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Master Thesis

"What are possible growth strategies the Norwegian apple industry can adopt to increase sales of Norwegian apples?"

Hand-in date:
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Campus:
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Supervisor:
Per Ingvar Olsen

Examination code and name:
GRA 19703 Master Thesis

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Master of Science in Business – Major Strategy

Abstract

This master thesis explores the decrease in consume of Norwegian apples and investigates alternative strategies to boost growth by increasing sales. Through a comprehensive case study, we aimed to identify potential avenues for increasing market share. Our findings suggest that the Norwegian apple industry can benefit from shifting its focus towards cider production, considering the lower costs, growing consumer interest, and stronger competitive advantage within the cider segment compared to regular apples found in grocery stores.

The study begins with an analysis of the current market situation. Subsequently, we present relevant literature on the area that we use to get a deeper understanding of the challenges and opportunities in the industry. We then conducted a case study of selected actors in the value chain, using interviews as our primary data.

The research revealed that cider production offers several advantages over traditional apple sales. First, the cost of cider production is lower compared to the expenses associated with cultivating and marketing consume apples. This cost reduction can potentially improve profit margins for apple growers. Furthermore, consumer interest in cider has been steadily increasing and by capitalizing on this trend, Norwegian apple producers can tap into a broader consumer base and potentially expand their market reach. Based on these findings, we recommend that Norwegian apple producers strategically shift their focus towards cider production to reap the benefits of a competitive and potentially profitable product.

Acknowledgement

Our thesis is a result of an intense learning process for both researchers. Although it has been challenging at times, it has been a highly interesting and insightful journey.

First and foremost, we would like to express our gratitude to our thesis supervisor, Per Ingvar Olsen. Thank you for providing us with support, guidance, and feedback throughout the research process. Your expertise and our discussions together have been highly valued. We would also like to express our gratitude to Anna Birgitte Milford and the other participants of the GreenRoad project for their valuable assistance, knowledge, and insights that greatly contributed to our thesis. Furthermore, we are grateful to all the participants in our study for their tremendous enthusiasm, willingness to share knowledge, and active engagement that greatly enriched our research.

We hope our research can provide valuable insights to the apple industry.

Edel Schaaning Mørch and Hedda Stjern Fondevik

Table of Content

1.0 Introduction

1.1 Topic and purpose

The Norwegian directory of health in Norway recommends Norwegians to consume 5 servings of fruits, berries, and vegetables each day to maintain a healthy and balanced diet (Bama, n.d.-a). Unfortunately, the proportion of fruits and vegetables in Norwegian diets is below the desired levels, and this downward trend is concerning. National dietary surveys reveal that the average consumption is currently at 3.2 servings per day. Last year, only 18.2% of Norwegians managed to meet the 5 a day recommendation, marking the lowest recorded figure since measurements began in 2017. In comparison to other European countries, we score poorly in terms of fruit and vegetable consumption. New trends show that consumers are opting for cheaper alternatives and purchasing smaller quantities of fruits and vegetables (Kommunikasjon, 2023a). A survey conducted in 2022 revealed that fewer people are willing to pay extra for higher-quality fruits and vegetables in 2022 compared to 2021 (Rebnes & Angelsen, 2021).

The Norwegian fruit market currently holds a modest market share of 3% within the horticulture sector in Norway. This percentage stands out as relatively low when comparing to market shares of other agricultural commodities. (Landbruksdirektoratet, 2022; NIBIO, 2022c). Apples have been challenged by an increasing range of new substitutes. In 2022, we ate 60 million fewer apples compared to 2013 (Kommunikasjon, 2023b). The fruit and vegetable market in Norway faces significant challenges due to intensified competition from imports and limited economies of scale, impeding the growth potential of the domestic fruit market. There are several projects started to increase the share of Norwegian apples, with focus on research and development on growth opportunities. To succeed in increasing the market share, it is necessary to enhance collaboration within the value chain and work collectively to strengthen the quality of the Norwegian horticulture sector (Landbruksdirektoratet, 2020).

