

**DAIRY CONSUMPTION CHANGES IN FINLAND AND ITS  
EFFECTS ON THE DAIRY SUPPLY CHAIN**

Lapland University of Applied Sciences

Heino Matilda

Thesis

Business  
International Business

2023

Business  
International Business

---

<b>Author</b>	Heino Matilda	<b>Year</b>	2023
<b>Supervisor</b>	Braun Adrian		
<b>Commissioned by</b>	Lapland University of applied sciences		
<b>Title</b>	Changes in the consumption of Finnish dairy and reactions in the supply chain		
<b>Number of pages</b>	38+2		

---

The topic of this thesis was to investigate the changes in the consumption of agricultural products and its impact on the production chain from the point of view of different stakeholders. The aim was to determine whether the impact is greater on a particular stakeholder or whether the impact is evenly distributed. The research question of the thesis was: How have changes in dairy consumption affected different stakeholders in the supply chain?

The first theoretical part of the thesis dealt with the changes in Finnish consumption in recent years in general and more specifically with the changes in food consumption. In this section, the changes in milk consumption were examined in more detail. This section also covered the milk production chain and the issues affecting it. The second theoretical section dealt with Finnish food and its responsibility and impact on the national economy.

The data collection method for the study was interviews, either remotely or via e-mail. The materials were reviewed by coding the most frequently mentioned words and phrases that were seen as relevant to the study. Subsequently, these words were categorized into relevant groups. To visualize the analysis, word clouds were made showing the most frequently used words in the responses. Finally, a stakeholder map was created based on the analyses to illustrate the impact and effectiveness of the different stakeholder groups.

The result, based on the interviews, was that all stakeholders are affected by changes in the production chain. In the long term, the producer is more affected, but in the short term the impact on the manufacturing company is greater. All stakeholders have an interest in influencing consumers, and all can do so at different scales. The result of the stakeholder map analysis is that different parts of the supply chain have different opportunities to influence, and the impact on them is quite different.

This thesis can be used in the future for a more detailed analysis of the production chain. The thesis can also be used, for example, in the context of on-farm investments to help assess changes and trends in dairy production.

**Keywords** Dairy, Consumption, Consumer, Influence, Supply chain

Liiketalous  
Kansainvälinen liiketalous

---

<b>Tekijä</b>	Matilda Heino	<b>Vuosi</b>	2023
<b>Ohjaaja</b>	Adrian Braun		
<b>Toimeksiantaja</b>	Lapin ammattikorkeakoulu		
<b>Työn nimi</b>	Maitotuotteiden kulutuksen muutokset eri sidosryhmien näkökulmasta		
<b>Sivumäärä</b>	38+2		

---

Tämä opinnäytetyön aiheena oli selvittää eri sidosryhmien näkökulmasta maitotuotteiden kulutuksen muutoksia ja sen vaikutuksia tuotantoketjuun nyt ja tulevaisuudessa. Tavoitteena oli selvittää ovatko vaikutukset suurempia johonkin tiettyyn sidosryhmään vai jakaantuuko vaikutukset tasaisesti. Opinnäytetyön tutkimuskysymys oli: Miten muutokset maitotuotteiden kulutuksessa ovat vaikuttaneet eri tuotantoketjun sidosryhmiin?

Opinnäytetyön teoriaosa käsiteltiin suomalaisten kulutuksessa tapahtuneita muutoksia viime vuosina yleisesti sekä tarkemmin kulutuksen muutoksia ruuassa. Tässä osiossa pureuduttiin tarkemmin maidon kulutuksessa tapahtuneisiin muutoksiin. Tässä osiossa myös käytiin läpi maidon tuotantoketju ja siihen vaikuttavat asiat. Toisena teoriakohtana käsiteltiin Suomalaista ruokaa ja sen vastuullisuutta sekä vaikutuksia kansantalouteen.

Tutkimukseen tiedonhankintametodina toimi haastattelut joko etänä tai sähköpostin välityksellä. Materiaalit käytiin läpi koodaamalla eniten mainittuja sanoja, jotka nähtiin relevanttina tutkimukselle. Myöhemmin nämä sanat kategorioitiin relevantteihin ryhmiin. Visualisoimaan analysointia tehtiin sanapilvet, jossa ilmeni eniten käytetyt sanat vastauksista. Lopulta analysointien pohjalta tehtiin vielä sidosryhmä kartta kuvaamaan vaikutuksia ja vaikuttavuutta eri sidostyhmien välillä.

Tuloksena saatiin perustuen haastatteluihin, että muutokset vaikuttavat kaikkiin sidosryhmiin tuotantoketjussa. Pitkällä aikavälillä tuottajan vaikutukset kasvavat, mutta lyhyellä aikavälillä teollisuusyritykseen vaikutukset ovat suuremmat. Kaikki sidosryhmät ovat kiinnostuneita vaikuttamaan kuluttajiin, ja kaikilla on siihen mahdollisuus eri mittakaavoissa vain.

Opinnäytetyötä voi hyödyntää tulevaisuudessa tarkemman tuotantoketjun analysoinnissa Opinnäytetyötä voi myös hyödyntää esimerkiksi tiloilla investointien yhteydessä auttamaan arvioinnissa maitotuotannon muutoksista ja trendeistä.

Avainsanat

Maitotuotanto, tuotantoketju, sidosryhmät, kulutus

## CONTENTS

1	INTRODUCTION .....	7
2	OBJECTIVES AND RESEARCH QUESTIONS .....	9
2.1	Objective.....	9
2.2	Research question.....	10
3	RESEARCH AND ANALYSIS METHODS .....	11
3.1	Research method .....	11
3.2	Analyzing method .....	12
4	CONSUMPTION AND SUPPLY .....	14
4.1	Changes in consumption in Finland 2020-2023.....	14
4.2	Supply chain of Finnish dairy .....	18
4.3	Consumption of Finnish food and dairy .....	15
4.4	Consumption of dairy globally.....	16
4.5	Companies influencing consumers.....	17
5	FINNISH FOOD .....	18
5.1	Agriculture and dairy farming in Finland .....	18
5.2	Sustainability of Finnish food and laws and regulations.....	20
5.3	Finnish food in Finnish economy .....	20
6	RESEARCH ANALYSIS .....	22
6.1	Interview analysis of the producer .....	23
6.2	Interview analysis of the representee from a dairy company.....	26
6.3	Interview analysis of the representee from a retailer company .....	29
6.4	Comparing the answers.....	31
6.5	Stakeholder matrix.....	33
7	DISCUSSION .....	36
7.1	Restrictions of the research .....	36
7.2	The main results and of the research .....	37
7.3	The usability of the thesis .....	38
7.4	Ethical consideration.....	38
8	CONCLUSION.....	40
	REFERENCES .....	42



## FOREWORD

In the beginning I would like to deeply thank all the individuals and companies participating in the process of this thesis. You made this possible and without you the data would have been lacking. Thank you for sharing your experiences and future sights of dairy consumption and its supply chain. Wish you all the best and hopefully the thesis gives justice to your words! Thank you for inspiring me to work with this topic!

## 1 INTRODUCTION

The consumption of Finnish households has developed over the years and changed in recent years as well. When looking back to 2020 and covid-19 the changes were visible and major. The consumption of Finnish food has also changed. When trends and circumstances globally change it affects markets in Finland as well. The consumption of Finnish food has increased as there has been changes in the world. Consumers have started to recognize the distress in Finnish farming and by consuming Finnish foods wanting to support the work done. Also concerns about security of supply have affected on the consumer behaviour towards local food. Consuming local food affects bigger companies as well as farmers. (Nyrhinen et al. 2020, 13.)

Consuming of Finnish dairy products are changing. This thesis is going find out how the changes in consumption of Finnish dairy products are affecting some of the stakeholders such as producer, dairy company, and grocery store in the supply chain of Finnish dairy. As theory in thesis Finnish food is examined from different angles as well as consumption in general and the supply chain of dairy in Finland. With these background information's a good base is made to the research itself. The theory and background are going to be used when analysing the research material collected.

The research includes three different interviews that give different perspectives on the supply chain. The interviewees were picked based on their relevancy to the topic but also informative to give a wide picture on the supply chain and how it's affected. For the producer part a producer with a contract on one of the major dairies in Finland was picked due to the relevancy and knowledge based on this topic. The producer was chosen to present approximately middle size farm to get answers relevant and ordinary. The retailer was chosen with knowledge that the supply of dairy is major, but not the only good sold.

