods of seafood dehydration is sun drying and smoking. In the past, the difference between the two methods is due to the amount of sun light of different producing regions. In regions with lot of sunshine hours and intensity, the fish can be left under direct sunlight to let the water naturally vapor away. Smoking is performed in more foggy and dark regions where the amount of sunlight is not enough for effective drying. However, smoking nowadays is performed in large smoking facilities, using not traditional smoke but an agent called smoking liquid that create similar effects and flavors but in significantly less time. The liquid also creates better coloring quality and more consistent textures (Rahman, 2007). The second methods is freezing: In freezing, the seafood product will be lowered to below zero temperature. Usually, the seafood will be dipped into water. The coat of water will freeze first, forming a thin glaze of ice around the pieces of seafood and protect the flesh within from damaging agents as well as from the breezing temperature itself, which could cause the flesh to change color and texture. As a norm, the seafood flesh will not be left exposed directly to the breezing environment but will be stocked into boxes or plastic containers and packaging to further protect it (Granata et al, 2012). The third considered method is canning: While being one of the most costly preservation methods, canning is at the same time among the most effective. In canning,

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seafood will be chopped into small pieces and then immerse in preservation agents such as tuna in brine and oil or into seasoning sauce such as sardine in tomato sauce. Prior to sealing the cans, processors must sterilize the content to such an extent that almost no bacteria or fungi may survive and reproduce inside the container. Canned products are usually meant to be shipped away directly and need not undergo any other processing stages before reaching the end consumers (Rahman, 2007). Last of the long-term preservation method is pickling: The method preserve seafood by letting fresh products immerse in a glass jar a tin can with a calculated and regulated brine solution, composed of water, vinegar, salt and some flavor, where the seafood will transform, developing new taste and texture while being protected from spoilage agents. Like canning, the end product is not meant to be processed any further before finally reaching the consumers (Tiwari et al, 2013).

### *2.3.3 Packaging*

In the context of this thesis, packaging is the process through which finished seafood products are placed in certain types of containers or wrapping before being sent off for delivery. A single type of product does not necessarily require only a single type of packaging. Depending on several factors such as legal regulations, customer demands or material availability, a product can have one or several layers of packaging. For example, salmon fillet from Norway has usually been placed only in a single layer of Styrofoam box. However, lately, due to rising demand over health concern and the level of freshness, class A and B salmon fillet products are sealed in an extra layer of plastic bag to protect them from external environmental factors and improve their overall quality upon delivery to the customer market. As this thesis mainly focuses on international exportation of seafood, the packaging approach will also develop accordingly. Due to extended travel time and exposure to a variety of environmental and artificial factors, packaging methods for products bound for exportation to Finland must be meticulous and thorough to reduce any risk of damage or infection to the products while in transportation (Export.gov. 2018).

#### *a. General purposes*

As with many other types of food, in seafood, packaging is an essential part of the product life cycle. It is so important that a myriad of study, research and investment have been made concerning the topic in order that packaging materials, designs and methods can be constantly improved to aid increasing trade demands and new types of products. In

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general, proper packaging solutions can bring about the following results. An extensive guide to packaging is provided according to Export.gov in 2018 as followed.

The first purpose of packaging is to “Protect”. As products move around or set on display, they are exposed to many issues. Even in the strictest controlled environments, there are always contamination agents such as bacteria, dust particles and chemicals that can damage the overall quality of the products, not to mention physical damages such as shock, fire or collision. Seafood, especially, as a type perishable product, are even more susceptible to such damaging factors and thus require even stricter approaches to packaging. The need for packaging is even more relevant in an international transportation context since the seafood products will, in this case, be exposed to even more destructive factors, more impacts and more risks (Kerry, 2012).

The second purpose is to “Preserve”. Seafood in general are perishable and will not last very long if left uncovered in the natural environment. Given a local and domestic market setting, seafood may not need packaging since transactions can be made within a day and the quality could not have deteriorated too much within a short amount of time. However, when put into an international trade setting, seafood has to not only undergo lengthy transportation processes but also pass import and export regulation plus complicated paper work arrangement that could take days. In addition, there is, of course, natural damaging factors. Therefore, packaging is again of extremely essentiality. Those layers of cover would slow down the seafood’s composition speed and protect the products from damaging factors, thus ensuring that the products will reach the destination markets still in quality and conditions suitable for retailing and consumption (Moskowitz et al, 2009).

Then comes the fourth purpose, which is to “Contain”. Seafood products are high in water, fat and other liquid contents. Highly processed seafood items also contain traces of scrap tissues. Those contents, if left exposed would eventually spoil the surrounding environment. A clear example can be seen in local seafood markets where seafood are less covered and leakage agents from them often give the markets a very distinctive, fishy and sometimes pungent odor. If such leakage fluids managed to break, loose in a sealed and contained environment such as in the cargo fuselage of a plane or an enclosed container on a cargo ship. Such situations can be left undetected until the end of the journey and the leakage could have caused by then a lot of discomfort or even serious contamination. Therefore, packaging, apart from protecting the seafood products from external agents, also prevent seafood leakage to affect the outside environment (Otwell et al, 2008).

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Last but not least, packaging can also function to provide information. When a product is packaged, it may be hard for transportation processors and recipients to know exactly what is inside the container. This is especially true for solid container such as those made from carton box, dark-colored plastics or Styrofoam, those that completely block up the view of people handling the containers about what is inside. In addition, even when the contents are viewable, there are a lot of other types of information that a person simply cannot comprehend just by taking a look. Some of such information are weights, nutrition values, places of origins, packaging date and expiry date etc. Therefore, on the outside of the packaging layers, such information are usually provided, printed on large labels and stuck on visible areas of the containers. Such information will help cargo handlers, recipients and any other ones concerned (custom officers, quality control officers etc.) to acquire the needed information with ease (Sen, 2005).

#### b. General requirements

Nowadays, the forms of seafood products are almost endless. It is easy to pick up fish and other seafood types in all stages: whole, fillet, dried, smoked, chunk, fish cake, fermented, frozen etc. That means the types of packaging must also vary accordingly, each serving different types of products and purposes. In any case, despite their various distinctions, for packaging materials to fulfill their duties, they must meet several basic qualifications.

The first concern of packaging is food safety. It is the main duties of packaging layers is to keep the perishable product inside free from contaminants. It would not make any sense if the packaging materials could contaminate the food content in one way or another. Therefore, whatever material used for packaging, that material must not react chemically with any component of the content or break down into small pieces and get mixed up with the content. If such a situation happens, there is no other way but to discard of the entire content since it would be impossible to remove all alien agents that could have integrated at a molecular level with the food materials (Yam & Lee, 2012).

The second quality for packaging materials to possess is taste/smell neutrality. It is very important that packaging materials must not have any distinct taste or smell of their own. That way, when stored within the packaging layer for an extended amount of time, the food content will not develop any strange smell or taste, preserving the original taste and smell as the producers would have wanted. Strange smell or taste, if ever accumulated within the content, would definitely not be appealing to the customers, not to mention health issues and other concerns (Sen, 2005).

Third, Next required quality of food packaging materials are resistance capabilities. The first in concern is light resistance. Light-resistant packaging helps protect the content inside from photochemical effects that happen due to direct exposure to light. Light resistant containers reduce or completely block light transmission, which could cause chemical disturbances and reactions to the contents if not properly covered. A packaging material can be considered light resistant if it can reduce light wavelength to between 290nm and 450nm (Granata et al, 2012). Another form of resistance expected of packaging materials is air resistance. Oxygen has long been known to cause oxidization. Food oxidization can cause bad health effects to the human bodies. One of those are inflammatory conditions in the digestive systems. Oxygen is also a requirement for bacteria to multiply. Without oxygen, the majority of bacteria will become inactive, incapable of reproduction, many simply die off. Therefore, oxygen resistant packaging materials will help prevent these potential health threats from occurring (Kerry, 2012). Next is water resistance. This type of resistance characteristic in packaging materials works both ways: to prevent water from leaking in and dripping out. Water is the main environment for many chemical reactions to happen; having outside water, which possibly carries a great amount of unknown agents itself, leaking into seafood containers would cause an unchecked rate of different chemical reactions that would eventually render the food items useless. Water also facilitates the growth of bacteria, which could spoil, deteriorate or even intoxicate the food items. On the other hand, seafood products, especially those in fresh and frozen forms, usually contain a percentage of water and body fluid. Having those fluids dripping out of the container can contaminate other units and the surrounding environment in the same manner as external water leaking in (Yam & Lee, 2012). The last resistance capabilities in concern is odor resistance: The odor resistance characteristics also function both ways like water resistance. The packaging material must be able to block outside smells from entering the seafood content to avoid ruining its overall quality and smell integrity. In contrast, the smell of the seafood products must also not be allowed to leak out to the outside environment for the sake of comfort and health wellbeing (Moskowitz et al, 2009).

The fourth required characteristic of packaging is lightweight. In general, packaging weight is generally not a legal or technical concern when it comes to international logistics. However, while weight may not be too much of a concern in a local or domestic market setting, it is of great importance when it comes to exporting. First of all, international logistics costs are usually very high and export businesses must try to cut cost

by reducing the weight of their cargo to the lowest levels possible (Tiwari et al, 2013).. Thus, lightweight packaging materials such as plastic, Styrofoam and carton boxes will be more cost-effective than heavier materials such as wood, glass and metals. Second, cargos need to be exported in enormous quantity to ensure profitability on the basis of economy of scale. That means using unreasonable, heavy packaging materials will cause unnecessary problems and hardships for cargo handling operations, not to mention more serious consequences if accidents happen, and thus delay the entire export operation (Otwell et al, 2008).

Fifth, considering the commercial context of the study, the affordability of packaging materials is of great importance. Prices of the packaging materials, again, may not be a major factor in term of legal and technical requirement in international export and import activities. However, pricing directly affects the profitability of the businesses engaged in such import and export operation. The cheaper the packaging materials, the more profits for the businesses. That would also mean that shops, supermarkets and sellers can import for lower rates and can thus sell the products for cheaper prices in the retailing sector. Such a situation would eventually improve the competition capability of particular brands of seafood in a new market (Otwell et al, 2008).

For the sake of content preserving, the seventh required characteristic is temperature controllability: Generally, to prevent seafood products from spoilage while in transportation, seafood items must be kept in cold temperature levels. Such low temperature will prevent the speed of flesh decay primarily by slowing down or entirely shutting off the activities of bacteria responsible for the decomposition of organic matters. Since the existence of packaging layer is a rigid requirement, those packaging layers must be able to allow temperature changes to happen to the seafood content. Failure of such characteristic will lead to the seafood content's not being able to properly preserve and affect storage regulations (Robertson, 2016).

The eighth characteristic is determined due to the need for mass processing. Automation compatibility: Seafood export operations are big business and the volume of goods and cargo during a single transaction can be enormous. That means such export and transportation operations need to be handled with automated machinery to maximize time and productivity factors. In fact, export and transportation operations nowadays have reached such high volume that they would have been impossible without the help of machineries. Therefore, packaging must be designed and composed to match with machinery handling standard. One of the most common requirement is shape. Seafood

containers must be shaped in such a way that they can be stacked together and fit into large bales for easy loading and arrangement jobs. Marking individual containers with bar codes would also help ease the process. Bar-coded containers can be easily sorted through cargo classification and assigned to correct shipment units (Moskowitz et al, 2009).

Last but not least, while not economically or technically required, the recyclability of packaging materials is important for the environment. The fact that the packaging materials can be recycled or better, reused entirely is very beneficial. That would mean less waste material being discarded and less impact on the ecosystem's wellbeing. Considering the fact that most packaging materials being used in the world nowadays come from synthetic materials, it would be disastrous for the environment if such materials were discarded on an industrial scale (Robertson, 2016). Using recyclable materials could also help exporters gain trade favors from recipient countries, especially a nation that cares a lot about environmental issues like Finland.

#### c. Modified atmosphere packaging (MAP)

MAP is a packaging method widely used in the food processing industry. The basic idea of the method is to enclose perishable food items in gas-resistant containers, filled with low-temperature gases and sealed off. The cold gas, while trapped inside the containers, will retard the decomposition process of the perishable items. MAP is most used in preserving small portions of fresh products such as fish fillet, chunk flesh, mollusks and small crustaceans. CO<sub>2</sub>, O<sub>2</sub> and N<sub>2</sub> are the most common gas used in MAP. They are all useful in prohibiting the growth and activities of unwanted microorganisms. CO<sub>2</sub> is the most commonly used gas in the seafood industry. O<sub>2</sub>, while less common, is used to preserve fish with red meat such as tunas due to its ability to preserve not only the freshness but also the color of the flesh. N<sub>2</sub> has similar functions as O<sub>2</sub> but will be used as a filler gas in more complex cases to reduce the oxidization levels of the food content (Fellows, 2009).

#### d. Vacuum packaging

A well-known food packaging method, vacuum packaging make use of water and air resistant packaging materials to prevent such matters from entering or existing the packaging barriers. After the content has been processed and inserted into the packaging layer, air will be removed under vacuum and the package sealed. As the air has been removed, bacteria and fungi will have little sustenance to live and multiply on, thus slowing the decomposition rate of the content inside. Removing oxygen from the content

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also reduces the chance and rate of oxidization, maintaining both the color, odor and taste of the content (Otwell et al, 2008).

Vacuum packaging can be used to preserve almost any kind of seafood products, from fresh cuts to dried products. However, products that are meant to be reprocessed later after reaching the destination country do not usually undergo vacuum packaging due to the waste of the packaging materials involved. It makes little sense to vacuum a product into a plastic layer just to cut the layer later and re-vacuum the product into another plastic layer (Parry, 2012).