1.2 Presentation of our Master Thesis

For our master thesis, we are participating in a project called "Sustainable Growth of the Norwegian Horticulture Food System – GreenRoad GS35", led by Norsk Institutt for Bioøkonomi (NIBIO). The project has secured funding of NOK 19.2 million from the Norwegian government. Its primary objective is to improve knowledge of the Norwegian horticultural food system and find solutions for increased value creation and sustainability (Appendix 1). The results of the project will present the current status of the system, as well as identify relevant opportunities and bottlenecks. With a broad scope that encompasses various areas, the project involves multiple partners and participants across all levels of the value chain. Notably, Bama Gruppen AS, Gartnerhallen AS, and Felleskjøpet AS are actively engaged as participants (NIBIO, 2022).

Our Master Thesis takes place in TASK 4.2 of horticultural value chain and retail market structure (Appendix 2). The purpose of our participation in the project is to find measures to improve the logistical system and marketing strategies with intent of increasing sales of Norwegian products in the market. Given our academic background in business, specializing in strategy as part of our MSc program, the task provided us with an opportunity to contribute our expertise and insights to the project. Specifically, we directed our research towards increasing the sales of Norwegian apples with the following research question:

"What are possible growth strategies the Norwegian apple industry can adopt to increase sales of Norwegian apples?"

We started the research process in September 2022 to have the opportunity to visit some farms during the harvesting season. During the fall and winter, we conducted 19 interviews to comprehensively map the value chains within the apple industry, giving a good base for insight and findings to analyze. The data provided a solid foundation of insights and findings for our analysis. Further on, our research process has been exploratory, fostering a dynamic and evolving process over time.

The Master Thesis is structured into nine chapters. It starts with a presentation of the Norwegian fruit market and apple industry, with mainly focus on apples for consume and cider. Further on, we present relevant theory that is closely connected to the industry. This gives us a good base for conducting a value chain analysis for the analyzing part, where three of the chains are evaluated and discussed through three sub-questions. Finally, based on the findings and discussion conducted for each chain, we answer the research question and provide recommendations for the overall strategy and growth potential for the industry. It is important to remember that the Master Thesis is written from an economic and strategic point of view.

2.0 The Norwegian Apple Industry

2.1 General

The Norwegian fruit market represents around 3% of the horticulture sector in Norway, distinguishing itself with a comparatively low market share compared to other agricultural commodities (Landbruksdirektoratet, 2022; NIBIO, 2022c). However, there is a collective vision within the sector to increase this share, thus several initiatives have been started. In collaboration with Forum for Norsk Grønt, Norgesgruppen, Rema 1000, and Coop have made a commitment to realize a 50 percent increase in the share of Norwegian fruits and vegetables by 2035 (NHO mat og drikke, 2022).

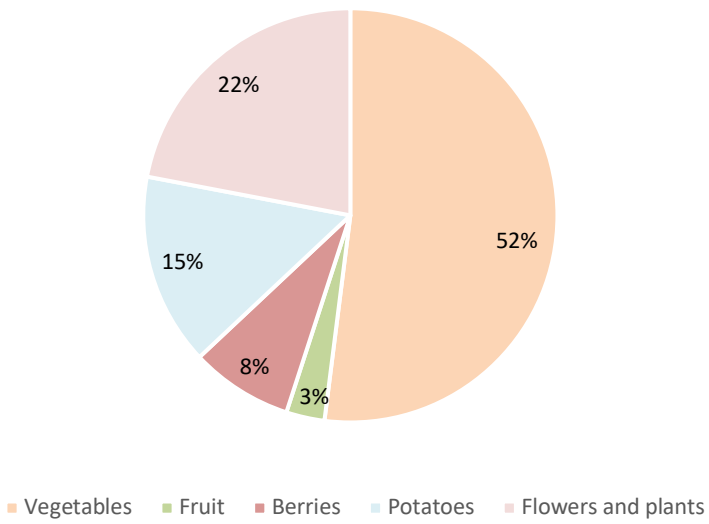

Figure 1: Horticulture sector (Landbruksdirektoratet, 2022; NIBIO, 2022c)

The apple industry currently holds a small market share among all cultures in the horticulture sector (Rebnes & Angelsen, 2021). To increase this market share, various projects with different strategies and approaches have been started. The apple industry encompasses various market segments, including apples for consumption, cider, juice, and other applications. The segments for class 1 apples (in this paper referred to as “consume apples” or “class one apples”) and class 2 apples (in this paper referred to as “pressed apples” or “class 2 apples”) hold the biggest share and is distributed with a 60/40 percent division (NIBIO, 2022a).