The aim to this thesis is to give answers on the state of the supply chain and analyse the influence on the changes on different parts of the supply chain to see if some stakeholder is affected different amounts and reasoning behind that. The

thesis aims also to examine the influence they have on the consumers and consumption. That is done by using stakeholder matrix with the theory and interview analyses.

This thesis can be valuable to the different parts of the supply chain. Companies on the supply chain of dairy can use this to recognize opportunities and challenges. It will give consumers valuable information about the state of Finnish food and how consumption affects the supply chains in Finland. This can also be used with farmers when deciding about new investments and the state of the farms.

In this thesis Finnish food is mentioned when talked about so called raw materials that are produced in Finland for example milk and wheats. Also, in this thesis only some parts of the dairy supply chain are examined.



## 2 OBJECTIVES AND RESEARCH QUESTIONS

### 2.1 Objective

The objective is to find out how the changes of consumption/demand in dairy has and will effect on companies and producers. The research is going to achieve clarity on the changes happening in this field for different part of the supply chain. The inspiration behind this thesis comes from plenty of seen re-search about the changes in consumption from the consumers point of view. Finding relevant answers for the stakeholders on the other side of the changes is not as significant. The goal is to find solutions to the research question and be able to analyse different perspectives and volumes of the influence on them.

As the research question states about the different parts of supply chain might be affected differently and different amounts. Also, for example a big company can change its way and still be profitable but for a small producer the change might not be possible due to different amounts of capital. Comparing the significance between the stakeholders and finding solutions for the future are key aspects on this thesis. Stakeholder matrix is done to also get insight about the influence and interest the stakeholders of the dairy supply chain have. These are used to conclude the research question.

This thesis can be viewed as important due to the relevant changes in the industry. New innovations are done and the thought about having patterns and trends in consumption are followed. Major part of business comes from risk. Is it and will it be worthy to take risks on an industry that is driven based on the demand that changes a lot? The theory will give base for the interviews done and help understand the topic. When understanding the theory and background analyzing the data will be easier.

## 2.2 Research question

The main research question of this thesis is “How some stakeholders such as producer, dairy companies and retailers of the dairy supply chain are affected in the changes in demand of dairy products?” This thesis analyses the supply chain of dairy and the stakeholders of it. This research question sets a direction on where this thesis is going and from what perspective the situation is looked from. The reason of mentioning some parts of the supply chain is to narrow down the research to only some parts of it to keep the research more specific. This research question helps understand the objective as well. It helps the thesis and research done to focus on few parts and not try to cover too many topics and ideas. Based on the question it can be assumed that there have been or is right now changes happening. It also gives room to look into the future with the topic to understand the longevity the topic holds.

Based on the theory the hypothesis for the research is that some stakeholders are affected more. Taking into consideration of the complexity of the other parts of the supply chain examined producers might be affected the most on a longer run. On shorter period industrial companies that create different products from the raw milk are affected since the process of creating them takes time since their biggest income comes from the product itself when dairy company gets to produce it into more trendy products and grocery store gets to choose what to sell based on the consuming. In the research the hypothesis will be either supported or repealed. The hypothesis does not take away the fact that all parts of the supply chain are affected and changing somewhat in time.

### 3 RESEARCH AND ANALYSIS METHODS

#### 3.1 Research method

This thesis will be qualitative research. Qualitative research finds answers from deeper level and investigates and understands the data further than in quantitative research. In quantitative research it is not tried to find out how much or how many but why and how problem is a problem. In qualitative research usually open-ended questions are used to get to the issue. By doing this one of the strengths in qualitative research methods are the abilities to explain the processes as patterns from people in the studies. Usually, qualitative research is used on data that is hard or impossible to quantify. (Brannan, Brannan & Tenny 2023.)

The method to collect data will be interview. Interview suits this research as tool the best because the research question indicates that the research wants to understand concepts and experiences to draw the conclusion (Jamshed 2014). This thesis includes an interview from a dairy company and how the changes have affected them being a major part in the supply chain. On top of that to understand the supply chain better there will be also interview from a producer to get the effects on the first part of the supply chain. And to finish the supply chain the last interview will be done with a retailer. All these help understand the supply chain of dairy. As one major part has been left out all the stakeholders will have questions about logistics and how the stakeholders work and see logistics as a part of the supply chain. The research will that way contain all major stakeholders on the supply chain of dairy until the consumer since this thesis examines the effects of consuming on the supply chain.

All the interviews will be done as individual to focus on just that stakeholder during them. The questions regarding this research are sent prior to the interviews to give time to prepare for the answers. Handing the questions prior is also going to make the interviews easier to both participants to keep the conversation alive and faster (Rinderknecht 2021). The interviews will be semi structured so there will be some ready-made questions, but it leaves space for the interviewee to open more regarding the topic that might be valuable for the research (Galletta 2013,

45). The interviews will be held online or via email due to the scheduling of the research done. All material collected will be valued as important to the research. The research data will be primary since the data is originally collected for this thesis.

### 3.2 Analyzing method

When analyzing the data collected from the interviews content analysis is used. Content analysis uses coding as a factor to tie the things together said in the interviews. The interviews are broken down into smaller code categories to help the analysis. (Columbia 2023.)

The coding is done to summarize the collected data. The coding is done as open coding. The coding will be conceptual so phrases with words such as power and influence will be coded and phrases regarding volume and physical changes. Coding these make sense taking into consideration the research question. Doing this will help to analyze the categories in the end and make the stakeholder matrix (Bengtsson 2016). During the coding process there is flexibility to add more categories on top of the four pre-made ones that are supply chain, influence, effects, and consumption. Due to the structure of the interviews, they allow more data to become relevant. The categories pre-made are the most relevant for the research question. More important categories might arise when coding the data. The plan is to code for frequency of a concept. The interview questions are mostly the same so they mostly will consist of the same concepts. As a basic rule for the coding is to be able to distinguish words based on different wording into different codes and categories. This means that in necessary cases the categorization might differ due to different wording. (Columbia 2023.)

Other rules to follow when coding is to do line by line coding first and then widen it out the second time coding. Focus should be only on relevant things to the stakeholder and supply chain and on the influence of the changes. The irrelevant material is coded again to see if there is something to help the research question and objective but after that ignored. The coding is done by hand to

make sure all errors are noticed. The coding will be deductive so multiple premises can turn into conclusion. (Columbia 2023.) The method is used since there are already picked themes for the coding that is wanted to follow. It must be taken into consideration not to be biased to prove the hypothesis.

After few rounds of coding the codes will be collected into flat coding frame where all codes are as important. In categorization the data is put into meaningful categories. This part needs to be clear and consistent. After categorizing the data, it will be analyzed and tested for the hypothesis. The way to visualize the data is to put it into word clouds, where the coded words are different sizes depending on how many times the words were used in the interviews (Fidrmuc, Korab & Strba 2021).

After the analyses and comparisons of the answers a stakeholder matrix is formed. The matrix describes how much the stakeholders have an influence on the consumption and consumers and the other measured value is how important they see it. The stakeholder matrix is made based on the answers and theory collected. Stakeholder matrix is a good tool when analysing the stakeholders. (Hartley, Howden & Kennon 2009, 2.)

## 4 CONSUMPTION AND SUPPLY

In this part of the thesis some basic background from consumption is examined. These parts will include consumption, changes in consumption in Finland 2020-2023, consumption of Finnish food and dairy, global consumption of dairy and companies affecting consumption. These parts give out theory to back up the research done for this thesis.

Consumption can be characterized as the usage of goods and services by a household. It is used often as a component when calculating gross domestic product. Calculating consumption can be held as important since production of goods and services are dependent of it. (Corporate finance institution 2023.)

### 4.1 Changes in consumption in Finland 2020-2023

In past three years consuming has changed somewhat due to changes in the world. When corona pandemic started in 2020 the hit to Finnish economy was significant. Changes were needed to be done in households consuming as gatherings were restricted and services closing. Schools started to teach online, and all possible work was moved to done from home. This all had influence on the consumption of Finnish households. (Nyrhinen et al. 2020, 13.)

First change in consumption was hoarding from the grocery stores for the future. People started purchasing goods that were not necessary in the fear of stores closing. After the first reaction consumer started to utilize online shopping for food but mostly other items. This affected on special stores a lot. Changes in purchasing Finnish items increased a little during corona. (Nyrhinen et al 2020, 37-41.). In grocery stores Finnish food was consumed more than during previous years. (S-group 2023). People want to support Finnish agriculture by consuming more Finnish foods (Kesko 2022).