#### e. Active packaging

Active packaging is a relatively advanced form of packaging used in the food industry. The technique achieves better product preservation time and less deteriorating effects by introduction active agents that could intake or release certain compounds in gas form. One of the most basic form of active packaging is the introduction of moisture absorber in sealed packages to reduce the level of moisture in the content, which is known to speed up bacteria growth and affect quality. Nowadays, more active packaging approaches have been introduced such as O<sub>2</sub> and CO<sub>2</sub> scavengers, which actively seek and absorb those gases, reducing their presence and effects on the content. Bioactive packaging has also been studied and applied, containing substances that are either integrated in or placed in addition with the packaging materials themselves to reduce bacteria levels (Coles et al, 2003).

### *2.3.4 Transportation*

#### a. Mode of transportation

For perishable products, almost every type of transportation method available nowadays (sea, air, road, railway) can be utilized. However, depending on specific requirements and conditions on specific case, the mode of transportation of choice may vary. Air is definitely the fastest method as well as the most costly option. Railway and sea transportation are both significantly more affordable but are also very much slower and subjected to strict port and rail facilities. Road transportation is the most agile of them all, being able to reach almost everywhere. However, there are simply too many risks and possibilities involved with road transportation, not to mention the relatively small cargo volume that can be transported via roads at the same time (Rushton & Walker, 2007).

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#### b. Timing issues

For seafood products, perfect timing is everything. While it is true that some seafood varieties can be kept for a very long amount of time and thus do not require immediate shipment. However, a great majority of seafood need to be consumed fresh so as little time as possible should be spent on both processing and transportation for the sake of fresh delivery to end consumers. For that to be possible, several concerns must be bypassed. It even makes sense to allow for some extra costs so that the seafood shipments in concern may arrive as soon as possible no matter what (Ryan 2013).

#### c. Geography

When it comes to geography issues, the main concerns often target: (1) the distance between the country of origin and the country of destination, (2) the transportation facilities available to cover the route and (3) the ease of access to such facilities. Such factors will greatly determine which means of transportation to be used in each case. As mentioned above, for seafood products, the less time it takes to travel, the fresher the seafood that reaches the customers. Therefore, time matters should be given authority. Rugged terrains should be bypassed as they will take more time to cross. Risky routes such as over volatile oceans or ranging mountains should also be avoided if possible even when crossing those offers lower transportation price (Ryan, 2013).

#### d. Overall quality

The responsible parties must be able to monitor the products' quality throughout the entire transportation operation. They must make sure that no rancid individual product unit can make it into the entire batch. Unlike other types of goods, where a faulty unit does not affect the quality of others, seafood are perishable goods and a single rancid or contaminated unit can ruin other product units as well. Therefore, there must be quality control mechanism and assurance in each and every step across the transportation route to weed out any defects, predict unseen problems and prevent serious spoilage scenario from ever happening (Waters, 2007).

#### e. Hygiene maintenance

As perishable products such as seafood carry high risk of infection and contamination, carriage vehicles and compartments that are used to transport them must be thoroughly and systematically cleaned, deodorized and sterilized. This is to make sure that no lingering

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bacteria colony or chemical residue is left behind to spread to taint future cargos or spread unchecked to wherever the carriages will go later. For disinfection purpose, spraying water alone is not enough. A combination of regulated cleaning solutions plus water spraying before and after chemical application is the relatively safe and complete approach to hygiene maintenance (Thompson, 2002).

f. Temperature Control

To impede bacteria activities and heating effects on seafood, the temperature within seafood carriage compartments must be kept stable at cool temperature, the exact temperature level depends on different types of products. It is also worth noting that when left insufficiently controlled, the temperature within the seafood can rise very quickly without showing any obvious changes to be observed by the common eyes. Yet, bacteria and rancid effects take place very quickly pass the safe cooling point. Therefore, carriage compartments must have adjustable air conditioning systems to maintain the inner atmosphere at a desired temperature. One exception is air travelling. The normal temperature during air journeys in the sky is low enough to keep seafood sufficiently chilled. However, during airport storage and transportation to and from the airliners themselves, there must be suitable facilities (usually cold rooms) to maintain the desired temperature (Hyard, 2014).

g. Trade embargo

In normal political conditions, goods and vehicles with proper documents and in acceptable conditions would pass through national borders relatively easily. However, political tensions are quite common and trade embargos soon follow such tensions. Trade embargos will create situations in which a common transportation route is closed unexpectedly, leaving goods and vehicles stranded or struggling to seek alternative routes. While countries nowadays are reluctant to impose trade embargos, it is worth preparing in advance for sudden situations. For example, in 2017, several Gulf countries placed an embargo upon Qatar, rendering Qatari airliners inadmissible to the airspace of those countries. This affect commercial air routes that usually pass through the UAE on the way to Qatar, forcing them to re-route over the Iranian airspace, adding a few hours to the total travel time. While there is effectively little to nothing seafood export businesses can do to remove a trade embargo, they can closely monitor political issues and embargo status to

devise new shipping schedules and itineraries to salvage the situations as much as possible (Voortman, 2004).

### 2.3.5 Goods Reception at Destination

#### a. Custom Clearance

Except for shipments originating in other EU countries, all goods that reach the international border of Finland must pass through custom check. The importer client (the Finnish company that orders and accepts the cargos) usually has the exporter (the foreign company from where the goods originates) perform custom procedures. The exporter, in turn, will employ a custom broker to provide such services. A custom broker company is one that is knowledgeable of custom regulations, procedures and requirement of the destination country. The broker will prepare all the needed paper works and forward them to Finnish custom authorities to process. In effect, the general duties of the broker is to represent the actual owners of the cargo, provide custom advices, pay custom duties and ultimately, make sure that the cargo be released from custom and forwarded to the importer. Figure 11 describes the steps that goods must move through to be considered admissible to Finland.

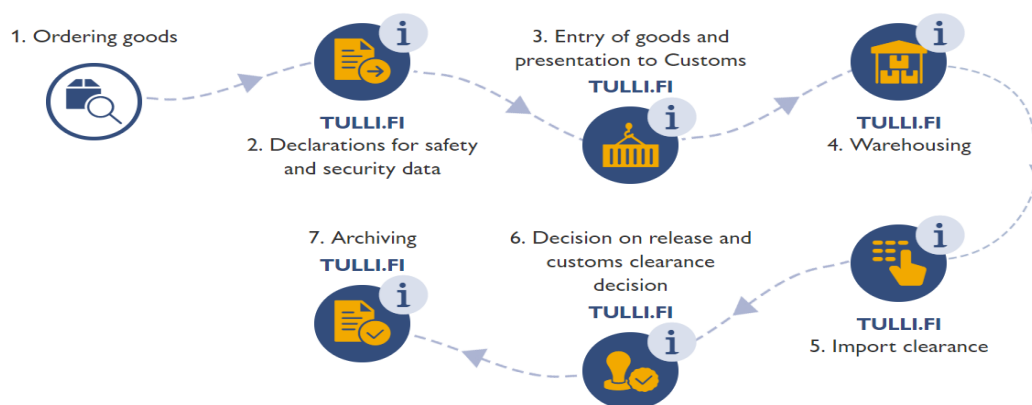


Figure 11: Custom Procedures of Finland

Source: Tulli.fi

#### b. Transportation to Importer Client

Once the cargo has been released from custom, it must be taken to the warehouse or other premises of the importer. This step is quite simple and straightforward. It can be done by the importer itself, which usually has a transportation fleet of its own. It can also be

contracted by the importer to be done by some other companies, as long as the cargo reaches the importer in the end (Tulli, 2018). The cargo transit fleet must have the required vehicles and equipment suitable for preserving the seafood merchandise in its best state.

## 2.4 Agriculture Importation Regulations of Finland

Finland is a full-ledged member of the European Union (the EU). This means the country enjoys certain privileges and accepts certain duties as imposed by EU legislations. When it comes to importation activities, agriculture goods to be specific, the EU has some common approaches that all member states have to follow. The most significant of which is the four freedoms: free movement of goods, free movement of services, free movement of capital and free movement of person (European Commission, 2019). Still, Finland, as an independent nation, can impose its own rules and laws upon certain importation factors such as licensing or specific quotas.

Figure 12 below provides an overview of import vs. export volume of EU nations. As can be seen from the figure. Finland is a trade-deficit country whose import values are slightly higher than its export values. That means, Finland relies considerably on foreign products to keep its people satisfied and its economy running. That also means Finland is not capable of producing certain types of products or the production of such goods is not economically advantageous domestically. In fact, Finland, as an Arctic nation, has great needs for imported agricultural products to keep its food stock at profitable and sustainable states. For such a country to diversify its food choices, importation seems more likely to be successful and productive than domestic agricultural development.

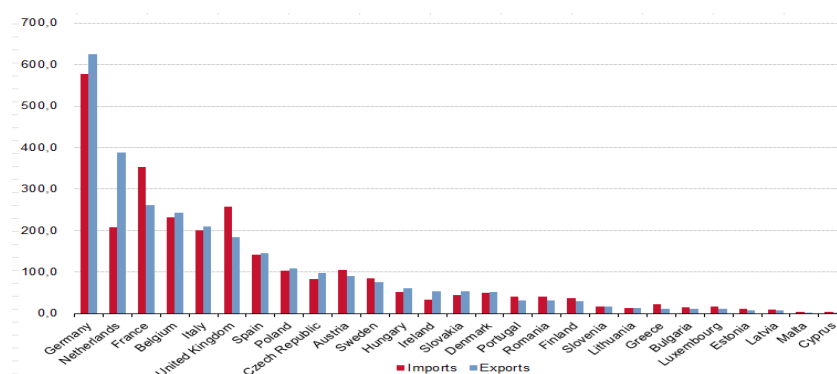


Figure 12: Import vs Export Values of EU Countries 2012

Source: Eurostat

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#### *2.4.1 EU vs Non-EU Trade in Agriculture*

##### a. Goods originating from EU countries

As of EU legislation, there are four fundamental freedoms of the inner-EU market, the first of them being the free movement of goods. Article 26 and 28-37 of the “Treaty on the Functioning of the EU” forms the legal basis for this freedom. According to the treaty, goods originating from EU member states and goods from non-EU countries but that have passed the EU outer border are guaranteed free movement, free from custom duties, quota restriction as well as any other hindrances. Effectively, goods move around EU member states just as easily as they would in any national market. In addition, countries that do not belong in the EU but are rather members of the EEA (European Economic Area) also enjoy the same freedom of goods movement. Those countries include Iceland, Norway and Liechtenstein. Switzerland, despite being a member of neither the EU nor the EEA, also secures such rights (European Commission, 2019). In that case, Finland, as a signatory of both the EU and the EEA, will have to fulfill its part of the deal and allow imported goods from other member countries to pass into its market freely (Tulli, 2018).

##### b. Goods originating from non-EU countries

If a country is neither a member of the EU nor the EEA, it automatically falls under the custom regulated category. Which means, in theory, that goods originating from that country will undergo complete custom screening and be affected by trade quotas. In reality, the EU has signed several free trade agreements with several trade partners of non-EU background. Countries that benefit from those free trade agreements are Chile, Egypt, Georgia, Albania, Israel etc. Under those agreements, trade tariffs and quotas will be abolished completely for all sorts of goods. However, goods originating from free trade partners still need to pass through EU border control and custom before being accepted into the EU common market. Apart from some of those special cases, any other non-EU countries will see full EU custom regulations and trade quotas applied upon their goods. For those countries, the EU has a common goods tariff rates. The exact tariff rates will depend greatly on the types of goods. To be specific, as of 2018, duty rates for seafood ranges from 0-24%, with the 0% rate obviously applicable only to EU, EEA and free trade partner nations. Finland applies the same tariff rates (Tulli, 2018).

### *2.4.2 Licensing*

As of common EU's ruling, imported products do not require a specific license unless they fall into import watch lists of EU member states. Different EU nations will impose their own watch list and be responsible for the monitoring of the list and the issuance of licenses. Exporters must submit the licensing application to relevant departments of the relevant countries they want to export to and prepare relevant documents to help boost the process.

In Finland, the list of restricted goods mainly include:

- Medicines
- Live animals and animal products
- Plants and plant products
- Firearms and ammunition
- Endangered species and products from those species

To be able to export restricted categories of goods to Finland, the exporter must apply for an export/import permit to the Finnish authority that regulates and imposes the restriction. Upon importation at the Finnish border, the exporter must be able to present the permit with all the declared restricted good stated on it. The Finnish custom authority will then take the goods into custody and place it proper warehousing. After consideration, if Finnish custom decided that the goods is admissible, they would release the goods back to its owner and then archive the custom transaction for book keeping.

For unrestricted types of products, those that do not require a license to export to Finland, relatively the same procedures apply to them. The major different is that the exporter of such goods do not need to apply for a permit beforehand.

### *2.4.3 Food safety*

In Finland, the Finnish Food Safety Authority (Evira) regulates food quality and safety issues. Evira is a centralized governmental body operating directly under the Finnish Ministry of Agriculture and Forestry. Apart from ensuring food safety, Evira also promotes animal health, nature welfare as well as develop regulations for foodstuff, including those with seafood origins.

While Evira's rules are usually in harmony with common EU standards, it can impose certain regulation approaches of its own will. For example, Finland has stricter salmonella control policies than most other EU nations. Imported animal products, including seafood,

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often find themselves under heavy scrutiny by Evira to weed out even very small risks of infection. Evira often conduct scheduled and random checks on food businesses, including food exporters and importers, to check on food safety conducts and take food samples for further lab tests if deemed necessary. Evira can also withdraw operation licenses of food businesses that do not comply with Finnish and EU safety standards.