2.2 Consume apples

Consume apples refer to fresh apples being sold to households and industry. The marketing scheme for apples and pears, determined by Landbruksdepartementet, entails that fruit warehouses and producers can only package apples within class 1 for consumption. The production target is set by 7,500 tons of class 1, and other classifications are to be delivered for pressing or other industrial purposes (Lovdata, n.d.).

2.2.1 History

Apples have been produced in Norway for over a thousand years. In the 1930s, fruit orchards began to be established, and apples gradually became a commercial product in Norway. The 1950s and 1960s marked the peak of apple production, with an annual output of around 70,000 tons apples. However, in recent years, imported apples have claimed an increasingly larger share of the market (Digitalt Museum, 2014).

Until the end of the 1980s, Norway had a quantitative import protection for fruits. At the time the Norwegian season was protected against import, which meant that if one avoided exceeding the upper price limit for two consecutive weeks, there was practically no import of fruit. At the time, the Norwegian season lasted from May 1st to February 1st and no fruit was imported unless there was a shortage in the Norwegian market (Knutsen et al., 2001). After the

US challenged the Norwegian import regime in GATT (General Agreement on Tariffs and Trade), there were big changes in the agreements. The date for the last month of the protected season was changed from February 1st to December 1st. A production quote of maximum 7 500 tons Norwegian apples was determined, and apples over this quantum was regulated out of the market. Subsidy schemes were established to compensate for the problems this created for Norwegian producers. In practice, these changes led to a significant reduction of apples produced in Norway. From 1995, in accordance with the new GATT agreement, Norway introduced a tariff-based import protection, which meant that foreign apples could be imported even during the Norwegian season. There was a pressure for fruit storages and producers to sell off the Norwegian fruit before December 1st (Knutsen et al., 2001).

Another big cause of change in the market, was due to the establishment of the big retail chains in the beginning of 1990. Until now, the market was characterized by many players and a high level of competition. Gartnerhallen was the cooperative organization within the green sector (potatoes, vegetables, fruit, berries, and flowers) with the role of being the market regulator. Since July 1st, 2000, the role of market regulator was entrusted to GPS (Grøntprodusentenes samarbeidsråd) (Knutsen et al., 2001).

2.2.2 Volume

The overall production of apples varies from season to season due to variations in weather and climate conditions. In an email correspondence with Anna Milford and Torbjørn Haukås, we received numbers of commercial sales of apples (domestic and import) at wholesale level in Norway in tons. The evolution of sales is shown in figure 3 (Data based on Appendix 3) and demonstrates that the sales of consumer apples have exhibited remarkable stability. In average, 7 500 Norwegian apples are being sold every year, however this volume is expected to decrease, as the largest wholesaler in the industry has reduced their desired volume in new production plans (see appendix 4).