After corona in grocery stores people have started to check discounts more and purchasing food in bulk has also increased (Kesko 2022). In the past years inflation has increased the prices of most of the groceries. In 2023 the increase in prices has been over 16%. Research done by Pellervo in 2022 forecasted that the prices would have had turned down already in 2022. One factor keeping the prices increasing is raw material prices for sugar, flour, and eggs. In total dairy products prices increased over 25% on average. The biggest changes were in cheese and processed dairy. (Parviala, Viitta 2023.)

#### 4.2 Consumption of Finnish food and dairy

The consumption of Finnish food has changed in the past few years. There has been some increase in specific areas, but some have also decreased. The figure 1. below will show changes in the consumption from 2020 to 2022 in major departments.

In the chart in the liquid milk includes all processed milk products such as sour milk, butter, and creams. As seen in the chart the usage of liquid milk has decreased over six percentage in the past three years. Most decrease in that has been in milk itself since the amount of cheese has stayed on same level and creams have increased. In total the consumption of dairy in Finland has stayed approximately the same when liquid milk has decreased. There are some other departments as well that have decreased consumption. Fruits have gone from 65kg in 2020 to 55kg in 2022. Explanation to this could be problems in the supply chain due to major happenings around the world. The consumption of vegetables stayed the same in these past three years. Also, the consumption of eggs stayed around the same numbers as fish. Consumption of meat includes pork, poultry, beef, and others. As the numbers of meat changed between 79kg and 72kg in 2020-2022 inside the category poultry usage increased to almost same level as pork which is the most consumed meat in Finland. The consumption of cereals includes oat, rye, wheat, and others. As the numbers have gone from 81kg to 85kg the most changes have happened in between the cereals. The usage of oat is over 25% from the whole amount and rye is decreasing from the cereals as almost any other cereal has increased their popularity. (Mikkola 2023.) The reason for the major use of oat in Finland can be seen as part of the trend of being

healthier and changing diets. On top of that oats are easy to proceed into various products. Oat is lot of the times used as a base for non-dairy options (Hietaniemi 2021).

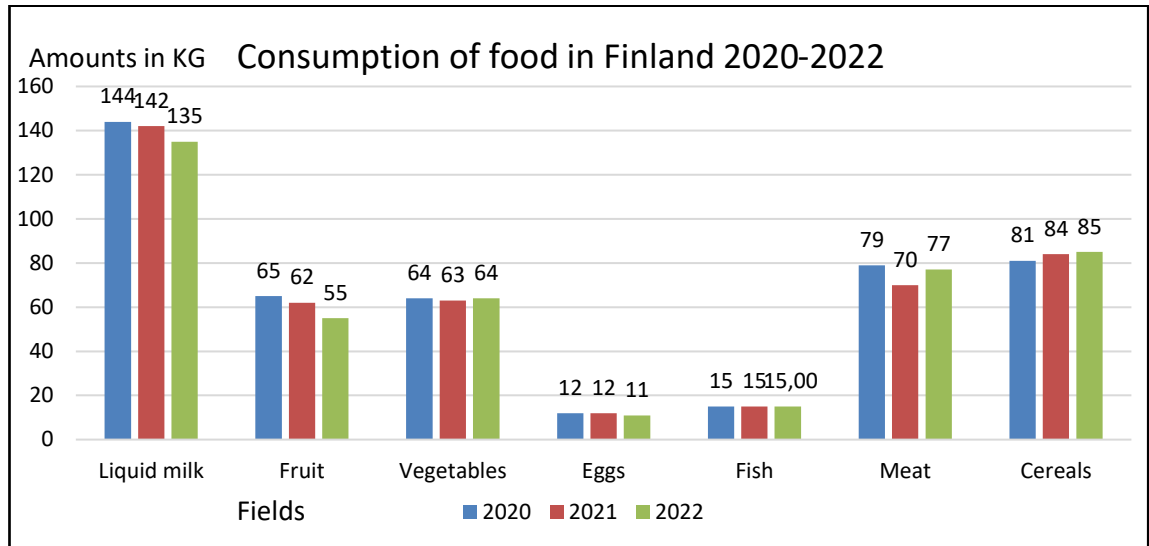


Figure 1. Consumption of food in Finland 2020-2022 source luonnonvarakeskus.fi

#### 4.3 Consumption of dairy globally

Globally dairy consumption has increased since 2005. The largest dairy exports are cheese, dry milk, and butter. (Davis & Hahn 2016, 1-6.) Finland exports food items to the market as well and in 2020 the amount of export in euros was 1,7 billion euros. Finland is known abroad from its knowledge in food and nutrition studies and standards for the primary production is high. (Heinonen et al 2021, 6,13.) The annual growth for dairy consumption globally is around 2,5- 4% (Vitaliano 2016,29). Even as the consumption and demand are increasing it is forecasted that the supply will not match. Challenges towards European Union in dairy trade are covid, increase in energy costs and warming weathers. Other large suppliers in global dairy trade Australia and New Zealand will be affected from the weather as well. There are also plenty of political conflicts that are affecting to the global dairy trade and that way also Finland's export of dairy. (Bai et al 2023,1.)



#### 4.4 Companies influencing consumers

Companies and businesses do a major part in consumption. They market using strategies that are exactly measured from the previous purchase behaviors from the consumers. Purchase behavior is a process that includes cognition, human action, and emotion. There are different variables which lead to consumption. Companies want to fulfill the consumers' needs. One main driving force is attitudes towards the businesses and goods. (Ramadhani, Rusdi, Sadiq 2022, 6-9.)

## 5 FINNISH FOOD

This part will examine Finnish food from different angles. These angles are Agriculture and dairy farming in Finland, Finnish food in Finnish economy and Sustainability in Finnish food. These will help build up understanding for the research. As mentioned earlier as well in this thesis when mentioned Finnish food it is meant as raw ingredients and products grown in Finland.

### 5.1 Agriculture and dairy farming in Finland

In Finland there have been farms and cows for centuries. After 1800 milk cattle increased due to increases in demand and export. Farmers started to put more thought into feeding and different breeds on larger cattle farms (Soininen 1974, 410-414). Since 1920s there have been acts done towards better supply chain. Around 97% of raw milk produced every year gets classified on the highest level. (Mattio 2023.)

Coming to 2023 the number of dairy farms has decreased. In 2023 there is around 4400 dairy farms and in 2020 there was around 5570. Even though severe decrease in the amount of farms supply doesn't drop as fast since there are more larger farms and producing of milk increases. (Mattio 2023.) The supply of milk has been stable for some years now. The larger sized farms compensate the loss.

### 5.2 Supply chain of Finnish dairy

The supply chain of dairy consists of four major steps that are producer, dairies, grocery store and consumer. In between those steps is one of the most important parts of the supply chain that keeps all the others going on. That part is logistics. The supply chain is more complicated than the simplified chart shows. In this simplified figure of supply chain there can be seen all the major stakeholders that are examined in the research. But if looked more into detail the figure 2. all these parts of the chain are needed for the supply chain to interact. All the parts work together making agreements and supplying the consumers with

the finish product. (Arovuori et al. 2019.) The profitability of farming is an objective in farming politics. The farming subsidy is a major income for many farmers but increases in profiting is wanted. (Euroopan tilintarkastustuomioistuin 2021.)

When the raw material leaves from the farm it is ideally and in the most cases taken into the closest dairy to the farm. In general, the dairy is less than 100 kilometers. Milk truck picks it up. The logistics is an important part of the supply chain. It makes sure the raw material stays hygienic during the trip to the dairy. At the dairy the milk is weighed. In the dairy raw milk processed to become milk sold in grocery stores but also processed to become other dairy products like cheese and yoghurts. Sometimes from the dairy the milk does not go to a grocery store but another company that uses the milk to create its own products for example ice cream. (Ruokatieto 2023.)

From the industrial companies and dairies, the product continues its way to the grocery store or other retailer. The places purchase and have contract with the dairies to supply the retailer. From these the products go to the consumer. They can be individual households or companies or even chains. The consumer is the end of the supply chain (Ruokatieto 2023). Finnish dairy is also exported to other countries (ETL 2023). When comparing Finnish dairy supply chain to Baltic ones, one dairy cow in Finland produces 1,2-3 thousand kilograms more milk during its life (Jansik 2009, 5).



Figure 2. Supply chain of dairy in Finland source pellervo.fi

### 5.3 Sustainability of Finnish food and laws and regulations

Sustainability in the food chain has seven different parts: nature, animal health, economy, work welfare, product safety, nutrition, and local welfare. When these seven dimensions are taken care of by the producers it can be called sustainable food chain. This is only the legal restrictions in the food chains. Most of the companies do not explain about their sustainability due to the difficulties in the measuring of it and broad definitions. (Heikkurinen et al. 2012, 8.)