#### *2.4.4 Labeling*

According to TUKES (Finnish Safety and Chemicals Agency) in 2018, as part of the requirements in order to pass custom and food safety standard tests, exporters must make right approaches to labeling the products. According to existing Finnish regulations, products must be labelled in both Finnish and Swedish, the official languages of Finland. In addition, the information stated on the label must be clearly readable and must not fade easily. Of the amount of information to be stated on the label, the below categories are always required:

- Country/Region of origin (Made in...)
- Product's full name
- Producer/Importer information
- Amount of content (in kg/gr/ml...)
- Ingredients
- Expiry date and time

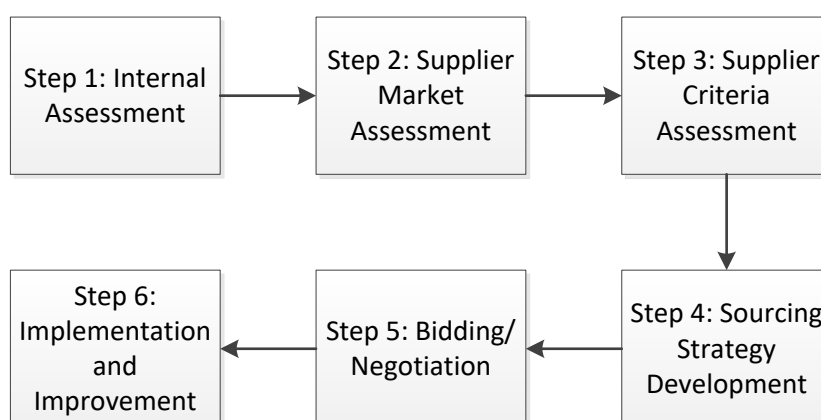
In addition, other information, while not always required, will need to be included on the label if applicable:

- Production batch/consignment numbers
- Use and storage instructions
- Packaging and content recycling/disposal instruction
- Nutritional values
- Trade mark logos
- Certification logos (Fair Trade)

### 3 International Sourcing Strategy

International sourcing, as in the concept of this thesis, is a series of business activities at serve the ultimate goal of helping a Finnish-based business to find reliable sources of seafood products and materials from foreign markets. According to Senft in 2013, International sourcing is useful in the current global situation in which countries seek to diversify on their own markets yet many reluctant or unable to achieve such diversification using internal means and resources. International sourcing will help gain different types of resources and services at lower cost, greater efficiency and more stable volumes. This chapter of the thesis will first looks into the common steps of international sourcing then discuss optimization strategies to ensure maximum international sourcing effects and end with issues to be attended to while exercising international sourcing.

#### 3.1 International Sourcing Steps



Graph: The 6 Steps of International Sourcing

##### 3.1.1 Step 1 - Internal Assessment

As a commercial organization tries to venture with any strategies or campaigns, it must first be able to fully comprehend its internal capabilities and demands. The simplest approach to internal analysis nowadays exists in the form of SWOT analysis. In this form of analysis, a company tries to make use of different benchmarks that provide insightful data into the company's current characteristics such as strength and competency, weaknesses, opportunities and threats. Provided that the benchmarking processes happen in the most careful, complete and accurate manner possible, the company will then have an overview of its current position in the industry and the resources it has at disposal for an actual implementation of the international purchase plan (Senft, 2013).

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In reality, SWOT analysis alone is usually not enough to assess the potentials of the company. For an actual international purchase plan to function, a company should perform more than a SWOT test. First, it must review its own internal functions and protocols to see if its own internal functions and processes are capable of international purchasing. If not, an internal improvement plan must be produced, and then real actions and changes must be taken. After that comes internal resources analysis. In this step, the seeker company will have to determine if the resources (financial, human, partnerships, shares, equipment, connections etc.) at hand are enough for the scale of the international purchasing plan (Baily et al, 2008). That being said, the analysis measures done in this first step alone do not guarantee success or failure of the plan as a whole. Still, such measures serve as the stepping-stones for the entire campaign. If the company decides to proceed with international purchasing, the data acquired from this first step will serve as a rough blue prints for improvements, business approaches as well as bargaining might of the company (Schneid 2010).

### *3.1.2 Step 2 - Supplier Market Assessment*

Prior to choosing a specific international supplier, a company must first comprehend the natures and potentials of the market where the prospective supplier comes from. The first issue comes with choosing the target supplier country itself. Each of the regions and countries in the world specializes in different types of goods and materials. Even countries that offer goods and materials of the same categories have significant distinguishable merits that could set the different between being chosen and not (Baily et al, 2008). Within the scope of this thesis, the target goods category has already been identified: seafood products. It may appear to be a good sign that seafood products are available in many countries in countless varieties, meaning more options to choose from for Finnish companies seeking to import seafood. However, that could also mean Finnish importers must conduct not only intensive but also extensive target supplier markets to identify the most suitable candidates to commit into a serious business relationship.

To explore a supplier market is to explore its production capabilities (Schneid 2010). The first issue to care about is, obviously, the availability of the desired goods and materials. The second issue is the sustainability of the target products. This will help ensure that the product will be available for extended amount of time to ensure constant supply to the Finnish market in the end. Thirdly, a prospective supplier market must have the ability to diversify its products so that more product categories and types could be offered to the

Finnish market later on. Then, the target supplier market should have stable political and economic conditions so Finnish companies will not have to risk both their investments and the demand of the Finnish market into a gamble, which could be disrupted anytime. In addition, the target supplier market should agree to and abide to national and international commercial laws (Senft, 2013). A fair competition environment will free Finnish companies from having to deal with unofficial and unexpected ordeals that could delay or impede several import/export activities and traumatize the integrity of the entire supply chain. Lastly, the target supplier market should have functional supply routes to Finnish ports at any time of the year to ensure smooth movement of products and materials at any notice. A smooth supply line can also guarantee and improve seafood quality and value upon reaching the Finnish consumers.

### *3.1.3 Step 3 - Supplier Criteria Assessment*

One of the most important steps of the entire international purchasing process, the assessment of prospective suppliers is crucial to the wellbeing of the supplier seeker as well as to the Finnish market in the future. The supplier seeker company from the Finnish side should set clear and precise prior criteria before beginning to seek for suppliers. That will help the seeker company know exactly what they want and what to expect from suppliers. The criteria also serve as the basis for supplier assessment. There is, in fact, no single set of criteria for this matter. The seeker companies will have to decide for themselves what they want from their suppliers. Still, the common requirements are a considerable supplier reputation, the ability to fulfill regular orders, an effective communication network, the adaptability to special orders and occasions, familiarity with market demands, availability for inspection upon requests, and the commitment for better interests of both sides (Baily et al, 2008).

Still, even with all careful considerations, it is still possible for the relationship between the supplier and the seeker companies to go wrong. Disruption in business activities and communication due to external factors can also lead to a halt of goods and materials flow from the suppliers to the seekers (Kohler & Yalcin, 2018). Therefore, it is a common strategy among seeker companies to enter a partnership with more than one supplier, even for a single type of products. This method helps relieve the seeker companies from over-reliance upon a single supplier, thus increasing their bargaining powers. In addition, the seeker companies also suffer less risk from factors from the supplier sides such as double-crossing or bankruptcy. A large network of suppliers also ensures timely acquisition of the

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needed goods. Seafood is not always a geographically centralized industry and often subject to species migration. Therefore, having suppliers from many geographical locations will ease the transportation process to the maximum gain of the seeker companies (Baily et al, 2008).

#### *3.1.4 Step 4 - Sourcing Strategy Development*

After setting the criteria for their prospective suppliers, the seeker companies move on to determine how they should approach their candidates. From this step forward, the seeker companies no longer held absolute control over their strategies and activities. How and to what extent should a sourcing strategy be carried out will depend greatly on both the bargaining power of the seeker companies and that of the supplier candidates (Baily et al, 2008). The level of risk tolerance of the supplier candidates also play a considerable role in how a strategy will play out. Seeker companies should be able to somewhat gain an overview about these factors from previous steps yet fluctuations and misinterpretations do happen and the seeker companies will usually have to determine and re-determine their sourcing strategies for several times before the final solution can be mapped out.

At this point, there are many possible scenarios for the seeker companies to choose. The first choice is “Direct Purchase”. The seeker companies will send out several Requests for Proposal or Requests for Quote and wait for the recipients to reply. If this is the case, the two sides of the deal do not usually enter into a partnership right away. Rather, they are trying to know each other better by inquiring for more information such as prices and supplying capabilities. Only upon more careful inspection and consideration will the suppliers and the seeker companies enter a business relationship after the two parties have accounted for all factors (Baily et al, 2008). This is one of the most common scenarios when the two parties have little prior interactions and experiences about each other and require often-lengthy approaches to get familiar as well as to build mutual trust. There are some less common scenarios such as when the two parties have had prior successful interactions or when the reputation and capabilities of the supplier side are already established (at least from the point of view of the seeker companies). If prior interactions have already happened, the seekers often approach the suppliers directly and immediately make their requests. If there has been no prior interactions, the two sides sit back and discuss business terms before exchanging the first orders. Either way, the seeker companies can choose to either buy a one-off order from the supplier (Individual Acquisition) or enter a lasting relationship (Strategic Partnership). It is also possible that

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the seeker companies make their orders and needs open for bidding and prospective suppliers will make their offers and terms, struggling for the right to be among the future supplier force. This process is commonly known as “Open Bidding” (Kohler & Yalcin, 2018).

### *3.1.5 Step 5 - Bidding/Negotiation*

While the approaches mentioned previously may sound simple and straightforward in theory, actual contracts involve a lot more complicated steps of meeting and discussion as the two sides bargain for the best deals and terms possible.

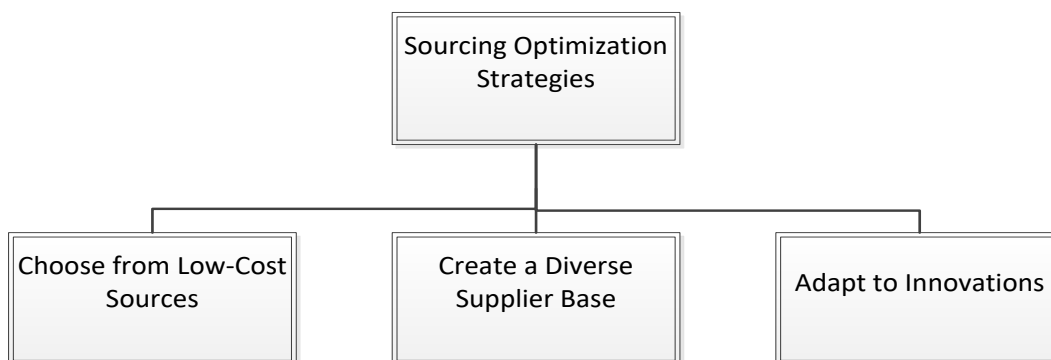
In addition, it is highly common for seeker companies to come up with a certain strategic approach only discard the plan and favor another approach the next day. The commercial world is subjected to changes on many occasions under a lot of factors. Still, having a clear approach at the beginning will go a great length in helping the seeker companies to narrow down their choices of suppliers (Kohler & Yalcin, 2018). After some filtering steps, only a handful of the most worthy candidates remains. It will then be possible for the seeker companies to deal directly with the remaining company individually. Representatives from the two sides can meet up and discuss specific business terms. Through those meetings, they get to understand each other better, especially from the seeker side. The seeker companies, upon hearing about what their counterparts have to offer, can adjust the criteria to lower or higher levels compared to their original expectation. A meeting does not necessarily involve only two organizations. If the approach is “Open Bidding”, the seeker companies can organize hearing sessions where several supplier candidates gather and make their offers. The seeker companies will pick the offer(s) that they feel most suitable, correlating with their development targets and visions (Baily et al, 2008).

### *3.1.6 - Step 6: Implementation and Improvement*

When the final suppliers have been chosen and all contracts signed, actual transactions of materials and financial resources will begin. At this stage, it is important for the suppliers and the seeker companies to agree on mutual business process protocols and to implement a working communication system. This way, despite their previous differences, the two parties can function in harmony, ensuring satisfaction and efficiency for both of them and founding the basis for a more lasting partnership (Senft, 2013). For both party, one of the most sensitive issue after entering a sourcing contract is data sharing. Both sides have to allow their counterparts partial access into previously classified information, provide

training to familiarize the partners with internal systems as well as transfer certain physical assets for integration. In many cases, entirely new departments and systems have to be developed to facilitate the sourcing partners. Mutual inspecting activities also need to happen from both sides to make sure that they keeping up with the development and changes within their partners and to monitor if the partners are upholding their parts of the deals. Occasionally, meetings between the two parties must be organized to keep both sides up to date to important events and protocols, assess previous activities and suggest improvements (Kohler & Yalcin, 2018).

## 3.2 Sourcing Optimization Strategies



Graph: The 3 Main Strategies of Sourcing Optimization

### 3.2.1 Choose from Low-Cost Sources

To engage in business is to make profit and that holds true for Finnish sourcing company seeker to import seafood items from foreign markets for commercial selling in the Finnish markets. In order to maximize profit figures, the first approach is to choose, from among the available offers, the most low-cost options possible. For this approach to be successful, sourcing seekers must first determine clearly the categories of products they want to import and set quality and quantity criteria for the products. That way, the sourcing seekers will not be overly enticed over mere prices and can exercise more logics and standardization. This is to prevent scenarios in which their judgment capabilities are clouded by significantly low prices (Philippart, 2005). In that case, they would follow such leads without paying enough concern for quality matters, which would greatly traumatize the sourcing seekers' reputation later on, if health or quality issues pop up while in the Finnish market. After all criteria are set and all factors accounted for, the search could begin.

At first glance, the process of choosing a supplier with the best price may be quite straightforward and simple. The sourcing seeker company will set up a list of orders it wants and ask for a quote from among a list of established suppliers or from new suppliers through brokers or direct contacts. The suppliers will then return the quote, setting the prices for their services and any add-ons possible. The seeker company will then consider among the offers and, if the main priority remains low prices, then it will pick the one with the most suitable quotes (Wallace, 2014). In practice, sourcing seekers should keep in mind that their suppliers also seek to make profit from their business relationship. Forcing the price down too much may greatly hurt that relationship in many ways. It is possible that the supplier may simply step down from the deal and the seeker company will be left with fewer choices and a bad reputation. In a worse scenario, the suppliers will quote a price that fits what the seeker company asks for but will somehow reduce the quality of the supplied batch, the aftermath of which is damages beyond comprehension (Sollish & Semanik, 2011). That is to say, when setting their asking prices, sourcing seeker companies should be open to reasons from the side of the suppliers and try to create win-win situations where both sides could make profit alike.