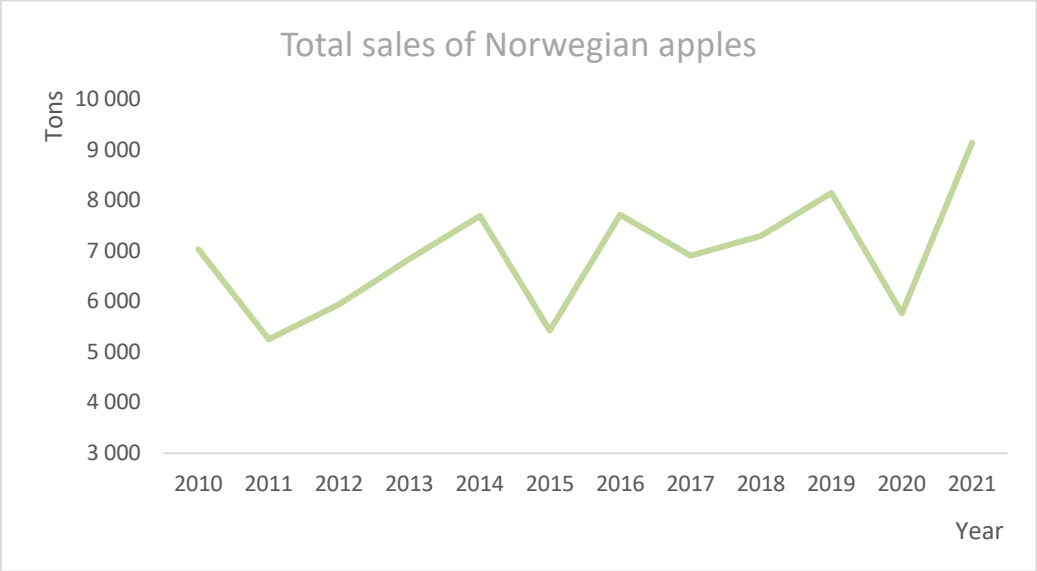

Figure 2: Total sales of Norwegian apples (Appendix 3)

Furthermore, there is an intense competition from imported apples during the Norwegian season. In average, Norwegian apples have comprised an average of 13% of the total apple sales sold during 20 years of data, shown in the figure below.

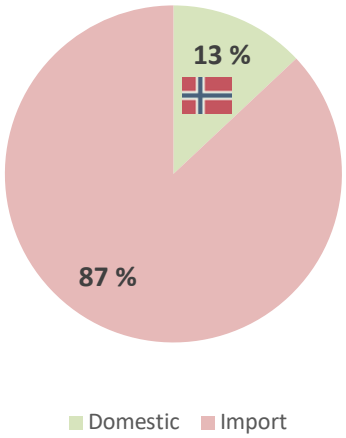

Figure 3: Import and domestic production (Based on data from Appendix 3)

2.2.3 Price

With exception from the Norwegian competition law §§ 10 and 11, price collaboration is allowed for Norwegian potatoes, vegetables, fruit and berries (Lovdata, 2023). Every week, GPS in collaboration with their members, Gartnerhallen, Nordgrønt, and Produsentforeningen 1909, who discuss and set a target price for what farmers should charge for their apples. The purpose of GPS

is to foster collaboration among producers across wholesale affiliations and enhance as fair competition conditions as possible in the market for fruit and vegetables. The target price is a recommended price that authorities believe the agricultural sector should realistically achieve based on balanced market conditions and the established import protection. The price is represented for class 1 apples with size over 70 mm. The figure below shows target price for apples from 2016 until today. In 2022, the listed price in the market was on average 3,2% below target price (GPS, 2022).