Around 10% of the greenhouse gas emissions of Finland come from agriculture. The European union has made an agreement about reducing the greenhouse emissions in agriculture by 20%. (Ahvenjärvi, Lehtonen, Palosuo & Regina, 2014, 9-15.) Nowadays lot of the companies have their own sustainability reports that are done annually. This report is mandatory for companies listed and with more that 250 employees over 40 million euros in sales or over 20-million-euro balance (Virtanen 2023.). An article from ministry of agriculture and forestry of Finland states that Finnish food is sustainable since there is a large water supply in Finland. The welfare of animals is highly monitored, and the usage of antibiotics is responsible. Finnish food industry also employs over 340 000 all around Finland every year. (Salminen 2023.)

On top of the regulations considering the responsibility of the food chain there are other laws and regulations considering farming. The law about the welfare of the farm animals states laws that are European Union wide and others national. The laws consist bits of physical and mental wellbeing of the animals, in this case cattle. There are also laws about the living conditions that should be provided to the animals. (Finlex 2023.)

### 5.4 Finnish food in Finnish economy

Finnish food information site mentions in an article that agriculture is significant part of the Finnish economy. The industry employees over 300 000 employees. Around 250 000 of those in the production and the rest in logistics and grocery stores. From the 250 000 around 30 000 are employed by the dairy supply chain.

Also, major investments are annually done in agricultural field bringing in new jobs even into smaller towns in Finland. (Vaara 2018.) From working age around 13% work on food industry. Also, around 15 billion euros worth of gross domestic product value comes from agriculture and food industry. This amount is around nine percents of annual GDP of Finland. Taxes paid to the government annually are around nine billion euros. That is around ten percents of the overall taxes paid. Half of the amount comes from the business taxes and other half combination of excise tax and value added tax. Goods like dairy and wheat products are also exported and the amount of food export is around 1,2 billion mainly around European Union countries. (Ruokatieto 2023.)

Agriculture and food industry can be seen as valuable for Finnish economy. Over all the numbers show that Finnish food and agriculture is an important part of Finnish economy. Food is one of the biggest industry Finns spend their income around 12%. (Ruokatieto 2023.)

## 6 RESEARCH ANALYSIS

For the research three stakeholders from the dairy supply chain was interviewed. The questions were based on the changes happening in dairy consumption. There were also questions on how the stakeholders see the supply chain and how much they have power in it. Based on these questions that can be found from the appendix coding and categorization was done. After that the data was formed into word clouds. This part of the thesis analyses all the word clouds and compares the effects and power to each other to get to the conclusion. The pre-made categories for the coded words stayed the same. The interviewed stakeholders were picked to showcase as large portion of the supply chain as possible from different parts of it.

The research question for this thesis is “How the changes in consumption of dairy has affected to different parts of the dairy supply chain?” Also, to analyse the influence of stakeholders’ stakeholder matrix is formed based on the current situations and the interviews. The stakeholder matrix will show how much interest and influence the stakeholders have on the changes in the supply chain. When analysing the data words used most were used to collect a word cloud. The categorization was done based on the amount the words were used. So, in total words relevant to the research were collected and then categorized based on the similarities.

The interview questions can be found from the appendix. The questions were themed to see the views and experiences of the stakeholders in the supply chain. All interviewees got to evaluate their part in the supply chain and their influence on the consumers. Also, there were questions about the changes happening in dairy consumption especially in drinking milk. On top of that, all participants got the chance to evaluate the supply chain in total and look a little into the future of dairy market.

To visualize the answers word clouds were used. They preform most used words in the text. Only categorized coding were put into a word cloud generator to keep all filler words away from the work. Some two-word phrases are written

together to keep the word clouds more valid. The bigger the word the more it was mentioned. In the word clouds need to be taken into consideration that some two worded phrases are divided in them. All word clouds have 50 words most used. All the words mentioned in the cloud were mentioned multiple times in the answers.

### 6.1 Interview analysis of the producer

The figure 3. showcases the coding done from the producer's answers. The interview was done in email, but questions gave opportunity to talk about other subjects as well. The first category gathered from coding of the interview were supply chain that consisted of words related to the supply chain mentioned multiple times. Other category was influence and it concluded words mentioned about influence and future. The third category were effects that had mentioned words about the effects of the changes and the last category was consumption that had all the words mentioned related to consumption.

The word mentioned in the interview the most can be seen to be consumption. Since consumption was mentioned over 15 times during the answers can be seen that consumption holds a big factor on the stakeholder. The consumption was mentioned in questions asked about the effects it has on the producer and if they have been affected. As could be seen from the theory the consumption in Finland has changed a little in general and some differences in the consumption of dairy as well. The producer mentioned changing the production into targeting different concentration in milk to influence on the price. From that can be concluded that changes have been made due to the changes in the demand and dairy being so much wider range of products now. The consumption and industry companies need of milk is still the same as it has been in the past years. The changes haven't that way affected much on the producer. The main thing mentioned is how much the dairies can pay from the raw material and that way how much the producer can pay themselves salary. In the past years the amount for example Valio dairies have paid per liter is 42-52 cents per liter (Koivisto 2023.) These effect the amount the producer gets paid from the work.

When going through the cloud more influence, changes and consumer are also mentioned multiple times. Based on the analysing method we can conclude that since influence was mentioned 7 times Influencing is something the producer values and would like to do. In the interview was mentioned also the ways to influence are limited. Changes affect all the parts of the supply chain differently. The interviewee saw the biggest effects to them being money and investments in the future. Changes were mentioned over 5 times as well when going through the earlier changes happened in dairy consumption. Based on the mentions can be concluded that the stakeholder is affected especially by the changes and the changes are a driving force effecting the producer in positive and negative.

Trends and plant-based products are used in the interview lot of times as well. Plant based products are becoming trendier as can be seen in the figure 2. where can be seen the consumption of different foods in 2020-2023. Trends and such influence on the producer. It has the same effect as other parts related to money. If some trend increases, it can have either positive or negative effects on the producer. If it takes consumption away from dairy it can affect negatively. Based on the interview done can be concluded that trends affect the producer in the supply chain and sometimes the effect can be positive when in others negative.

Transparency was something the producer thinks is going to be valuable for the dairy supply chain in the future. As can be seen from the theory the consumer knows the supply chain. Being transparent about it effects consuming. Finnish dairy is thought to be sustainable as mentioned in the theory section at sustainability of Finnish agriculture. Consumers respect the visibility in the chain and are more liked to purchase a product they know the supply chain of.

Decisions were mentioned by the producer multiple times. In the answers it talked about experience based how decisions made by other stakeholders affect them. The interview also evaluated the amount of the effects these decisions could have. As mentioned earlier in the analysis salary and money paid from the raw material are a driving force for the decisions made. So, the consumption affects the future decisions of the stakeholder.



When comparing the answers to the research question that was: How some stakeholders such as producer, dairy companies and retailers of the dairy supply chain are affected in the changes in demand of dairy products? we can conclude that this stakeholder is affected by the changes. The effects are not straight to the producer but based on the effects and decisions made by other parts of the supply chain. The effects are money related and effect to the future a little. The reason the changes affect are trends on different areas and ways that people consume.

All In all, most important words as mentioned in the analysis of the interview were consumption, influence, change, consumer, transparency, trends, and plant based. These words effectively describe the way the stakeholder see themselves now and in the future. They are affected on some level and that they care about the supply chain. The interview explained the ways they can influence as well and evaluated the whole supply chain. The interview answers are relevant to the research question created. Based on the interview can be concluded that there are plenty of things effecting the stability of the producer and multiple ways to also influence on the consumers. The main effect from the changes is the salary and money aspect that has other effects as well. They can influence by using social media and other platforms. the effects are not significant on a short period due to the contracts with dairies.



Figure 3. Word cloud- producer source: interview

## 6.2 Interview analysis of the representee from a dairy company

In the figure 4. can be seen the word cloud gathered from the deputy of the industry company. The four categories were the same as in the producer: Effects, supply chain, influence, and consumption. The interview was held online. This way the deputy was able to comment on the situation openly and ask clarification to the somewhat open questions. The answers help to create a conclusion based on the research question.

The main words highlighted from the interview were consumer, product, and trend. As was mentioned in the theory part, consumer is the base for the company to run so it is totally natural for it to be valued high. The consumers are the most powerful part of the supply chain and the whole supply is targeted to them. The trend was mentioned in the interview over 10 times as well. From that can be concluded that trends are also a driving force in the supply chain especially for this stakeholder. They see the trends as important to take part in but also create by processing well selling products that are diverse. That way everyone can find something from the product line. With the trend hand- in hand goes

plant based. It was mentioned a few times as well since it has become more popular and trendier. Plant- based was mentioned to be important in the future consumed with dairy. As can be seen from the chart of the consumption changes in 2020-2022 oat takes over 25% from the whole usage of cereals.