### *3.2.2 Create a Diverse Supplier Base*

In creating a diverse supplier base, commercial entities incorporate into their networks a several suppliers with different backgrounds such as geographic location, product portfolio or even enterprise culture (Kohler & Yalcin, 2018). Recently, supplier diversity has been promoted as a positive social and economic movement that offers not only employment to different classes of people but also reputation for businesses. In fact, more than just any polished movement, supplier diversity can actually bring about real economic values for sourcing seeker companies.

#### *a. Promote new approaches*

With the number and the diversity level of the supplier base now greatly proliferated, sourcing seeker companies can gather new ways of conducting businesses or experience new types of equipment. With new approaches being put on the table, it is possible the seeker companies can find something that matches their needs to renew themselves. In addition, the fact that seeker companies are exposed to new ideas and equipment also makes the seeker companies develop a more tolerant and flexible mindset so that they become even more open to new ideas and manners of business conduct (Wallace, 2014).

b. Create new sourcing channels

Apart from new business approaches, suppliers can provide seeker companies with what they have the most: products and resources. With more suppliers in place, seeker companies can gain either a more proliferate stock of existing goods or a more diverse stock of products and resources, some of them they have never known existed. With new types of products and resources come new market opportunities since seeker companies can serve and appeal to a large population of customers, news and loyal ones alike. New products also improve the competitiveness of the seeker companies compared to other companies offering only common merchandises (Sollish & Semanik, 2011).

c. Promote competition & reduce prices

One of the advantages of a more numerous supplier base is to reduce over-reliance on one or a few suppliers and thus improve the bargaining power of the seeker companies. With more suppliers offering the same materials, the suppliers will have to fight each other by improving their products' quality or offering better prices to appeal the seeker companies. In turn, the seeker companies can resell the products to end customers also at higher quality and lower retail prices, further improving their competitiveness in the market (Philippart, 2005).

d. Allow network expansion

By being in league with more suppliers, seeker companies open themselves the door to build even larger networks for themselves. They, via their new partners, can get in touch with companies they would otherwise have no idea about or have to chance of acquiring contact before. As they acquire new contacts, their chance of having more suppliers and partners in other manners again increase and provide them with more business approaches and opportunities (Sollish & Semanik, 2011).

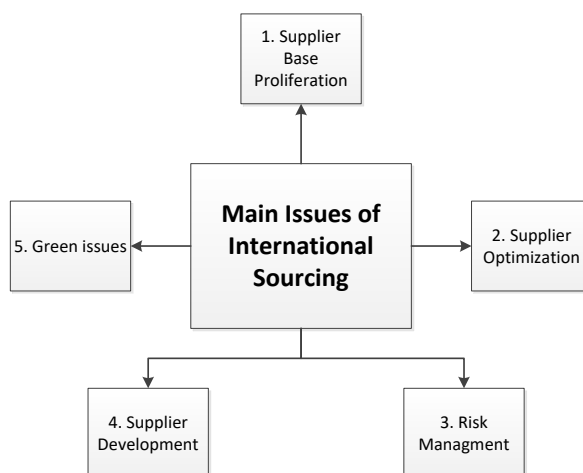
### *3.2.3 Adapt to Innovations*

The values of innovations are undeniable in the commercial world. With the aid of innovations, new technologies, thus new machineries and work approaches, have been developed all over the course of history. Those new machineries and work approaches have played an important role in reliving labors, increasing productivity, developing new products and lowering costs. In the present days, as the rates of innovation development rise to unprecedented levels, the relevance of innovation usually means the difference

between failure and success for a business (McIntyre, 2014). How a business access innovations greatly depends on its resources and connections. Most business entities draw their innovations from their own work force, their business network and even crowdsourcing. In special cases, large multinational corporations invest in entire training centers or research establishments to produce their own innovations.

However, it is mostly easier said than done when it comes to actually integrating innovations into business functions. Most international companies have well-established hierarchy and protocols to ensure that the mass of business activities and supply chain flow is carried out in order and avoid sudden variations. To adapt innovations would sometimes mean the entire currently existing systems could be completely overturn. Therefore, a business in functional order would not risk having innovations that have not undergone reality testing to replace a system that is actually reaping successes (Seshadri, 2005). That means innovations are more usually adapted in newly established businesses with little progress to lose and a lot of rooms and flexibility for improvements. If their decision were right, these new businesses would climb the success ladder quite rapidly, forcing old businesses, with a declining market share and a risk of bankruptcy altogether, to also adapt innovations (Kohler & Yalcin, 2018). As time passes, if an innovation is proven to be beneficial to business activities, it will soon become a norm with widespread use every here and there. By that time, new innovations could have been introduced and the entire cycle begins anew.

### 3.3 Main Issues of International Sourcing



Graph: The Five Issues of International Sourcing

### *3.3.1 Supplier Base Proliferation*

It is common for a company seeking to perform international sourcing to stay content with a few established suppliers. It is not easy to seek out a suitable supplier and establish a functional supply chain with all issues accounted for. However, the commercial world changes on at a very rapid rate. Suppliers that were once deemed unfavorable could become entirely promising ones over the course of as quickly as a month due to changes in the suppliers' countries' national laws, suppliers' internal restructure, availability of seafood stock or new trade deals signed between Finland and the suppliers' countries. In any case, newly emerging suppliers could offer better products at better prices and entirely new approaches to business conduct protocols that could benefit the seeker companies greatly (Wallace, 2014).

As is the case of developing market, there are usually a lot of new products and materials that new markets possess in great quality and quantity that were previously unknown in the established markets. Resources often left unmined in developing markets due to the lack of knowledge and low demand. In addition, bureaucracy and outdated systems are often problems with established markets and suppliers. As they have reach a significant economic scale, they tend to keep things in the old way, which often involve sluggish processing and beaten thinking manners. On the other hand, new markets and suppliers are more prone to take in and apply new approaches and thereby can deliver results in unprecedented rates and efficiency. In short, for Finnish sourcing-seeker companies, it is very beneficial to always keep an open eye on the look for new suppliers and consider what they have to offer. For that to be possible, it is important to keep a clear mind, free of prejudice and bias, so as to judge objectively and thoroughly as new suppliers emerges and new opportunities appear.

### *3.3.2 Supplier Optimization*

One common problem with international purchasing is that the seeker companies are no longer in full control of their supply chain. Instead, the supply chain is greatly dependent on the performance of the supplier partners, which, in turn, is dependent on a lot of other unforeseeable factors (Kohler & Yalcin, 2018). The risks come also from the suppliers themselves. Suppliers with poor performance, inadequate financial resources or shrinking material supplies all impose great risk for the seeker companies. In addition, as the seeker companies' operations grow, they will inevitably take in more suppliers to feed their

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expanding needs for goods and materials. Eventually, seeker companies end up with a large base of suppliers (Wallace, 2014). However, interactions and partnership with suppliers are costly. Seeker companies have to spend a lot on keeping their suppliers in line, including regular meetings, visits to supplier sites, data processing and order tracking. While it is worth spending on profitable relationship, a large supplier base inevitably means unhealthy partnerships exist somewhere in the midst and such will leek the seeker companies off their resources (Senft, 2013). For those reasons, for the sake of profitability and productivity, seeker companies have to employ tactics to continuously weed out incapable suppliers and take in new ones. The concept of supplier optimization prefers to the practice of seeker companies to make the best out of their partnership with suppliers using a variety of techniques. This practice usually involves choosing only the most promising supplier partners and always having a backup supplier in case something goes wrong.

The approaches to supplier optimization can be anywhere between gradual and radical. A large supplier base is indeed, hard and costly at the same time to maintain and manage. However, to assess every single one of the suppliers on a precise and thorough manner is on an entirely different scale. Seeker companies with poor approaches to supplier assessment criteria often end up wiping out, after a series of poor considerations, a significant number of suppliers, leaving only the most obvious profitable and major partners (Seshadri, 2005). While this practice may seem simple and thorough, it may cause declines in many aspects in the future since many capable suppliers may be swept away along with the mass supplier cut, causing the seeker companies to lose some footholds and future opportunities. Other seeker companies, more conscious about their choices yet still reluctant and unable to fully assess the large supplier base, tend to keep the top spend partners, those that the seeker companies tend to do most volume of transaction with. By keeping the top spend suppliers, the seeker companies can somewhat maintain the main factions of business activities and protect current interests in the short run. However, the reality that the top spend partners are not always the best when it comes to performance and among those weeded out may hold great potentials is still very true and can hurt the seeker companies' development opportunities in the long run (McIntyre, 2014).

### *3.3.3 Risk Management*

When it comes to risks in the seafood industry, the variety of risks in term of time, scale, characteristics, damages and solution approaches is almost countless. There are simply so

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many risk scenarios that seeker companies can no longer fully prepare or develop a perfect false-roof risk management plan. In this part, only some of the most significant risk factors will be discussed to so as to provide an overview of what seeker companies from Finland have to face when deciding to commit themselves to international seafood sourcing (Baily et al, 2008).

The first issue is environmental risks. Environmental risks can come from both human and natural factors. A great percentage of seafood produced worldwide are harvested from while stock in the open ocean. If the concerned region has to suffer natural disasters such as typhoon or storms, the fishing fleets will not be able to operate as a result. That will surely lead to decline in the available seafood stock in the market and both the supplier and the seeker sides will suffer in term of both financial and business volumes. Seafood migration, the result of many factors such as changes in living environment, searching new food sources or evading overfishing, usually leads to decline in caught stock could bring about the same outcomes. In addition, human causes, usually pollutions (oil spills, poor waste management, environmental declines, and expanding tourism...) and overfishing also force down seafood populations by disturbing normal living conditions or reducing the population to the level of unsustainable also jeopardize commercial fishing activities. The seeker companies, if affected by these risk factors, can compensate for retailers and customers in the Finnish consumer market by offering other products. However, such replacement products do not guarantee the same level of quality, quantity and familiarity for the Finnish market, causing losses in market share and customer credibility. In addition, a distribution plan, assembled hastily in response to a disaster cannot be as complete and profitable as a well-defined plan that has taken months or years to perfect (Wallace, 2014).

The second risk issue is political threats. Businesses sometimes pick suppliers from risky regions due to many reasons such as the high concentration of seafood stock, low price, less fierce competition or simply geographical convenience. However, if political problems such as wars, changes of regime, embargos or economic declines, broke out, the seeker companies will have a lot to lose because they will be cut off from their sources of merchandise and whatever amount of investment they have made into the region will be very likely lost amidst the turmoil. While the best methods to avoid this type of risk are to survey and study the market political potentials carefully and to not take the risk if there appears to be one (McIntyre, 2014). However, if the seeker companies to take the risk anyway, they should invest only what they can afford to lose and do not consider the

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region their main suppliers (unless the companies are confident about their political interference powers, which a lot of companies actually do have). In the worst-case scenarios, they can withdraw from the region and still be able to retain enough resources and supply sources to navigate through the hard time (Kohler & Yalcin, 2018).

Thirdly, when it comes to doing business, there is always a risk associated with business partners themselves. Of course, companies have a lot to consider when choosing a partner, a supplier in this case, and actually invest a lot in making sure that the partnership they are investing in is a promising, trustworthy and profitable one. However, such is not always the case and it is, in fact, very common for suppliers to double cross on their deals, supply low-quality stocks or be incompetent etc. It is bad enough for one of the minor suppliers to the illicit party. However, it could very likely be one of the major suppliers that is the bad apple. While surveying the suppliers carefully can greatly reduce this risk, it may still happen in the most unexpected way possible, such as when the supplier has a new leadership and they are looking for a quick way to turn away from the current seeker company. In any case, the seeker company will be the one with the most to lose and is left with a great cavity in this supply chain so severe that the company may never fully recover and go out of business outright. The solution for this scenario is to diversify the supplier base. One seeker company should have more than a few suppliers and distribute the business volume with each supplier in such a way that not one supplier can cater for a great percentage of the total demand volume of the seeker company for too long. This can avoid the risk of over reliance on a single supplier, which would give the supplier too much bargaining power and cause the seeker company greater losses if their business relationship ever went sour (Seshadri, 2005).

Lastly, transportation accidents are among the most disastrous and most nuisance of all risks. Transportation accidents can happen anywhere and at any time due to the unpredictability of the transportation trail, which could involve trans-continental travelling and passing hazardous weather conditions and regions with unstable political conditions. Accidents usually occur in form of (1) vehicle crashing or colliding and (2) hijacking/pirating. In case an accident occurs, material losses are the least the two sides (supplier and seeker) should worry about since most of the time the cargos are covered by insurances and any material damaged or lost while in transit will be compensated. What suppliers and seeker companies should worry about is either third-party compensation or supply-chain-related aftermaths. Third party compensation needs to be carried out when the vehicle employed during cargo transportation causes damages to third-party entities

such as humans, vehicles and buildings. Even if the transporting vehicle's insurance policy does cover third-party damages, the process would involve lengthy legal and court actions, which will take several weeks at the very least, during which time the vehicle may be seized, causing delays in future deliveries (Seshadri, 2005). To counter this scenario, apart from putting safety measures above all else, the seeker companies should always have a backup plan, preferably a backup supplier so that if anything goes wrong, new materials can be delivered at short notice so as not hinder other production and commercial. If the accident involves pirating or hijacking, the solution is very much the same (without the compensation for third-party nuisance): to seek an alternative source of materials first (using a backup supplier may be a safe bet) to quickly continue other business processes and deal with other issues of the incident afterward (Kohler & Yalcin, 2018).