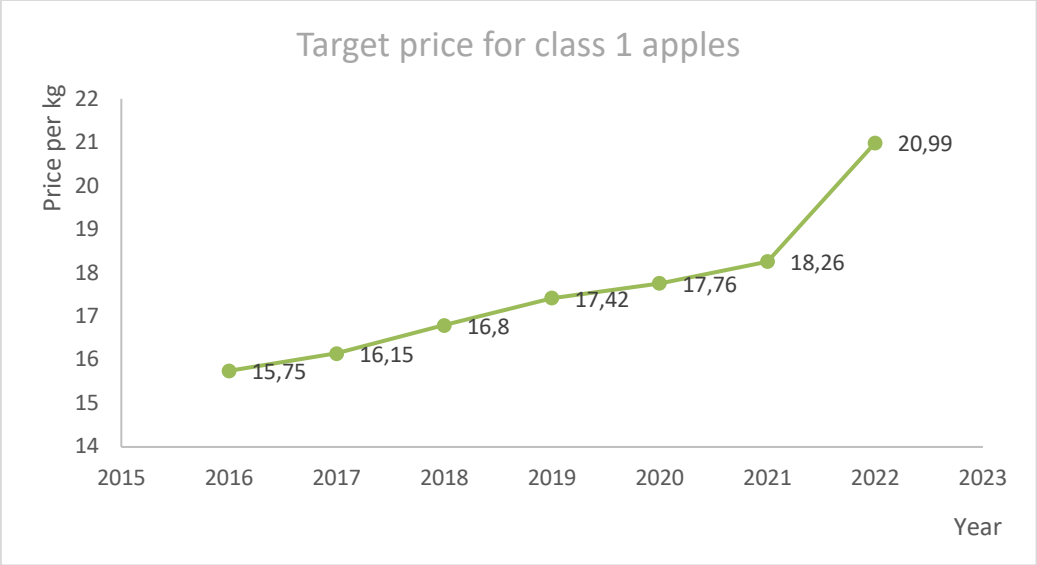

Figure 4: Target price for class 1 apples (GPS, 2022)

The Norwegian price of apples when purchased from producer to wholesaler is higher compared to the imported apple prices. The figure illustrates the disparities between the listed prices of Norwegian apples and the prices of imported apples (including transportation and tax) for the Norwegian season, 2022. Notably, the Norwegian price remained the highest and was 18.8% higher than import on average in 2022 (GPS, 2022).

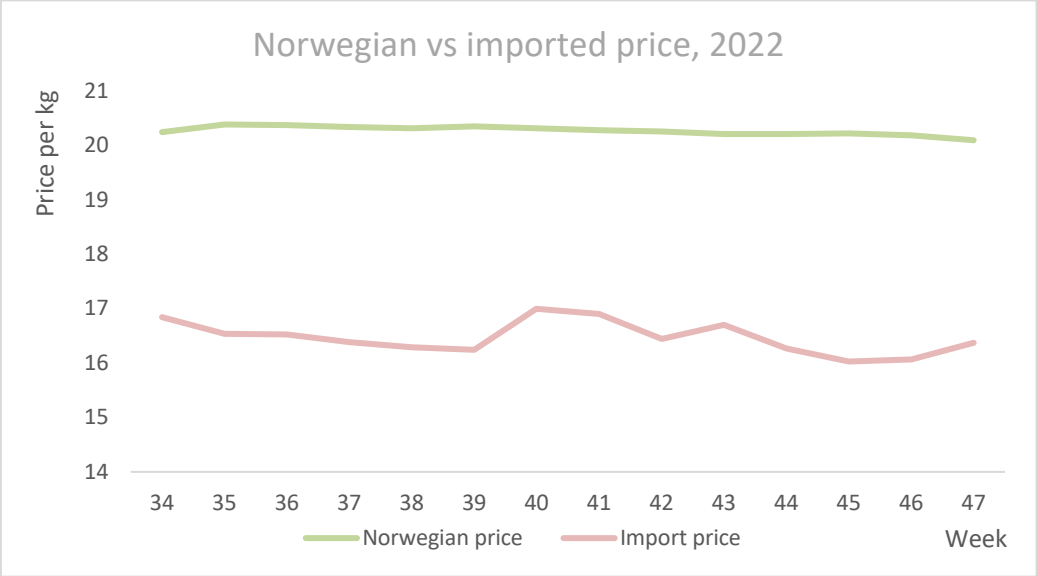

Figure 5: Norwegian vs import price (GPS, 2022)

2.3 Cider

2.3.1 History

There was a thriving West Norwegian cider industry in the late 19th century. Hardanger was among the very first places where people seriously started to produce cider of apples. However, the production of cider changed after Vinmonopolet took over the responsibility for alcohol sales in 1922. Consequently, cider production became a home activity instead of a commercial activity (Drikkeglede, 2021). Over the past 10 years, Norway has become a cider production country. Sales of cider through Vinmonopolet has increased from 3.9 million Norwegian kroner in 2011 to 64 million Norwegian kroner in 2021, resulting in a growth of 1541.03%. The big change happened in 2016, when producers were allowed to sell cider with alcohol percentage of 22% directly from the farm. This gave new possibilities of building their own brand and develop the market (Regjeringen, 2022).