Other highly mentioned words were demand, milk, and dairy. In this word cloud milk is meant as drinking milk as dairy is describing the whole category. Highlighted from the interview was as a reason to the changes in consumption as the wide range of dairy products. What can be seen from the theory on the figure 2. that consumption of dairy has decreased slightly but it doesn't have that many effects. The demand is almost the same in 2020 and 2022. As can be seen from the cloud is that it has the word global. In the interview with the deputy was compared the slight increase in demand of dairy globally. The global demand is also important to the Finnish dairy supply chain since it covers around 10% of the Finnish exports as was mentioned in the theoretical background. The global demand keeps the supply of the Finnish milk approximately the same even when demand in Finland would decrease a little.

Market and influence were mentioned multiple times in the interview as well. The market of Finnish dairy has increased over the years. The influence of the industrial company is large. The company is responsible of the marketing of the good and by that influence on the consumption is major. Sometimes the influence is so large that it creates consumption. In this part the industrial company could also be called as the trend setter in dairy market. The stakeholder mentioned their opportunity to be major influence on the market by doing consumer research and creating consumers the goods they need and want.

In total the most used words in the interview were consumer, product, change, demand, milk, dairy, trend, market, and influence. They all describe well the situation the stakeholder is now in the supply chain; they are interested in the market of dairy. Especially they are interested in the consumer and to provide the consumer with the product they want. Trends are visible for them and sometimes they manage to create them. Influence on consumers is large and that way the demand has also stayed almost the same.

When thinking the research question “How some stakeholders such as producer, dairy companies and retailers of the dairy supply chain are affected in the changes in demand of dairy products?” the company clearly is affected as well but there are plenty of positive effect. There are some negative economic effects on the changes in demand but also positive opportunities. They get to create new products for consumers and take them abroad. Having lot of product lines help to go hand in hand with trends and changing product lines. The company also has influence on the consumer and base their work on consumers and providing them. The stakeholder handles a lot of the marketing of dairy and can influence consumers by strategies but also supply. All in all, there are effects on this part of the supply chain and influence on consumers.



Figure 4. Word cloud- industry company source: Interview

### 6.3 Interview analysis of the representee from a retailer company

The last interview done was made with a retailer company that purchases the product from the industry company and sells them to consumers of their field. This interview was also done via email due to the short amount of time left to collect the data and possibilities to arrange interview. The word cloud collected from the answers of the retailer can be found from figure 5. It describes most used words in the interview. The categories used in all interviews were: influence, effect, supply chain and consumption.

In this interview with the retailer the most used word was product. It was mentioned over 10 times. Based on that we can conclude that the products the retailers sell is the most important thing in their service. It can also be concluded that the changes in the demand of dairy have affected on the products they sell to the customers. It was also important that the products develop and are responsible. Responsibility was mentioned over 5 times as well. It is valued high on this stakeholder. The stakeholder also wants to take responsibility in the supply chain and be responsible part. As mentioned in the theoretical part there are base laws and regulations as a driving force for the responsibility in food supply chains, but it can be concluded based on the interview that the retailer wants to have more than just the regulations.

Other relevant words mentioned multiple times were dairy and innovation. In the part about effects on the changes there was mentioned not quite visible changes. Dairy was mentioned multiple times and compared to the demand of plant-based products. There was mentioning about the innovation as a reason to the possibility for plant-based product to become more popular. Innovation can be seen very important as an influence for the changes. Innovations in the supply chain are clearly important. Based on the mentions multiple times can be concluded that innovations in dairy industry have affected on the consumption.

Customer was mentioned in the interview over 7 times. It was more mentioned than consumer. The reason for that is that the stakeholder has straight customers they sell to. Consumption and consumers are important to the stakeholder

but the work the stakeholder does is based on the customer needs are primary as was mentioned in the interview.

Other multiple time mentioned words were impact and demand that was mentioned over 5 times. Demand is clearly something that is valued high for the stakeholder. In the interview was mentioned that the demand of products is the main focus of them, and something wanted to be followed. This can also be based on the theoretical background that the demand is an important part in consuming. Impact was mentioned in things such as how they can have an impact and how the situation has an impact on their field of business and company.

All in all, when thinking about the research question “How some stakeholders such as producer, dairy companies and retailers of the dairy supply chain are affected in the changes in demand of dairy products?” It can be concluded that they are affected. Most of that happens on the shorter run compared to long run where other parts of the supply chain are affected. The effects are economical, but the stakeholder can change their product lines to match the demand better. The retailer is in closer contact compared to the other stakeholders interviewed. They have an influence on consumption of dairy in Finland but don't think it as important as customer needs. They can influence by having certain products more exposed than others. The influence is not seen as significant as working together with consumer to provide more demanded goods.



Figure 5. Word cloud- retailer

Source: Interview

#### 6.4 Comparing the answers

When comparing the results and word clouds of the stakeholders all were similar yet had some differences in the perspectives but taking into consideration their different placements on the supply chain the reasoning is clear. If checking the most used words producer had consumption was the most used word. Other stakeholders had consumer. This reason to this is that due to the supply chain producer rarely is in straight contact with the consumers. dairy is usually purchased from a store or a restaurant and that way the producer might not be in contact with consumers. The word consumption describes the overall situation and has wider perspective than consumer.

Based on all the interviews the changes in consumption were discussed. All mentioned the changes affecting their work. Based on that and the analyzing method we can conclude that consumption has changed and divided into wider area of dairy, and it has had effects on the stakeholders on the supply chain. Mostly the changes have been positive giving opportunities to innovate and widen their profession. Also based on the answers about the short time effects are mostly on the industry company and retailers. Contracts are made with producers and that way secured that the raw material is collected around the year

and the correct amount of money is paid. Short time effects can be seen affecting the company and the retailer. When planning for longer periods of time sometimes there can be changes in consumption of thing on short notice and effects on that are large. On longer period the changes affecting are larger towards producer and dairy company than retailer since for them it is easier to change things as was mentioned in the interview analysis, they are customer driven.

Going forward from here the transparency of the stakeholder can be seen very important. It is one way for the stakeholders to influence the consumer and have importance in the future as well. Also, responsibility is seen important for all the stakeholders. All think that being responsible and sustainable influences the consumers and have a positive effect on the consumption.

One fact that was mentioned similarly in all the answers was about the plant-based products. One question was asked in the interviews about plant-based products as a trend and how they are seen. All stakeholders saw the industry widening as a good thing. For producer the trend was okay but if it would affect on the consumption of dairy too much then the effects would turn into negative. On top of the specific question about the topic plant-based was mentioned as a possibility multiple times in all interviews. For retailer it was more positive since consumer was valued the highest based on the coding.

All in all, when examining the word clouds and interviews all stakeholders see the situation similarly. They all think consumption and consumer are important. The perspectives are slightly different but that is reasonable when taking into consideration them working in different parts and jobs just in the same supply chain and with the same goals. The interviews give meaningful data to answer the research question and give out perspectives to it.



## 6.5 Stakeholder matrix

Based on the answers from the interview a stakeholder matrix is formed. In the map stakeholders: producer, consumer, retailer, law, dairy company, and media are put into the map based on the interviews and theory. The values measured were interest and influence on the consumption of dairy. This means that stakeholders are put into the matrix based on how much they have influence on the consumption and to make changes. The other axis measures how interested the stakeholder is on the situation. The axes are chosen to be relevant to the research and to be able to evaluate the stakeholders based on the interview and theory. The only major stakeholder left out from the matrix is logistics.

Based on the theory and interviews it is impossible to evaluate the influence and interest of the logistics in the supply chain of dairy. Other than that, as wide cut into the supply chain is done using multiple different aspects. The figure 6. showcases the matrix and here it is explained. After going through the map conclusions can be made based on the interviews and theory.

First on the map can be seen laws and regulations. They are the base and a driving force for all stakeholders. As mentioned in the theory section in sustainability of the food supply chain the role of laws and regulations are examined. The influence is major but the interest especially on consumption is vague. As can be seen from the theory laws are formed to make sure a certain level of responsibility when taking care of the animals. The interest might not be so much on the supply chain and the consumption. Not having too much to say gives the field opportunity to grow and divide into smaller fractions.