### *3.3.4 Supplier Development*

As much as a sourcing seeker company wants to or needs to diversify its supplier base, sometimes, such task is simply possible. Again, it must be stressed that it is not in any way easy or quick to be able to find a suitable supplier, much less to discuss business terms and to ultimately come up with a functional supply chain. However, business cannot wait forever. The seeker company needs seafood stocks as quickly as possible so that it can make an early entrance into the market and avoid upcoming fierce competition (Schneid 2010).

Therefore, it will come to situations in which the seeker company will have to settle with a single supplier, which is still very hard to get to begin with. If such is the case, then it will be the best-case scenario if the single supplier can perform well on its own. The seeker company can focus on other matters or concentrate on finding new supplier as business moves on. Furthermore, investing technologies, resources and dedication on this only supplier can actually do the seeker company well. That will bring the two companies closer and transactions can flow more smoothly as well as orders delivered in a more matching manner with the requirements of the seeker (it is still advisable for the seeker company to diversify its supplier base to deal with unexpected events). However, what if the only supplier the seeker company can get fails to perform as expected? The seeker company cannot simply ditch the failing supplier and request orders from another supplier now that supplier base diversification is no longer an option. Therefore, the seeker company is left with no choice but to assist the supplier so that it can function up to expectation. Now that the seeker company can focus on studying a single supplier, it can better comprehend a

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clear overview of the current characteristics and status of the supplier, what is its advantages, what it is still lacking, what needs to be prioritized for improvement etc. (McIntyre, 2014). Depending on the outcome of the analysis, the seeker company can simply begin with providing new data and sending support staff to help the supplier integrate or send dedicated and cutting-edge technologies and protocols to bring the supplier to the expected standard. While this approach is indeed costly and somewhat annoying, the seeker company is doing itself a favor since only if the supplier functions well can the seeker company gain the resources it needs to prosper.

### *3.3.5 Green Issues*

The seafood industry is highly susceptible to environmental and pollution factors. As discussed in a previous part, the availability of seafood stock in the open sea environment can be greatly jeopardized by changes in living conditions and environmental catastrophes caused both by natural and human agents. While humankind nowadays can predict natural disaster quite precisely, there is little to nothing humans can do to prevent major natural disaster events from happening and it thus left to carry on with the loses in the aftermath of such events. However, humans, by caring for the environments, can reduce their own footprints and impacts to the living habitats of seafood stocks (McIntyre, 2014).

The first approach is to fight back overfishing. Even if the natural seafood stocks are not affected by natural factors, with overfishing in place, their populations cannot regrowth as normal and will eventually fade away from established fisheries, forcing human to seek their catching stock in new regions. If the trend continues, soon there will be no healthy seafood population left to catch at all. However, fighting overfishing is not something business entities can do on their own. Even if a business can restrain itself from overfishing, other greedy entities will soon take its place and cause similar harms, even worse. Therefore, national governments must step in. Of course, they must introduce laws and impose fishing quotas. Quotas can be used to set the amount of seafood each vessel is allowed to catch, the adult size of the species as well as the time of the year that no commercial fishing is permitted to allow species to breed etc. However, what is most important is law and quota enforcement because without proper enforcement, many will continue to break the rules and contribute to the deterioration of the environment. This duty falls upon the coast guard forces since they have the most access to maritime patrolling equipment to detect and stop poaching within short notice. The ultimate goal of this entire issue is to ensure that seafood stocks are maintained at a sustainable level so that

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future fishery activities may continue. It is also a good measure to switch to culturing and commercializing farmed seafood. Farmed seafood causes less impact on the natural environment because seafood farms are located in enclosed water bodies or along the coastline regions. Therefore, the natural stocks are left alone in the open sea to thrive and breed. Pollution caused by fish farming activities is also more localized and can be solved with better efficiency due to the enclosed nature of fish farms. In addition, fish farming also guarantees products that are more consistent in term of both quality and quantity. That fact can help with stabilizing the market and ensure supply to end customers in a regular basis (Kohler & Yalcin, 2018).

The second approach is to cut pollution agents that are the result of international sourcing activities. The most common forms of waste produced in the context of international logistics are (1) water pollution, (2) air pollution and (3) packaging waste. First of all, water pollution is among the most obvious effects of international sourcing. To feed the need of foreign markets, domestic fishing vessels need to operate more and cause more pollution to the ocean by means such as waste oil spillage or crew's trash discard. Sourcing seeker companies must act by monitoring the supply chain and put pressure on suppliers that do not commit enough to protecting the environment by official demanding them to or by cutting orders if the problem persists (Schneid 2010). However, it would be unfair for suppliers if they keep being pushed toward taking all environmental responsibilities. The seeker companies should provide aids when needed such as recommendation for better environmental approaches or supplying equipment and vehicles that match the seeker companies' standards (McIntyre, 2014). Next, the second waste issue is air pollution. Transportation from one country to another certainly cause air pollution more or less. Such pollution comes from factory operations and vehicle emissions while in transit. Depending on practical situations and availability, the sourcing seeker company can choose to use more environmental friendly options such as new plane generations or electricity trains instead of trains running on fuels. Pressuring suppliers to invest in new processing technologies and switch to renewable energy where possible also goes a great length in help reducing air emission. While one seeker company may not bring about any significant changes, if this becomes a trend and many more follow, then air pollution on a global scale will be greatly lowered and such can pave the foundation and motivation for more green business approaches in the future (Schneid 2010). Third and last form of waste impact is packaging waste. Movements of goods have to make extensive use of packaging materials. If left unchecked, those packaging materials will be discarded directly into the

environment after the product content has been removed for commercial selling. Such thoughtless manner of waste discarding will lead to the buildup of landfills all over the world, with a terrifying percentage of waste ending up in the environment, causing pollution and damages to natural life and habitats. Nowadays, as waste management technologies have reached pivotal development, waste packaging materials can be sent toward recycling plants to be given new uses and purposes. What is important is to develop the recycling mindset in the workers so that they are more thorough in collecting waste packaging materials and sending them to proper processing areas. However, it would be even better if materials can be directly reused after cleaning and sterilizing rather than being sent for recycling. As much as recycling can protect the environment from waste, it still consumes a great amount of energy and not all materials can retain their original integrity and characteristics after being recycled. Producers, especially those from the supplier side should change their choices toward more durable, reusable materials to make seafood product containers such that those containers can be directly sent for new uses, saving even more energy and costs (Wallace, 2014).

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## 4 Data and Methods

In this part, research methods and approaches will be discussed and clarified. First of all, when conducting any study, the author must be able to make clear what form of research approach to be taken. Since each different research approaches utilizes different methods and protocols, its usefulness is best discovered and exploited given certain features and attributes of the research study in concern. After the favored research approach has been identified, it will be discussed in details concerning issues such as data collection methods and research design models. Lastly, an evaluation of the level of trustworthiness will be given to justify the research approaches and the values they could bring about.

### 4.1 Research Approach

#### a. Qualitative Research

Qualitative research is the type of research method that follows the exploratory approach. When using qualitative research, a researcher can come up with a proper understanding of the reasons, motivations or points of views of phenomena within the studied topic. With qualitative research, a researcher can gain an insight deep enough to uncover ways of thinking and rationale of opinions. Sometimes, qualitative research can be descriptive. In those cases, qualitative research is used to comprehend and describe complex social-economic dynamics or explore individual perception on the studied subjects (De Franco, 2011).

Yet, in short, the final common purpose of qualitative research is to seek non-numerical answers using text-based data from published or unpublished scientific and academic documents. Its methods vary but are in simple terms a combination of inductive processes used to formulate theories and hypotheses. Since qualitative research utilizes little to none statistical testing, a research conducted in such manner will have its validity and reliability values largely dependent on the reading, text skimming, and text analysis skills as well as the rigor of the researcher himself. That fact makes qualitative research documents highly case-specific and the conclusions and findings of such studies, while not always so, less generalizable and less applicable for other studies, even those with significant similarities (Shukairy, 2018).

### b. Quantitative Research

Quantitative research is performed in such a way that data, mostly numerical data, can be transformed into meaningful statistics for the research topic in concern. By the use of a carefully selected percentage of population or a significant group of a population, quantitative research aims at generalize the findings and attribute the characteristics of the findings to the entire population. That leads to the quantitative approach being a highly generalizable one (Bhat, 2018).

The entire process of quantitative research can be understood as a series of deductive scientific researching. The purpose of which is to test and validate or invalidate previously specified concepts and hypotheses that construct a certain theory. For the purpose of data acquisition, quantitative research employs a variety of methods. The most common methods are surveys, organized interviews, population observations, reviews of past records of data documents. Thus, the assessment parameters of quantitative researching greatly depend on the value and accuracy of the data as well as the measurement approaches and data processing instrument used in the process. When it comes to expenditure, quantitative researching costs heavily on the planning phase to come up with a proper research and data analysis approach. On the other hand, the actual data executive phases are lighter and cost less time (Crossman, 2019).

### c. Approach of Choice - Qualitative

In this particular study concerning the cross-border transportation of perishable seafood items, the most prominent numeric data sources come from business entities operating in the field. Unfortunately, those entities are often reluctant to share their data and business records to low-profile parties such as an independent researcher. Apart from that, other sources of data such as from other published studies or personal gathering often prove ineffective, non-relatable and too case-specific. Therefore, the research author's chance of following the quantitative approach is greatly hindrance and possibly unrealistic (Bhat, 2018).

On the other hand, conditions are set rather prime for the qualitative approach. Since this approach does not place too much stress on seeking numeric data, the author can rely on text-based and semi-numeric data as the basis for the study. Data acquired from observation of the transportation industry is rather stable and readily available. In addition, the purpose of this study aims at exploring transportation methods and determining the most prominent means for use. The author seeks to gain insights into each transportation

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means, identifying the pros and cons each of them has to offer and place them on comparison. For example, cargo airfares, van rental cost or train cargo costs are generally provided by online booking sites or from cargo booking agents' offices promptly upon inquiry. Such data could then be used to form a base for cost-effective comparison purposes with high accuracy and little time and effort demands. Therefore, the exploratory nature of qualitative research is a good match for such purpose (Berk, 2014).

What makes qualitative researching especially valuable and practical in this case is its ability to extract more meaningful information from a rather small database and restricted range of data. Data in quantitative researching are numeric and simply reveals the linear characteristics between data variable and will require a large database to secure an accurate analysis of the matter. Qualitative researching, however, can dig deep into a few study subjects available, making good use of limited resources and showing hidden information that might not have been possible to seek out using only quantitative methods. Thanks to the explorative nature of qualitative, meaningful information can always be acquired if inquired in the correct manner and focus. It is also common that qualitative researchers, being unsure with what they could expect from their studies, have less expectation for the study outcome and therefore having less bias and prejudice, thus conducting their work with more professional approaches and techniques (Sherif, 2018).

## **4.2 Data Collection in Qualitative Research**

### **a. Interview**

Interview is a common method in research data collection. Usually involving human subjects of the study topic, interviews help gain valuable, detailed and trustworthy data from an insider's perspective. The researcher, to achieve certain purposes and desired data, can tailor the exact types and manners of interview questions. In qualitative research, the interview usually has the characteristics of a semi-structured one. This means the researcher will prepare his interview questions beforehand, control the interviewing pace and flow as well as try to guide the interviewees toward answering the core issues. Yet, enough room must be allowed for the interviewees to express their own opinions toward the discussion as well as to express ideas and matters that the researcher may have failed to mention in the interview or even have no idea such ideas and matters exist at all. Interestingly, thanks to this characteristic, in many cases, observation helps the researcher validate or invalidate previously acquired data by comparing the changes in attitude and

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performance of the study subject from a face-to-face encounter versus a supposedly unsupervised setting (Crescentini & Mainardi, 2018).

#### b. Observation

This method employs what the researcher has been able to identify by observing related subjects and issues in a natural or controlled environment. Observations allow the researchers to experience the issues of his study topic first hand, discover on his own intuition, and extract highly sensitive and specialized details that could not have been possible to gain using a third-party source. However, when observing in a natural setting, a researcher often lacks the means to communicate with his study subjects and may stumble across unidentifiable issues that he often has to interpret by himself, the accuracy outcomes of such cases cannot be guaranteed. It is also worth noting that the researcher should keep enough distance and discretion with his observed subjects, especially human ones, because subjects may act and perform differently the moment they know they are under observation (Crossman, 2019).

#### c. Document Analysis

Documents used in qualitative research come in many forms. Since qualitative relies on text-based and semi-numeric data, traditionally, almost any printed media such as books, company reports, previous papers, articles and even magazines can serve as the sources for a qualitative study. These days, the availability of the internet has made acquiring source documents even easier and productive; the number of available resources has also proliferated. The ease and availability of resources allow researchers to have different aspects and views concerning the same subjects. Researchers can also get timely updates and development trend of their research topics, churning out more and more informative, updated and worthy research papers by the hour. However, to master the skills of document analysis is not an easy task to achieve (Rhodes, 2014).

### **4.3 Qualitative Research Designs**

#### a. Phenomenology

This form of qualitative research allows researchers to come up with theories to explain for concerned phenomena. It is most useful when used to study events, activities and occurrences. In the phenomenology approach, first the researchers will collect information,

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from a variety of sources, usually from interviews, documents or observation data, until the data has saturated. This way, researchers will understand how different factors view and react to the studied phenomena. As with most design for qualitative research, the phenomenology approach does not provide a clear expectation at the beginning but rather try to seek the most standout points of view about the studied subjects and use other sources to validate those points of view (Wilson & Suttleworth, 2008).

For example, a society is rising in organic food demands and researchers want to find out how such rise could have an impact on the people and the process through which they go to fully understand and appreciate their new taste for organic items. Researchers will conduct phenomenology study to understand more clearly the motivation and experience of customers toward organic foods.

#### b. Ethnography

The ethnography approach lets the researchers immerse themselves in the phenomenon they are seeking to study. Usually performed in economic, political, cultural and social studies, ethnography is a way for researchers, acting members of a social group or experiencing a social phenomenon, to understand firsthand the characteristics, goals, cultural specialties, challenges, motivations within what they seek to study as well as the effects and impacts of such issue on the population (Sauro, 2015).

One example of this approach comes from application upon economic study. Retail businesses and producers, in the hope of better understanding the buying patterns of their customers, often try to act customer themselves. A supermarket manager would play a customer, considering his personal needs, visit his own supermarket, and try to seek the items in his shopping list. Along the way, he gets to experience item availability, shelf arrangement logics, supermarket facilities and customer service standards and attitudes.

#### c. Case Study – The Design of Choice

In case study, rather than trying to spread focus on an entire population or multiple subject of study, the researchers instead pay attention to only a single individual study subject. Case study can be about a person, a company, a country or even a social phenomenon, as long as the subject yields valuable information in the view of the researchers. The range of issues for studying can be anything that has to do with the study subject as long as it helps explain how the subject behave its ways or the effect that the behaviors could possibly cause (Sauro, 2015). In addition, the subject in case study must be large or influential

enough to cause certain types of impact in the social-economic settings around it such that the understanding of the impact can yield valuable data that aid with understanding and manipulating the issues in concern. However, when conducting case study, the aim is to observe alone, not to manipulate the subject. The subject is normally left to develop or decline in its natural environments (Wilson & Suttleworth, 2008). That way, the researchers can have a realistic and extensive overview of how certain subjects react to certain factors and the results such interaction would bring about.

Case study will be the method of choice in this case because the thesis has already identified a single subject to be studied: the transportation issue of the seafood industry of Finland. By following the case study approach, the author seeks to consider the characteristics of the transportation of perishable products, seafood in this case, from a foreign country to another. The thesis aims at explaining different means of transportation, transportation variables to consider, product processing as well as supply chain issues. However, put on an overall context, there are a myriad of data to process and a lot of twists and turns. It is simply impossible for the entire cross-border goods transportation industry to be condensed into a single paper research. As a result, there must be a specific subject, in this case the country of Finland to narrow down research range and scope as well as to present a realistic application of cross-border transportation theories.

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## 5 Findings

### 5.1 Factors Affecting the Choice of Transportation Mode for Seafood Products

#### 5.1.1 Nature of the Cargo

In this case, the cargo in concern includes seafood products in various forms. While the possible categories of seafood can be endless, they can be simply divided into two main groups: (1) the fresh, perishable items and (2) the highly processed, durable items. The first group is comprised of seafood in their most original forms. Products in this group are usually freshly harvested in the wild environment or from seafood farm. Most of the seafood types in this first group are only slightly processed: cleaned, gutted, filleted, skinned and cut into smaller portion-sized pieces. They are usually not treated in food chemicals, solutions or ingredients in any manner to ensure original taste, looks, smells as well as nutrition values. Some products from the first group such as crustaceans (crab, lobster, clam, snail, shrimp, prawn etc.) are even left unprocessed and reach the market shelf still living and breathing. Highly valued fish species such as wild salmon, sturgeons, stingrays and small sharks are treated in the same manner, stuck into water tanks with air pumps and sent straight to restaurants or fish markets. However, for exporting operations, living seafood is a grant luxury, a privileged preserved only for the most prestige products. In the second category, highly processed and lasting items, the original raw materials are treated in different combinations of solutions and ingredients, effectively changing the tastes, looks, smell and chemical components of the materials. Products in this second category are put into many forms of sealed packages such as glass jars, plastic bags and tin cans. Highly processed products, thanks to being cut off from environmental elements, can last for significant amount of times, the least being several months and the most being several years from the day of packaging. In many cases, the processed contents undergo sterilization before sealing, eliminating almost every traces of bacteria life forms, making the contents effectively unperishable forever.

#### 5.1.2 Cost

Cost is undoubtedly one of the most critical issues to consider when choosing a mode of transportation, especially for the purpose of commercial goods transportation. Considering the amount of goods needed to be shipped on a regular basis as well as the lasting need for transportation, even a slight difference in the cost per individual cargo units could mean a

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great amount of money in the long run. Low transportation costs also make it possible for businesses to provide imported items to end customers at affordable prices, thus increasing end values as well as competitiveness. Usually, cost is affected by the urgency of the cargo batch. For shipments that can afford to sit in transit for an extended amount of time, costs tend to be lower. In contrast, shipments that need to reach their destinations in little time such as perishable goods or emergency supplies will have to settle for more pricey options. In the case of seafood products, depending on the type of products to be shipped, the choice is quite straightforward. For highly processed, canned and packaged products, which can be kept in stock for months and sometimes even years, the shipping cost can be significantly lower. For fresh products that are meant to be consumed within a few weeks of harvest, the high prices must be tolerated. Shipping costs are also greatly affected by the availability of the chosen transportation means. The less cargo spaces available, the higher the costs charged toward shipments. In well-connected regions where a lot of transportation options run back and forth on a daily basis, cost will be lowered due to competition among the transport operators. In contrasted, in newly established cargo routes, the imbalance between demands and availability, transport costs will surely soar.

### *5.1.3 Time factor*

As a matter of fact, perishable products such as seafood cannot be kept waiting for too long and need to reach end consumers as quickly as possible otherwise they may soon turn rancid, rendering the products not fit for commercial selling anymore. However, nowadays, thanks to developments in cargo preservation techniques, goods can be produced long ahead of shelf time and still preserve the same tastes and quality. This means that products can usually afford to wait for a long time while in storage or in transit. The same rules usually applies for seafood products. As seafood preservation methods improve and diversify, businesses have more time to plan for transportation, even for fresh products. However, in certain markets, demand for fresh, unprocessed products is very strict. As of a common consumer conception and proven by food sciences, the longer seafood items spend in preservation, the higher the chance of losing original tastes and nutritious values. Recent movements toward fresh food also recommend people to consume less processed seafood and more fresh products, igniting demands for fresh, unprocessed items all over the globe, including Finland. Therefore, high value fresh seafood items still need to cut the time between harvesting and store display as much as possible.

#### *5.1.4 Capacity*

On an industrial scale, the amount of products being shipped on a given time period can be significantly enormous. Shipments that are capable of reaching several hundred or thousands of tons are not unheard of when it comes to seafood shipping. Sometimes, it would not make a lot of sense for businesses to divide large cargo bulks into smaller bulks and ship on several shipments. There are simply too many factors to account for and risks are everywhere. Sending several small bulks may mean non-uniformed storage conditions, which would create a lot of variation in product quality, which in turn leads to overall lower commercial values of the product batch. In addition, multiple small shipments also mean more paperwork to be done at international border ports. The costs for several small batches are also higher than those for larger patches, on a per unit basis. The reason for this is the transportation operators need send higher numbers of vehicles and personnel to escort and process those additional shipments, which cause unnecessary losses in operation unity, integrity and resources. In short, businesses tend to go with shipment methods that can cover their entire shipment orders in the lowest number of trips possible for the sake of cost and operation efficiency.

#### *5.1.5 Accessibility*

This factor considers the ability of transportation means to reach intended destinations. It is a fact that not all means of transportation go everywhere. Vehicles are often limited to their own types of facilities to operate. For example, airplanes specifically need airports to be able to take off and land. They also rely greatly on a network of air traffic control towers to guide them during their journey and relay important information to and from operation HQs. Trains run only on railroads and not every country has the same railroad capacity or technical specifications. While railroads in North America are uniform, those in the European Union and former Soviet countries such as Russia, Ukraine, and the Stan countries have different track gauge sizes (the space between the two sides of the rail tracks). That forces European trains bound for Asia and vice versa to unload and move to a different train to carry on, resulting in delays and high costs. However, the fact that a certain transportation means cannot reach a specific location does not necessarily mean that it is rendered entirely useless. With proper planning, a shipping business can seek out a way to combine several means of transportation. There is no specific blueprint for this approach and each situation and solution must be determined on a case-by-case basis. By

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combining different types of transportation, the operators can reach a larger geographical scale and become more effective in several aspects such as cost, time and scale.

#### *5.1.6 Availability*

An often overlooked factor nowadays due to the scale of availability of transportation means, availability refers to whether or not the transportation means of choice are available when and where needed. Many countries have long coastlines and commercial seafood activities happen all along the coastlines, including farming, harvesting, processing and shipping. However, transportation facilities are not equally adequate in all coastline regions. Many cities do not have a functional airport while others lack railroad systems or even adequate paved road. Even in regions with all transportation facilities available, major economic agents that have been around for long may have preserved them to maximum capacity, leaving little or no room for new businesses to acquire the transportation facilities they need. However, the availability factor can generally be solved with proper planning since road connection can ferry the goods to another location where transportation facilities are more readily available in reasonable times. Countries nowadays, seeking economic prosperity, also invest a lot in improving transportation systems so as to meet growing requirements so availability issues are constantly fading away.

#### *5.1.7 Frequency*

Nowadays, one can safely assume that transportation facilities such as airports, seaports and railways cover most important trade routes of the globe nowadays, ensuring that any human-populated hot spot on Earth can be connected to another spot somehow. However, the question of connection frequency remains a problem. For example, almost every major city in the world now possesses an airport. However, connections between any two airports are subjected to airlines' schedules, cargo airlines and passenger airlines alike. If an operator seeks to transport cargos from one point to another, it must relies on the frequency the preferred mode of transportation currently offers. It is possible to relieve from this reliance. A business can operate its own fleet of vehicles such as planes, trucks, train compartments or ship. However, the costs associated with operating and maintaining the fleet sometimes are not worth the effort and the scale of the business in concern. On a commercial entity's perspective, it is never wise to wait until the last minutes to reserve transportation. All must be done before at least a year prior so as to get the best connection

options available. Businesses in the export/import industry are generally in good terms with carrier companies and have certain privileges and priority levels, especially on vehicles that have limited capacity such as airplanes or train compartments. Another way to counter reliance on transportation frequency is to charter an entire cargo trip, usually a plane or a ship. If the volume and potential commercial value of the cargo shipment are high enough, chartering may actually be a better approach than to rely on scheduled trips. The reason is that by chartering, the business can make sure that the vehicle loads and leaves as per the will of the business, at its own chosen time and place.

#### *5.1.8 Safety & Reliability*

For a business, it is of absolute disaster if any issue happens to its cargos. The loss of monetary value of the cargos themselves is indeed important but it is of less importance when compared to other damages caused as a result of a cargo accident. As the affected merchandise fails to reach to market, the supply chain will be ruined. In the worst-case scenario, retail businesses do not have enough goods to sell to end customers, causing them to lose reputation, profit and market share. In turn, retail businesses lose trust in supply companies and ultimately the entire chain breaks. In short, it is important to ensure that the chosen mode of transportation can manage to deliver the assigned cargos to the destinations without incident. One common method is to rely on past performance records. By digging up the past, valuable information such as transportation fleets, fleet maintenance, safety records, safety approaches and aftermath solutions etc. Such information will provide a look into the approaches of prospective transportation partners and sourcing seeker businesses can decide for themselves if the approaches match their criteria and expectation of their partners. However, businesses sometimes base too much of their prejudice on past performance and fail to consider recent improvements made by transportation partners. In fact, a swift and significant makeover can render past records entirely obsolete, turning a previously unreliable candidate into a whole new, valuable one. Another issue when considering safety factors is to survey the announced transportation route. Several well founded carrier firms run through risky route, those that affected by factors such as harsh terrain and volatile political movements etc. It is best to avoid such risky routes for maximum safety effect. However, the fact holds true that such routes sometimes offer the most lucrative opportunities such as low transit costs or shortened travel distances. Still, it should be taken into consideration that several categories of seafood products are highly perishable and cannot afford to wait to be recovered from

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incidences since they will simply rot away after being exposed to outside environmental factors if their containments are breached. That means the entire shipment will have to be considered lost and subsequent nodes in the supply chain and associated commercial activities will also be affected as a result.

#### *5.1.9 Integrity with other modes*

Nowadays, even though all of the major means of transportation offer significant global-wide coverage, each of them has certain issues that impede them from reaching every desired destination. While airfreight and maritime transportation offer easy movement across countries as well as the globe, they are restricted by their reliance on their own specialized ports and facilities. While land and rail transit methods are able to carry cargos to specific destinations with relative ease, they are not possible to be used over significantly long routes due to limitation in fuel efficiency, controls and geo-political factors. Therefore, to overcome the limitations suffered by each mode of transportation, it is a common approach to combine several transportation modes over the entire routes. This approach will help make sure that there will always be an effective route to transport goods from one point to another by taking into consideration the transportation facilities available and utilize the advantages of one method to compensate for the lacking of other methods. Usually, there is one method that covers the majority of the routes and one or more methods to cover the minor remains of the entire routes. There are also situations in which two methods share comparable coverage, using a third country or a free port as the transit point. However, considering the perishable nature of several seafood categories, the longer the cargo has to spend in transfer zones the worse it is for the overall quality. Therefore, it would be best to cover the entire international route within a single leg and avoid transfer points as much as possible.

#### *5.1.10 Confidentiality*

This is a factor usually that is taken for granted nowadays as data protection lawsuits are introduced and updated rapidly to match with the growing volume of data and the needs of individuals and organizations to protect their confidential data from prying eyes. Confidentiality is especially for organizations since corporate data generated by commercial activities can mean the difference between success and failure in the competition. For businesses, it is vital to protect their operation secrets from illicit competitors. Similarly, when considering transportation option, businesses must take

precaution measures to make sure that their competitors know little or not at all about their transport routes. If such secret is compromise, the competitors, in the worst case, could plan sabotage measures to delay timely delivery or to copy the route or employ the same transportation partners if such approaches are effective enough. Therefore, while not directly any commercial value to the overall shipment, the extent to which a business can choose a transportation measure that can protect the identity of the cargo within usually means a lot in maintaining the business' competitive level and securing safe delivery.