Next stakeholder is the media. Media has influence and was also a question about it in the interviews. It has some influence, but other stakeholders can use the media as well for their benefit. The interviewees consider media important stakeholder that can have major influence. It was also examined that media has effects on all stakeholders on the supply chain. It was mentioned that all parts of the supply chain are good to be open in media, but it does not affect on the work that is done.

The next stakeholder considered on the map is consumer. Consumers have plenty of influence. As can be seen from the figure 2. Consumption changes. By changing ways consumers have major influence and as can be seen from the theory section as well consumers are interested on what they consume on to. Consumers were valued high in all the interviews as well as main component for the supply chain. But even with that information consumers are interested on what they purchase, not necessary on the whole chain and all its stakeholders.

Retailer has a lot of influence based on the interviews. Dairy is sold in grocery stores in Finland where the supply of product is large. That way dairy is not necessarily the main income for the retailer and as was mentioned in the interview retailers are more focused on fulfilling the demand. This is the reason retailer is put higher on the influence axel than interested axel.

Next on the matrix is the producer. Based on the interview producer has a lot of interest in the topic. And as can be read from the theory usually the main income of the dairy farmer comes from the product and the fields (Euroopan tilantarkstustuomiosituin 2018,11). And based on the interview when the interviewees put all the interviewed stakeholders to an order based on their opportunity to influence producer was seen as the smallest influence, still they have the opportunity to do so and can get larger influence with teaming up with another stakeholder. In this case for example media. If producer goes to either social media or newspaper it can gain bigger following and that way influence.

The last stakeholder on the map is the industry company. They have plenty of interest and influence. Based on the analysis and word cloud industrial dairies can influence on consuming with the production and regulate the way they make things based on trends and consumer behavior. In Finland the main source of income for the major dairies are the dairy products since they are specialized in it. Due to those reasons can be concluded that they are interested on what is happening in the industry not also to keep it going but also to benefit from it.

Based on the matrix can be concluded that all major stakeholders have influence and interest. Some influence is more voluntary as others can be preset for example the laws and regulations. All the stakeholders are interested in the industry but also consumer. The highest influence and interest is on the dairy company. Based on the interviews dairy company is a significant part of the supply chain that does mostly marketing and is responsible for the products to be the ones consumers want to purchase. The stakeholder matrix shows that some stakeholders are more interested on the changes on the consumption than others. The reasoning for this is based on the interviews the more capital is invested into the industry and how much revenue they need from it. Mostly other stakeholders are trying to influence on the consumer and the industry as the consumer is influencing all other stakeholders and the industry. This stakeholder matrix will be used to evaluate the supply chain and test the results of the research on the hypothesis created before the research.

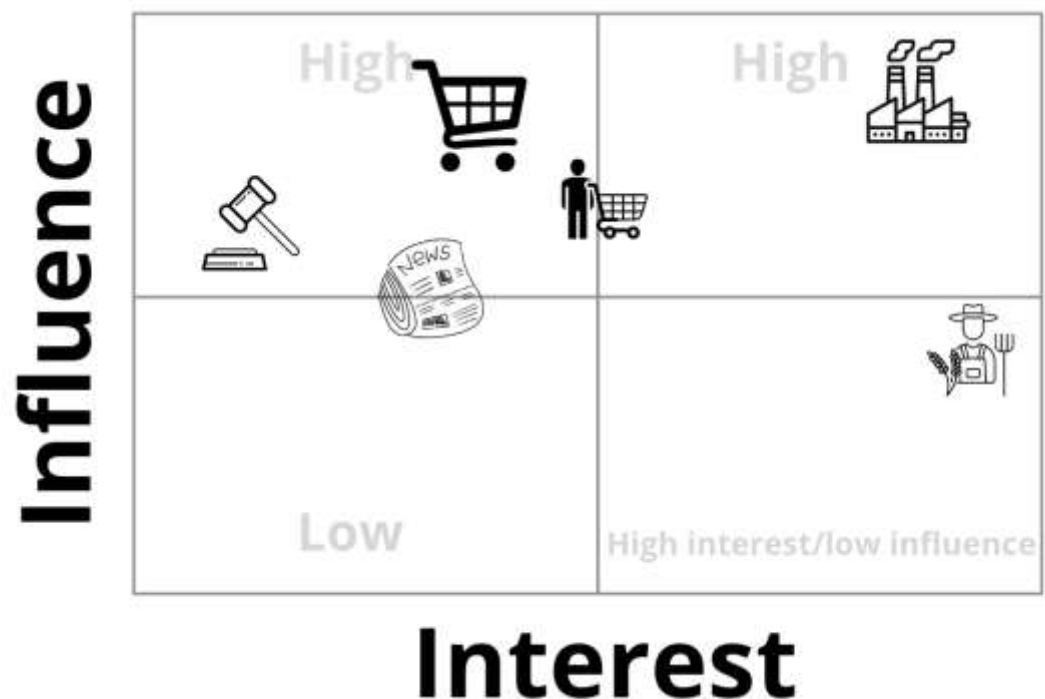


Figure 6. Stakeholder matrix

Source: Interviews & theory

## 7 DISCUSSION

### 7.1 Restrictions of the research

The supply chain of dairy is a broad topic with multiple different variables. Examining such a large industry is challenging and can have major differences. Understanding the whole supply chain takes major dimensions.

The main issue on this research was that the interview sample size was relatively small to be able to conclude data from such large topic. Due to the shorter time span to collect and analyze any data the sample size had to be kept on the smaller size. This can have led to the answers and experiences being quite similar. It also took away the opportunity to evaluate the whole supply chain deeper since the most information was only on specific. Based on that the stakeholder matrix relies heavily on the theoretical information.

Also, the interview was aimed to get answers as experience and personal thoughts and that way values and opinions can overshadow the motives behind answers. The questions were not aimed to be harmful towards any stakeholder or the supply chain in total but there is chance it can be viewed as so. The reason to this is the possibility to all interviewees to examine personal experiences and answer as they see and feel the situation.

While this thesis was able to map out the supply chain and stakeholders on it, it lacked the wider picture and due to that conclusion was based on small amount of data. This was mentioned and prepared in section 3 analyzing methods knowing the sample size of this research.

## 7.2 The main results and of the research

The aim of this thesis was to answer the question “How some stakeholders such as producer, dairy companies and retailers of the dairy supply chain are affected in the changes in demand of dairy products?” The best way to find out is to examine the influence and effects on different stakeholders have on the dairy supply chain. Using this kind of method helps understand the supply chain.

The theory part of this thesis introduces Finnish food and dairy supply chain. It is necessary to understand these to be able to do the research. The theoretical part shows that consumption is change and global consumption of dairy is in different state that in Finland. It can also be seen that Finnish food is a major part of the Economic state of Finland. There are rules and regulations that drive and mould the industry and the welfare of animals.

The interviewees show that all examined stakeholders are affected. Producer is affected on the longer period and the effects are mostly economical. The dairy company is affected on the shorter and longer period but there are more positive effects compared to the producer. The effects are economical but also give room to innovate and create new goods and concepts. The retailer is affected, and it is mostly on the shorter period. The effects are economical but are easier to fix and change their supply based on the demand. The interviews also show that all the examined stakeholders can influence consumers but on different volumes. The retailer is in the closest relation to the consumers and effect that way.

The research shows that all stakeholders are affected of the changes. All stakeholders are agreeing of the state of dairy and its part as consumption in Finland. The analysis from the interviews also show that all stakeholders interviewed are interested in influencing consumption and consumers. The main result from the analysis and stakeholder matrix is that producer has less influence and effects but even with smaller number of effects they can be more harmful and effective

than on other stakeholders. It can be concluded that the hypothesis about “Producer being the most affected in the changes of the dairy consumption” was correct about the volume of the affect. This does not make the other negative effects any less, but more positive effects compensate on the negative ones.

### 7.3 The usability of the thesis

This thesis can be used for companies and businesses on assessing how much some factors effect on their way of business. It is also valuable for the stakeholders in the dairy supply chain since this thesis brings light to all different parts of the supply chain. It rises questions and innovations on how things could or should be changed to compensate on the effects towards the supply chain.

Some businesses can use this thesis when starting to evaluate the risk on their business. This could be due to the similarities in the industry worked. This thesis will also be useful for producers and people wanting to start producing food to see what could be done to influence and what kind of effects and challenges might be faced on the way. For further research and analyses this thesis can work as a base to give out answers on important note.

### 7.4 Ethical consideration

Ethical consideration taken into consideration in this thesis are participation, informed consent, potential for harm and results communication. Also, plagiarism can be seen as a threat to the thesis. That is why all material used need to be referenced. All these will be taken into consideration while prepping the thesis and used as a guideline for the research done. (Chirk 2006.)