## **5.2 The Advantages and Disadvantages of Different Means of Transportation from the Perspective of Finland**

### *5.2.1 Road Transit*

Road transit, also known as land transit, is a method that employs wheeled vehicles such as cars, light buses and trucks. This method relies heavily on the availability of landmass to construct paved road or bridges and tunnels to cross more hard terrains such as bodies of water or mountain ranges. When considering international road transit to Finland, one obvious factor that carries the most weight is the geographic location of Finland as a nation. Despite being a member of the European Union and has significant cultural, economic and political ties with the rest of Europe, Finland has very limited land connection with other EU countries. Finland has land connection with the Northern parts of Sweden and some land border with Norway in near the Arctic. However, such locations are too isolated from the rest of the world to secure any significant transit volume. Those northern regions themselves are not major population centers and do not possess the most prominent facilities. Apart from that, the only considerable road connection Finland has with any country is the Eastern border with the Russian Federation. In turn, the Russian Federation possesses the largest landmass in the world. That means land shipments through Russia will have to cover an extensive routes that could take days and even weeks to pass, not to mention the amount of road that needs to be covered to transfer the goods from the country of origin to reach Russia itself. That means any shipment that bounds for Finland overland will have to cross either a sparsely populated and under facilitated northern borders with Sweden and Norway or through Russian territories. Recently, there have been talks and plans about building an underwater tunnel to connect Finland with Estonia.

However, until the day the tunnel is completed and vehicles start crossing the Gulf of Finland, that option cannot be counted.

Unless the original points of the shipment are anywhere near the Finnish borders with Sweden and Norway or from Russia itself, then land transit is a poor option in term of connection time and range. Considering the perishable nature of seafood products, such extended transit time and long route will definitely cause the products' quality to deteriorate even if preserved in thorough equipment and manners. Even for heavily processed products that can last long enough to survive the long road trip, there are many other risk factors. It remains a fact that road transit is controlled entirely by human drivers. In an extended driving route, humans tend to develop fatigue and errors, while could be greatly reduced, that could cause serious accidents are always a realistic risk. An extended road trip also takes its toll on the vehicles themselves. Maintenance and refueling are the most common issues. Refueling, while quick and largely available anywhere with major road systems, is costly, considering the primary fuels for cargo trucks are fossil fuels, which are not only a limited resourced but also cause great impact on the environment. Maintenance, on the other hand, is costly and slow at the same time, which greatly reduce the transportation pace and extend delivery time. For seafood products, such issues are largely not tolerable and render road transportation a questionable option to consider.

### *5.2.2 Rail Transit*

Similar to road transit, rail transit also relies on the availability of landmass to construct railways that train compartments can run on. However, rail transit is less subjected to risk factors because its support facilities are more extensive and thorough. The fact that compartments run on rail lines makes it less possible for compartments to go off track, thus causing less variable situations and therefore less chance of incidents. Rail transit also offers higher speeds and is more energy effective when compared to road transit, not to mention rail compartments are able to carry large volume of goods while requiring less maintenance. In addition, along rail lines are train stations and more comprehensive signaling and communication systems to meditate the flow of trains and compartments along the rail line. That helps to significantly reduce the chance of collision of vehicles travelling along the rail systems. All of these factors combined make rail transit a better option for commercial and industrial scale orders.

However, in the case of Finland, rail transit suffers the same problem as with road transit: limited connection. The only international rail system Finland can rely on also runs through the border of the Russian Federation. That again means any cargo shipment transported via railway to Finland will have to cover great distances all the way from the original point to Russia and then from Russia to Finland. Such a journey could take days at the quickest and sometimes will require the transfer of goods from one train to another since not all rail track gauge sizes are the same for every country. Therefore, railway again is not an appropriate mode for the more perishable categories of seafood due to extended travel times. On the other hand, rail transit is rather promising for highly processed products since they can withstand the long journey and the trip can be significantly less perilous compared to land transit due to the highly regulated nature and approaches of rail systems. However, the fact remains that the only international railway system connecting Finland with the rest of the world runs through Russia. That means if any issue, either natural, technical or political, happens to this rail system, entire supply routes to Finland will be interrupted without any viable replacement option available. Therefore, it would be risky to rely solely on railway transport via Russia to deliver seafood products to Finland from other parts of the world. Still, it is possible to utilize such route to deliver parts of the entire seafood supplies if needed during normal conditions while there is no significant tensions or disaster since the rail system does offer an economically viable option considering the costs and connection capabilities.

### *5.2.3 Sea Hauling*

Sea hauling is the mode of transportation capable of transporting more volume of cargo compared with all other cargo transportation means. Sea hauling, while greatly subjected to weather conditions and natural disasters, is also the least affected method when considering human factors such as political turmoil or economic sanction. This is possible because about 64% of all maritime total areas is international water, which means it is technically free for all sea hauls to pass through. However, sea hauling is a relatively slow option with the fastest recorded speed of commercial sea hauls is about 22 knots, translated to about 40kph. In addition, there remains the fact that the weather conditions of several sea routes can be very unpredictable and can turn violent within short notice. While the chances of total loss of cargos may not be very significant nowadays thanks to ships' being more sturdy and better ability to predict and avoid perilous weathers, partial damages are sometimes inevitable.

The main seaports of Finland are the port of Helsinki, Hamina Kotka, Naantali, Pori and Raahé. The main direct lines that those ports offer are those that connect with continental Europe. Finnish waterways are limited to within the Baltic Sea (which possible connects with the Baltic countries, Poland, Sweden, Germany and Denmark), the Gulf of Finland (mainly connections with St. Petersburg in Russia and Estonia), as well as the Gulf of Bothnia (exclusively connection with Sweden). A look at the map shows that the waterways that Finland has access are rather confined bodies of water. The only way to connect to greater sea routes is through two narrow belts through Denmark to reach the North Sea. That route eventually leads to greater connection with the Atlantic Ocean and other destinations to the north of the North Sea. Finland lacks viable waterways to reach and to be reached from lucrative seafood markets such as the Mediterranean Sea, the Far East or Latin America. Goods from those destinations would require weeks or months of travelling at sea to finally reach Finland. Therefore, if using only sea hauling options, the Finnish market will be limited to seafood products that are highly processed and well preserved. Fresh seafood choices would be completely out of the question since no perishable item can last such extended journey without being administered to regularly. Even so, caring for perishable batches all the way through months at sea will eventually turn out to be too expensive and wasteful of resources and labor, deeming it unprofitable in the end. In addition, several parts of Finnish maritime access routes are likely to freeze completely during winter months, making it even more difficult for sea hauls to navigate their ways to Finland.

#### *5.2.4 Air Freight*

Airfreight transportation is unarguably the fastest mode of cargo transportation that is widely available in the market. Airfreight is also among the most costly option, partly due to the delivery speed that raises the value of the option. Depending on the capacity of the airplane in concern, a full air shipment can be anywhere from 56-154 metric tons of cargo during a single take off. Air travel is considered one of the safest form of transportation since each airplane that is allowed to take off has to carry several life-support and fail-safe systems so as to prevent the plane itself from getting into different form of situations. Such systems are the ultimate results of decades of research and experiments, many drawn from real air disasters that cost human lives and commercial values dearly. Airplanes in general nowadays operate under a network of air traffic control mediate and guide airplanes to appropriate routes and problem solving advices. Generally, airplanes pass through national

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borders with relative ease and straightforward processes and do not normally suffer from issues on the ground. However, situations in which a nation decides to close its airspace to all or certain airplanes or to impose no-fly zones on national territories are quite common. Such situations will force planes to reroute, either go back to their home base for further instruction or seek to negotiate new flying routes with air traffic control of another region or nation. Such situations, however, are rather rare and affect air traffic only on a localized scale.

The biggest international airport of Finland is Helsinki-Vantaa airport with connections all over Europe, North America, South Asia and the Far East. Other than that, Finland also operates smaller international airports such as Tampere, Turku and Lappeenranta, serving destinations in mainland Europe and the Nordic region. While the cargo fleets of carriers based in Helsinki-Vantaa airport serve mostly Nordic and Western Europe routes, the expansion capabilities of passenger commercial fleets are high and the amount of cargo they can carry along with passengers' baggage is considerable. In addition, with the availability of lend and lease fleets belonging to several charter companies nowadays, it is becoming increasingly accessible for businesses in need to charter an airplane if needs be. The Far East and South Asia are lucrative markets for seafood sourcing since many of the world's main seafood production and export countries such as India, Sri Lanka, China, Vietnam, Thailand and Korea etc. are located in the region. Canada and the East Coast of the USA are also great producers of seafood, reachable with a direct Trans-Atlantic flight. Flights to coastal countries in the South of Europe such as Greece, Italia, France and Spain etc. also connect the Finnish market to thriving seafood production markets. Other prominent sourcing countries also lie within moderate flight times and distances of Finland are North African countries, islands (Cape Verde, Morocco, Algeria, Tunisia, Eritrea etc.) due to the fact that they share fishing rights, and stocks within the Mediterranean Sea and some parts of the Red Sea. The one significant plus point that airfreight has to offer is that air travel can connect Finland with those above mentioned regions within reasonable time to allow perishable seafood items to retain their freshness and nutritional values. Most flights to and from those regions take between 5-8 hours, the longest being the route between Helsinki and Tokyo takes about 15 hours of direct flight. That means, with proper supply chain coordination from the sources of seafood and transportation operators, cultivated seafood can be expedited to Finland within 15 hours (Mediterranean Sea, North Africa and mainland Europe) or 30 hours (North America, South Asia and the Far East) of harvesting and processing. Wild stocks may take longer since the catching fleets need to

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first reach the coast and the catch will have to be forwarded to processing, if not already done so on board. The delay can add a few more days or weeks to delivery. However, with proper preservation and supply chain coordination, wild catch seafood products can still reach Finland within 24 hours of processing completion.

### **5.3 Priority Selection Criteria of Transportation Mode**

While there are many criteria to be used in picking the most prominent choice of transportation, not all of them have equal weight in the consideration process. There are inevitably more urging criteria and others with less standing importance. So as to decide which selection criteria are the most important from the mass, the analysis of international sourcing steps as in part 3.3 of this thesis will be used to aid the process since such analysis features the entire sourcing flow from start to finish and will help explain the importance of each selection criteria during each step.

The six steps of international sourcing are as followed:

- Step 1: Internal Assessment
- Step 2: Supplier Market Assessment
- Step 3: Supplier Criteria Assessment
- Step 4: Sourcing Strategy Development
- Step 5: Bidding/Negotiation
- Step 6: Implementation and Improvement

In the first step, it requires that sourcing companies assess their own needs and capabilities before commencing any international sourcing plan. In this specific case scenario, it is important for companies to understand the type of products and cargo they are dealing with since different types of products have different requirements when it comes to preservation while in transit. Seafood products are either fresh and perishable or highly processed and durable, affecting the preservation approaches that the sourcing seeker companies must follow. Perishable products must be handled with more care and durable products do not need to take into consideration too many environmental issues. Thus, it can be identified that the first and most important selection criteria when it comes to choice of transportation mode is the “nature of the products”.

The next two steps involve the assessment of potential suppliers and the market in which they are based. As can be seen from previous parts of the thesis, Finland is rather isolated

in term of geographical location and land connection from the most prominent and diverse target countries for seafood sourcing such as the Mediterranean Sea, the Far East coastal countries or South Asia etc. That means it will takes considerable amounts of time to travel from the point of origin to the destination that is Finland. Since there are perishable products involved in the process, it is a must that the choice of transportation mode must take into consideration the time factor. While transportation time can be more relaxed for durable items, it is rather still an important factor to ensure that products reach the Finnish market in time for distribution. In short, the second most important selection factor is identified as the “time factor”.

Step 4 and 5 are those that concern about the planning and negotiation of actual sourcing supply chain and agreements between the involved parties. In reality, step 4 mainly concerns the availability of certain transportation fleets and facilities as well as specific transportation protocols that could be used when actual implementation happens. Step 5 focuses on setting contracts between the sourcing seeker companies and suppliers as well as any others that may be involved. These two steps, while playing decent parts in building the supply chain, do not cause major impacts on transportation mode selection criteria. In fact, step may involves some selection criteria such as availability and accessibility. However, considering the rather extensive availability of all kinds of transportation and the level of transportation facility standardization the world enjoys nowadays, such criteria become rather secondary.

Lastly, step 6 is about the actual implementation of the sourcing plan. In this final step, the ultimate goal is to get the delivery to the final destination intact, without any major incident and damages to the content of the shipment. As mention before, the safe delivery is of utmost importance because the products will be sent for commercial selling across the Finnish market. Any failure and delay in delivery as well as the shortage of sellable products will cause various degrees of turbulence in the supply and demand balance, thus gradually destroy the industry as a whole. Therefore, a third major selection criteria can be identified as “safety and reliability”.

## **5.4 The Most Probable Means of Transportation**

### *5.4.1 Summary of Pros and Cons of each Means of Transportation*

#### a. Land Transit

<p>Advantages</p> <ul style="list-style-type: none"> <li>• Quick and available refueling along roads</li> </ul>	<p>Disadvantages</p> <ul style="list-style-type: none"> <li>• Limited land border options</li> <li>• Subjected to human errors and technical failures</li> <li>• Too much accident factors</li> <li>• Consume too much time and resources</li> </ul>
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#### b. Rail Transit

<p>Advantages</p> <ul style="list-style-type: none"> <li>• Extensive support facilities meaning less risk factors and errors</li> <li>• Higher speed</li> <li>• Energy efficiency</li> <li>• Suitable for highly processed products</li> </ul>	<p>Disadvantages</p> <ul style="list-style-type: none"> <li>• Relies on railway systems</li> <li>• Only connection is with Russian railway</li> <li>• High chance of interruption in case of turmoil</li> <li>• Long transit routes through Russia</li> <li>• Not suitable for perishable products</li> </ul>
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#### c. Sea Hauling

<p>Advantages</p> <ul style="list-style-type: none"> <li>• Highest capacity in all transportation modes</li> <li>• Easy movement around international waters</li> <li>• More suitable for highly processed products</li> </ul>	<p>Disadvantages</p> <ul style="list-style-type: none"> <li>• Subjected to weather and natural disasters</li> <li>• Rely on ports for docking, resupplying and maintenance</li> <li>• Slow velocity</li> <li>• Closed water bodies, little connections to open seas</li> <li>• Not suitable for perishable products</li> </ul>
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#### d. Air Freight

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• The fastest option for international cargo movement</li> <li>• Air travel considered the safest mode of transportation</li> <li>• Bypass national borders while in transportation</li> <li>• Good connection to many prominent seafood production regions</li> <li>• Scheduled and charter options available</li> <li>• Significantly cut time between origin and destination</li> </ul>	<ul style="list-style-type: none"> <li>• Isolated cases of sudden closed airspaces</li> <li>• Reliance on airport and air traffic control systems</li> <li>• High cost</li> </ul>

#### 5.4.2 The choice of transportation mode

By looking at all the previous analysis of the advantages and disadvantages of different transportation options that Finland as a country has when seeking to source its seafood from foreign sources, it is possible at this point to come up with a conclusion. First of all, one problem with Finland as a country is its relatively isolated geographic location away from prominent seafood production regions. That means goods will take a long time before goods can reach Finland after being dispatch from the country of origin. That factor is especially traumatizing to sourcing perishable products since they cannot last too long on the road without proper yet costly preservation equipment, supplies and practices. Therefore, the only obvious option left for the transportation of perishable seafood products is by airfreight. This option does have its own drawbacks, high cost being one of the most obvious problems. However, when weighting against the values that airfreight transportation can add to the seafood products and the values that such products can bring to the Finnish economy and population, the high transportation cost is largely tolerable.

The second seafood product category is heavily processed seafood products, products that are stored in sealed containers and can withstand external damage factors as well as do not spoil despite long transit time. For this category of product to be economically competitive

and profitable, transportation cost can be cut as much as possible. Therefore, this second category can afford to travel on any mode of transportation as long as safety and capacity are not an issue. Heavily processed products may still travel by airfreight if the sourcing company deems it profitable and necessary. Still, the preferred method may be through sea hauling or railway since these two modes cost significantly less and can carry more volume of products in one shipment, helping to maximize the economy of scale effect on the profitability of the approach. However, in the specific case of Finland, those normally accessible methods can prove more problematic than normal. As mentioned above, railway transportation to Finland has no choice but to go through the territory of the Russian Federation. In normal economic and political conditions, that fact does not pose any significant setback. However, if tension with Russia grows to dangerous levels then the route will surely be interrupted to various degrees and harm the entire supply chain. Considering sea-hauling, political issues do not seem to be problematic since ships can navigate around several options of waterways. However, the problem with Finnish ports is that they are located in closed water bodies that are the Gulf of Finland, Gulf of Bothnia and the Baltic Sea with limited connection to the North Sea. Therefore, to engage in sea hauling cargos from many geographic locations such as South Asia, the Far East or the Mediterranean Sea to Finland would cost a lot of resources and time to take the long way around the main European landmass before reaching the two narrow entrance ways through Denmark to reach Finnish water bodies. In the end, by weighting the two options, it would be best to choose rail transit rather than sea hauling since the problems with rail transit is rather loosely projected with little obvious proof of possible occurrence in the near future. On the other hand, the main geographical problem with sea hauling is an existing nuisance.

In conclusion, when considering the choice of transportation mode to deliver seafood products from foreign markets to Finland, the main factor to consider is the nature of the products itself. Seafood products in this case are divided into (1) perishable products and (2) sealed products. The main distinguishing factor between them is the amount of time they can afford to be kept in transit and the level of resilience of each method against damaging factors. Supporting factors that account for the choice are the safety levels each means of transportation can offer as well as its speed and costs. For the perishable category of seafood, there is no other choice but to deliver products as quickly as possible to Finland and so air freight is the obvious choice. For the sealed product category, airfreight remains a great choice when needed. However, to counter high cost and maximize transport

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capacity, railway transport proves to be a better choice although a bit of risk factors must be admitted and tolerated.

## **5.5 Motivations for Finland to Engage in International Seafood Sourcing**

### *5.5.1. Environmental Motivations*

Finland as a nation cares about its nature and the resources within and for good reasons. Finland is blessed with high forest coverage and abundance fresh inland water supplies as well as other considerable maritime resources. Therefore, it is for the best interest of Finland to restrain from exploiting its resources as much as possible to ensure that future generation can continue to thrive on the riches of the Finnish land. If Finland wants to diversify its seafood market, there are basically two options: (1) to increase harvest and cultivation within its own border or (2) to import from foreign markets. If the first approach is to be taken, Finland will lose percentages of its largely unspoiled nature, consuming water surface and natural habitats as well as allowing more waste from seafood operations to enter the environment. As in aquaculture, wild harvest will also impose certain effects on the Finnish environment. Wild harvest more or less will devastate natural seafood stocks all over Finland, creating a less healthy population in the environment. By seeking to seek from foreign sources for its seafood, Finland can avoid the above-mentioned problems all together.

However, that should not be mistaken as an approach that would demonize Finland as a selfish and uncaring country that cares only about itself and not about the environmental wellbeing of other nations. In fact, seafood-exporting countries have been cultivating and exploiting their seafood stocks for years at the very least. It does not matter if Finland is going to source from those countries or not, commercial fishing and aquaculture activities will always continue. However, as Finland steps in as a new and prominent consumer market, the country can more or less pressure the seafood-exporting countries to take more sustainable and environmental friendly to their current seafood activities. As a member of the customer side, Finnish businesses can force their partners in other countries to adapt conservation and sustainable approach to harvesting and culturing such as impose harvest limit to allow endangered species a free window for mating and reproduction or utilize machineries and fleets that are more efficient and less harmful to the environment. If such a scenario is possible, the environmental concerns of Finland may also benefits the natural

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habitats of other countries. The point is for Finland to understand its place in the market and be tactful enough to turn whatever negotiation power to make it favorable not only to its own environment but also to other regions.

### *5.5.2 Economic Motivations*

Many argue that Finland as an economy will suffer as money moves out of the Finnish border if the country focus on importing goods from other markets. That argument, while valid to certain extents, is premature and fails to consider the bigger picture. The fact is, while international sourcing for seafood may be a significant field on its own right and may somehow tip the balance of import and export, the practice is a mere link in the bigger economic picture.

First, it must be admitted that the practice of international seafood sourcing does leak a considerable amount of financial resources out of Finland. However, at the same time, it brings back new products and new materials to diversify the internal market of Finland. With new products and materials available in the market, the national economy grows in some other ways such as new restaurant businesses, new retail shops specialized in seafood and more household food consumption amount etc.

On the other hand, exposing more Finnish companies to international business activities such as international seafood sourcing also helps those businesses and others that follow them develop proficiency and experiences with dealing in other countries and cultures. That way, even if the international seafood-sourcing scheme turns out to be a failure in term of profit, its legacy as among the foundation of greater international business expansion of Finnish organization persists. Exposing Finnish businesses to foreign environment also helps the foreign counterparts to get used to the Finnish way of doing business. As more businesses from both side engage in trade, in volume, occasions and familiarity, the two economies eventually move further toward each other to a level that a sustainable and profitable economic relationship can be formed for long-term effects and mutual benefits. Having more international partners helps Finland improves its bargaining power, at least in term of economics, as reliance of old and singular partners is loosen. Finland businesses also have more partners and diverse options to choose from as well as more availability of essential resources so the cost in the domestic market can be driven down, benefiting end consumers and the health of the national economy as a whole. In addition, other countries, unwilling to have a profitable economic relationship with Finland broken, will offer Finnish businesses many privileges to keep both sides on good terms.

### *5.5.3 Political Motivations*

Political motivations in this case function somewhat the same the way as economic motivations. As countries become more exposed to each other and start exchanging benefits, they develop bonds in many aspects that would be detrimental to all sides if the bonds between them shattered. In this case, if Finland engages in increasing trades with other countries through international seafood sourcing, the countries will depend on each other for goods, materials and cash. That means each of the sides has certain benefits to lose if any form of conflict happens and therefore will try to avoid conflicts as much as possible. The initial idea of international seafood sourcing is merely to diversify the domestic seafood market of Finland while preserving the environment and to achieve certain economic gains out of it. However, the development of mutual national relationship will, by itself, force its way to politics. Still, in the end, Finland also has much to gain from this development. By having one or several countries depending on its economy for export of products and materials, Finland eventually reduces the number of prospective political enemies and gain stability as a result. Even if Finland lacks any intention of bringing other countries into submission or manipulation of any form, political stability itself is a powerful catalyst for the development of Finnish cultural, social and economic factors.

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## 6 Discussions & Conclusions

### 6.1 Answering the Research Question

***Question: “What is the most probable means of transportation for the transportation of foreign seafood products to Finland?”***

Answer: Airfreight is the most probable means of transportation of both fresh and heavily processed seafood categories due to the relatively isolated geographical location of Finland against seafood producing regions that requires transportation speed to be maximized to ensure product quality. In addition, for the category of heavily processed seafood, transportation by railway via Russia is also a probable option, provided stable and unhindered economic and political situations.

***Question: “The most important factors that lead to the transportation mode of choice as in the main research question?”***

Answer: While there are many factors that determine the choice of transportation mode in a commercial situation, only a few of them serve as the determinants. In the case of this thesis, those factors are:

- Nature of the cargo: this factor determines the level of protection, time and delivery manners that the cargo requires to reach the destination.
- Transportation time: since there are fresh and perishable products in concern, time is the utmost important factor to ensure they retain their freshness and quality upon arrival.
- Transportation safety & reliability: it is important that cargos reach the destination in the end since the supply chain does not stop at reaching the Finnish border and the products need to generate more value later on.

***Question: “What are the motivation factors for Finland to participate in international sourcing?”***

Answer: There are three motivation factors for Finland to participate in international sourcing of its seafood supplies. The first one is the need to protect the Finnish environment while still ensure market development. The second is the need to grow Finland’s economic power so as to give itself more business partners and to improve the competition capabilities of Finnish businesses. The third motivation is for Finland to use economic relationship to foster political wellbeing with other countries.

## **6.2 Reliability and Validity**

The thesis makes use of data and references that come mostly from published sources such as books, published research and others validated sources. The thesis has also been collated against other works with similar subjects and focus in the field. In addition sample supply chain and logistics framework provided in the thesis has also taken into consideration the most recent and pragmatic data and development achievements possible. It is thus safe to assume that the thesis could provide an accurate and reliable research result. This paper also makes use of standard written English in an academic manner to express research approaches, opinions, findings and industrial terms to ensure that readers have no difficulty in comprehending the content. At the same time, the thesis avoids to the utmost the use of overly complicated and industry-specific terms and expressions so that even novices people with none or little prior exposure to the topic of the thesis can easily understand the paper.

Still, considering the pace of development of the transportation industry nowadays, it would bode well for the sake of future readers and prospective researchers who may want to refer from this thesis to test the validity of this thesis against the most recent information of the same topics for updates and rectifications. Some of the issues that are prone to changes in the future are (1) the development in seafood preservation methods, (2) food references of the Finnish market, (3) changes in EU and Finnish laws concerning imported products and (4) the growth of logistic elements in the future.

## **6.3 Limitations of the Study**

The information and approaches conducted in this study are aimed at international seafood sourcing on a national scale and are therefore rather broad and general. In fact, several universal data and approaches can be directly referenced and serve as realistic framework for case-specific application. However, since the thesis only consider such matters at the national level of the Finnish economy, the solutions provided in this thesis will need to be reconsidered if intended to be applied in more specific scopes such as in an actual business scenario. In practice, businesses will function in a more variable range of business partnerships, target markets and product types etc. This will lead to micro-economic

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issues' being even very diverse and complicated to be summarized in any single study. The approaches and solutions to such issues must, in real life, be identified, assessed and dealt with on a case-by-case basis.

On the other hand, the thesis is, at the same time, quite specific about the products and country scenario it is dealing with. The products in concern are identified as seafood products of fresh and heavily processed categories and the country that those products are bound for is identified as Finland. Again, while the approaches and solutions given in the thesis is rather universal and many of those can be directly applied to other categories of products or target countries that share similar characteristics with those in the study, the specific approach in each case should remain discreet and be considered on a case-by-case basis. For example, since Finland belongs to the EU, other EU countries may share similar import quality and procedures with those of Finland. However, specific import quotas and the level of strictness when it comes to enforcing regulations may be at different levels. Such minor different cannot be considered lightly when conducting a specific research since they could mean a lot between an accurate and an invalid result.

#### **6.4 Suggestions for Further Research**

There are indeed rooms for further research on this topic. As mentioned before, the thesis only focus on a single market, a single product category as well as the very general level of approach (national level) toward solutions for the issues mentioned in the topic. If a future research were to be conducted, it would be for the goods of many if such research could be about a more specific study, preferably one that focus on a real Finnish company seeking real international seafood sourcing from one or several foreign nations or regions. Such study will provide a more minute view into how the supply chain actually happens and what other real problems that Finnish businesses have to face for such a feat to be possible. A specific case-company study could also form a blueprint for actual Finnish companies to prefer to and possibly form the basis for new business ventures in the future.

In addition, future research could also apply the thesis to develop supply chain models for other categories of products for different market countries. Similar product categories as seafood and similar countries as Finland may possess enough comparable characteristics to make use of the data and solutions provided in the thesis. Yet, however similar comparable objects may be, it would always be advisable to take a fresh approach to the prospective

study object first so as to fully comprehend the whole scale of the problem better making any reference to similar object.

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