All the interviewees are participating to the research voluntarily. There are no official agreements done so all stakeholders that are used as a subject of the thesis can withdraw from the study. The research does not handle any money either so all the participation is seen as help to the study so everyone's' decisions are respected. The communication between the stakeholders is kept formal via email.

All the stakeholders have gotten an email about the study and its basic potential and some questions to give a brief introduction to it. More information has been given before participation to all stakeholders. Information of the relevancy, benefits, potential and risks are discussed before collecting any data from the stakeholders to keep everyone on the same page.

The data collected from the interviews will be presented as anonymous to keep the identities of the interviewees private. The research does not include any sensitivity but to keep the social risks low the best way to go in this research is to keep it anonymous. The results of the research are sent to the participants of this thesis. The analysing and concluding the research is transparent and will be solely based on the collected data and will be credible.

## 8 CONCLUSION

The current way dairy is consumed nationally and globally is in constant change. Sometimes the changes are in shorter period and happening faster and in other cases the changes are from long time ago and take more time to affect. The changes do effect on the supply chain and its stakeholders. Stakeholders can also influence on the consumers and overall consumption. The significances and volumes are different.

The main point for this thesis was to find out if some stakeholders of the dairy supply chain are affected more than others. The thesis aimed to answer a question "How some stakeholders such as producer, dairy companies and retailers of the dairy supply chain are affected in the changes in demand of dairy products?" The analyses show ways how the different parts have been affected and how the stakeholders have utilized the changes to their benefit if they have.

The theoretical part had two main points. Finnish food and consumption were used to gain insight on the situation. The consumption changes nationally and globally. Some foods are reducing faster than others and in the past few years impacting factors have molded the consumption culture. The consumption of food has increased and in the category changes have happened. Consumption can be influenced by businesses in the form of marketing that target different variables that lead consumer behavior.

Finnish dairy supply chain is visible, and all parts are monitored. The supply chain is made to be as short as possible to make sure the product is always fresh. The supply has stayed the same in the changes in the demand. The Finnish food industry has major role in the economy of Finland. Finnish agriculture has changed over the years and became more responsible and visible.

The interview was quite small with three interviewees from different parts of the supply chain. The interviews supported the theory, and both had similar findings. Based on the analyses and stakeholder matrix it can be concluded that all



parts of the supply chain are affected when there are changes in the consumption of dairy. The volume differs between them. All stakeholders have the opportunity to influence on the situation and they can work together and impact on the consumption more. Based on the information collected from the theory and interviews the hypothesis about stakeholders being affected from the changes can be confirmed. There are some parts such as producer who are affected more.

Examining these topics is important to find the roots and see to the future of Finnish agriculture. Having desirable security of supply is important for the countries back up. Using this thesis can give insight on the situation in the supply chain to improve the part of every stakeholder part of it.

## REFERENCES

- Ahvenjärvi, S., Lehtonen, H., Palosuo, T., Regina, K., 2014. Maatalouden kasvi-huonepäästöt ja niiden vähentäminen. Accessed on 2 December 2023. <https://jukuri.luke.fi/bitstream/handle/10024/481727/mttraportti127.pdf?sequence=1&isAllowed=y>
- Animal welfare act 693/2023. Accessed on 1 December 2023. <https://finlex.fi/fi/laki/alkup/2023/20230693>
- Arovuori, K., Karikallio, H., Kiviholma, S., Jansik, C., Niemi, J., Piipponen, J. (2019). Suomalaisen maitosektorin rakenteet ja niiden muutokset vuosina 1995–2018. Accessed on 31 October 2023. <https://www.ptt.fi/wp-content/uploads/media/ptt-tp198f.pdf>
- Bai, Z., Li, C., Liu, C., Wang, H., 2023. Evolution characteristics and influencing factors of global dairy trade. Accessed on 25 November 2023. <https://www.mdpi.com/2071-1050/15/2/931>
- Bengtsson, M. 2016. How to plan and perform a qualitative study using content analysis. Accessed on 24 October 2023. <https://www.sciencedirect.com/science/article/pii/S2352900816000029>
- Brannan, G., Brannan, J., & Tenny, S. 2023. Qualitative study. Accessed on 3 October 2023. <https://www.ncbi.nlm.nih.gov/books/NBK470395/>
- Chirk, J. 2006. Common ethical issues in Research and Publication. Accessed on 1 December 2023 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4453117/>
- Corporate finance institution. 2023. Consumption. Accessed on 9 October 2023. <https://corporatefinanceinstitute.com/resources/economics/consumption/>
- Columbia. 2023. Content Analysis. Accessed on 1 November 2023. <https://www.publichealth.columbia.edu/research/population-health-methods/content-analysis>
- Elintarviketurvallisuusliitto. 2023. Vienti. Accessed on 10 November 2023. <https://www.etl.fi/tietoa-ruoka-alasta/vienti/>
- Esala, M., Lehtonen, H., Nousiainen, J., Regina, K. 2009. Modelled impacts of mitigation measures on greenhouse gas emissions from Finnish agriculture up to 2020. Accessed on 23 November 2023. <https://jukuri.luke.fi/bitstream/handle/10024/475934/mtt-afs-v18n3-4p477.pdf?sequence=1&isAllowed=y>
- Euroopan tilintarkastustuomioistuin, 2018. Viljelijöiden perustukijärjestelmä- toimii hyvin mutta vaikuttaa vain vähän tukitasojen yksinkertaistamiseen, kohdentamiseen ja lähestymiseen. Accessed on 2 December 2023. [https://www.eca.europa.eu/Lists/ECADocuments/SR18\\_10/SR\\_BPS\\_FI.pdf](https://www.eca.europa.eu/Lists/ECADocuments/SR18_10/SR_BPS_FI.pdf)

Fidrmuc, J., Korab, Strba, D. 2021. Guide to using word clouds for applied research design. Accessed on 25 November 2023. <https://towardsdatascience.com/guide-to-using-word-clouds-for-applied-research-design-2e07a6a1a513>

Finnish food information. 2023. Ruoka työllistää ja kasvattaa kansantaloutta. Accessed on 9 October 2023. <https://ruokatieto.fi/artikkelit/talous/>

Galletta, A. 2013. Mastering the semi-structured interview and beyond: From research design to analysis and publication. New York: New York University

Hahn, W., Davis, G. C. 2016. Assessing the status of the Global dairy trade. Accessed on 28 November 2023. [https://ifama.org/resources/Documents/v19ib/0\\_EdIntro.pdf](https://ifama.org/resources/Documents/v19ib/0_EdIntro.pdf)

Hartley, M., Howden, P., Kennon, N. 2009. Who really matters? A stakeholder analysis tool. Accessed on 26 November 2023. <https://search.informit.org/doi/epdf/10.3316/informit.733413362842369>

Heikkurinen, P., Jalkanen, L., Järvelä, K., Järvinen, M., Katajajuuri, J-M., Koistinen, L., Kotro, J., Mäkelä, J., Pesonen, H-L., Riipi, I., Ulvila, K-M., Forsman-Hugg, S. 2012. Vastuullisuus ruokaketjussa. Accessed on 20 September 2023. <http://www.mtt.fi/julkaisut/vastuullisuusruokaketjussa.pdf>

Heinonen, M., Kolehmainen, M., Maunuksela, L., Nordlund, E., Poutanen, K., Sandell, M., Sözer, N., Vilkki, J., Virtanen, S., Yang, B., Åkerman, M., 2021. Suomen ruokatutkimuksen ja -innovoinnin strategia 2021–2035. Accessed on 30 November 2023. <https://www.vttresearch.com/sites/default/files/pdf/publications/2021/Suomen-ruokatutkimuksen-ja-innovoinnin-strategia-2021-2035.pdf>

Hietaniemi, V. 2021. Näin kaura kipusi huipulle- ja näin se pysyy siellä. Accessed on 1 November 2023. <https://www.luke.fi/fi/blogit/nain-kaura-kapusi-huipulle-ja-nain-se-pysyy-siella>

Indeed, 2023. What is a stakeholder matrix? Accessed on 5 November 2023. <https://www.indeed.com/career-advice/career-development/stakeholder-matrix>

Jamshed, S. 2014. Qualitative research methods- interviewing and observation. Accessed on 19 November 2023. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4194943/>

Jansik, C., 2009. A comparison of dairy supply chains in Finland and in the Baltic countries. Accessed on 22 November 2023. [https://www.ifama.org/resources/files/2009-Symposium/1077\\_paper.pdf](https://www.ifama.org/resources/files/2009-Symposium/1077_paper.pdf)

Kesko, 2023. K selvitti: Ostokäyttäytyminen muuttuu yhä suunnitelmallisemmaksi- Nyt seurataan tarjouksia tarkasti. Accessed on 7 October 2023. <https://www.kesko.fi/media/uutiset-ja-tiedotteet/uutiset/2022/k-selvitti-ostokayttaytyminen-muuttuu-yha-suunnitelmallisemmaksi---nyt-seurataan-tarjouksia-tarkasti/>

- Koivisto, A. 2023. Maataloustuotteiden tuottajahinnat, syyskuu 2023. Accessed on 9 November 2023. <https://www.luke.fi/fi/tilastot/maataloustuotteiden-tuottajahinnat/maataloustuotteiden-tuottajahinnat-syyskuu-2023-ennakko>
- Luonnonvarakeskus 2021a. Mitä Suomessa syötiin 2020? Accessed 2 October 2023. <https://www.luke.fi/fi/uutiset/mita-suomessa-syotiin-vuonna-2020>
- Luonnonvarakeskus 2022b. Mitä Suomessa syötiin 2021? Accessed 2 October 2023. <https://www.luke.fi/fi/uutiset/mita-suomessa-syotiin-vuonna-2021>
- Luonnonvarakeskus 2023c. Mitä Suomessa syötiin 2022? Accessed 2 October 2023. <https://www.luke.fi/fi/uutiset/mita-suomessa-syotiin-vuonna-2022>
- Mattio, M. 2023. Maidontuotanto. Accessed on 1 October 2023. <https://www.mtk.fi/-/maidontuotanto-1>
- Mikkola, E. 2023. What was eaten in Finland in 2022? Accessed on 22 September 2023. <https://www.luke.fi/en/news/what-was-eaten-in-finland-in-2022>
- Moriarty, J. 2011. Qualitative methods overview. Accessed on 22 October 2023. [http://eprints.lse.ac.uk/41199/1/SSCR\\_Methods\\_Review\\_1-1.pdf](http://eprints.lse.ac.uk/41199/1/SSCR_Methods_Review_1-1.pdf)
- Nyrhinen, j., Rantala, E., Silinskas, G., Tuominen, J., & Wilska, T.M. 2020. Kulutus koronan aikana ja sen jälkeen. Accessed on 1 October 2023. <https://jyx.jyu.fi/bitstream/handle/123456789/69106/978-951-39-8180-8.pdf?sequence=1&isAllowed=y>
- Parviala, A., & Viita, K. 2023. Ruuan hintojen nousu jatkuu rajuna- Tämänkin vuoden hintaennusteet menevät täysin uusiksi. Accessed on 8 October 2023. <https://yle.fi/a/74-20026772>
- Ramadhani, N., Rusdi, M., Sadiq, M. 2022. Bureaucratic Reform at the Directorate of Politics and General Government, Ministry of Home Affairs. Accessed on 24 November 2023. [https://books.google.fi/books?hl=fi&lr=&id=XpbME-AAAQBAJ&oi=fnd&pg=PA6&dq=businesses+influence+consumers&ots=pGnZ38td31&sig=vFPbJ531rXlcNCzJSHhqD7iF7d8&redir\\_esc=y#v=onepage&q=businesses%20influence%20consumers&f=true](https://books.google.fi/books?hl=fi&lr=&id=XpbME-AAAQBAJ&oi=fnd&pg=PA6&dq=businesses+influence+consumers&ots=pGnZ38td31&sig=vFPbJ531rXlcNCzJSHhqD7iF7d8&redir_esc=y#v=onepage&q=businesses%20influence%20consumers&f=true)
- Rinderknecht, K. 2021. It's time to start sharing interview questions before the interview. Accessed on 29 October <https://www.linkedin.com/pulse/its-time-start-sharing-interview-questions-before-karl-rinderknecht/>.
- Ruokatieto. 2023. Maidon reitti. Accessed on 30 October 2023. <https://ruokatieto.fi/ruokakasvatus/ruuan-reitti/maidon-reitti/>
- Salminen, A. 2023. Läheltä parempaa. Accessed on 29 September 2023. <https://mmm.fi/laheltaparempaa>
- S- Group. 2023. Kohti kestävän kuluttamisen uutta normaalia- yhdessä askel kerrallaan. Accessed on 4 October 2023. <https://s-ryhma.fi/vastuullisuus/kestava-kuluttaminen#kotimai-suuden-edistaminen>

Soininen, A.M. 1974. Vanha maataloutemme. Accessed on 1 October 2023. [https://www.doria.fi/bitstream/handle/10024/167610/HT096\\_opt.pdf?sequence=1&isAllowed=y](https://www.doria.fi/bitstream/handle/10024/167610/HT096_opt.pdf?sequence=1&isAllowed=y)

Vaara, K. 2018, Maatalous työllistää valtavan joukon suomalaisia. ”Tuista puhutaan, mutta raha ei jää viljelijän taskuun”. Accessed on 6 October 2023. <https://yle.fi/a/3-10025698>

Virtanen, P. 2023. Vastuullisuusraportointi muuttuu pakolliseksi- mitä uudesta CSRD- säädöksestä tulisi tietää? Accessed on 10 October 2023. <https://greenstep.fi/vastuullisuus/vastuullisuusraportointi-muuttuu-pakolliseksi--mita-uudesta-csrd-saadoksesta-tulisi-tietaa>

Vitaliano, P., 2016. Global dairy trade: Where are we, how did we get here and where are we going? Accessed on 28 November 2023. <file:///Users/matildaheino/Downloads/2Vitaliano.pdf>

Williams, C. 2007. Research methods. Accessed on 10 October 2023. <file:///Users/matildaheino/Downloads/ciadmin,+Journal+manager,+2532-10125-1-CE.pdf>

## APPENDICES

Appendix 1.	Interview questions
Appendix 2.	Data for the figure 2

In the appendix can be found the interview questions. The questions were the same in all interviews.

## Haastattelu kysymykset:

- Voisitko kertoa osastanne maitotuotteiden tuotantoketjussa?
- Tuotantoketjussa on monta osaa, osaatko arvioida oman osuutenne vaikuttavuutta siinä?
- Oletteko huomanneet yrityksessänne muutoksia maitotuotteiden kulutuksessa?
- Vaikuttavatko muutokset teihin, miten?
- Oletteko muuttaneet toimintaanne muutosten myötä, miten?
- Oletteko kiinnostuneet muutoksista ja vaikuttamaan niihin?
- Osaatteko arvioida syitä maitotuotteiden kulutuksen muutoksiin yleisesti, miten?
- Maitotuotteiden kulutus on murroksessa, miten tähän voidaan reagoida yrityksessä?
- Kuinka nopeasti muutoksiin voidaan reagoida?
- Pystyttäisiinkö kuluttajien kiinnostusta maitotuotteisiin etenkin juotavaan maitoon kasvattaa vielä jotenkin, vaikka ennusteet laskusta vuoteen 2030 mennessä säilyvät?
- Onko teille kysyntä pysynyt samana, vaikka kysyntä kuluttajilla muuttuu?
- Olette suuri ja tärkeä osa tuotantoketjua, koetteko voivanne vaikuttaa kulutukseen ja kuluttajiin?
- Vaikuttaako tulevaisuuden ennusteet muutoksista päätöksiinne investoinneista tai innovaatioista?
- Näkyykö teidän työssänne trendit muun muassa kasvipohjaisten tuotteiden kulutuksen nousussa?
- Kuinka paljon teillä löytyy kiinnostusta muutoksiin vaikuttamisessa verraten valtaanne asiassa?
- Miten koette uusien ravintosuositusten vaikuttavan maitotuotteiden kulutukseen seuraavan 5 vuoden aikana Suomessa?
- Vaikuttaako media tai siellä käyty keskustelu teidän päätöksiinne?
- Kuinka suuri osuus kysyntään itse viljelijällä on verrattuna kaupan vaikutukseen tai yrityksen?
- Näistä kolmesta sidostyhmästä minkä koette olleen eniten vaikutuksen alla muutoksissa, sekä positiivisessa että negatiivisessa? Kauppa, maidontuottaja, maitoalan yritys
- Jos haluatte lisätä vielä jotain vapaa sana!

This appendix was collected based on the Natural resources institute Finland. This is the material figure 1. was formed from.

	2020	2021	2022
Liquid milk	144	142	135
Fruit	65	62	55
Vegetables	64	63	64
Eggs	12	12	11
Fish	15	15	15,00
Meat	79	70	77
Cereals	81	84	85