2.3.2 Cider production

There are approximately 50 cider producers in Norway today. Half of them are located in Hardanger, while the others are spread throughout Telemark, Ryfylke, Sogn, Nordfjord, Sunnmøre, Trøndelag, and the Eastern part of Norway (Regjeringen, 2022). There is an expected increase in the number of producers in

the coming years. Additionally, commercial producers in the form of urban cideries and larger breweries producing cider as part of their product line are emerging. There are two types of production licenses: state and municipal licenses. The former allows the producer to distribute cider through Vinmonopolet, grocery stores, and the Horeca sector, while the latter only permits selling from their own orchards. Although cider is a small category within beverages, it has shown a substantial growth and has been compared to products like champagne, cava, and prosecco in terms of taste. Norwegian cider has received great attention worldwide and won several medals in international cider competitions and festivals, such as the "Ehrengast 2022" title in CiderWorld. The figure below gives an overview of the given medals from 2018-2021, where Norway has an overall ranking of third in the world, only behind Germany and Spain. The high ranking indicates that Norwegian ciders deliver a high quality and is well received in the market (NIBIO, 2022a).

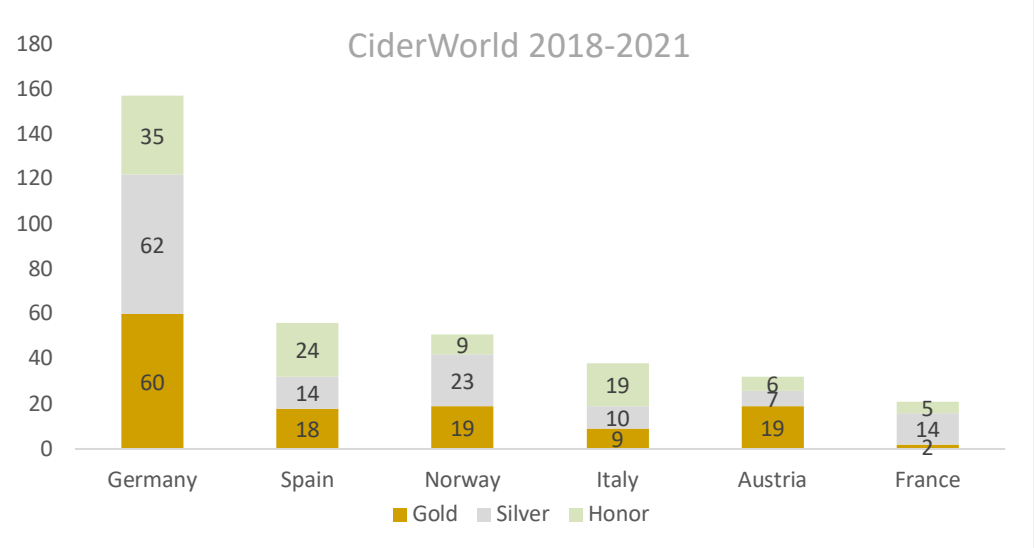

Figure 6: CiderWorld 2018-2021 (NIBIO, 2022a)

It is not common in Norway to cultivate cider apples, but the apples that do not meet the Class 1 criteria are typically used for pressing. The apples are pressed in October and undergo low-temperature fermentation until March. The cider is then bottled and ready for release in May. What makes Norwegian apples unique are the warm fjords in summer, combined with cool nights, giving fresh and tart apples. Norwegian cider holds a competitive advantage in terms of taste

due to its use of traditional apple varieties, differentiating them from their counterparts in countries like England and France (Moholdt, 2020).

2.3.3 Siderklynga i Hardanger

One of the reasons for the increase of cider producers and their good cooperation, is the establishment of Siderklynga in Hardanger. A total of 24 producers are part of the cluster, initiated by the Hardanger Siderprodusentlag, Innovasjon Norge, Hordaland County, and local businesses. Siderklynga aims to ensure that the growth in the cider industry also generates value for other sectors, such as tourism, raw material producers, manufacturing, and research. The main goal of the cluster is to foster a collaborative partnership among businesses to create new industries and increase value creation. Additionally, it aims to facilitate increased volume of Norwegian cider, availability of raw material, and the number of cider producers. (Siderklynga, n.d.). In these days, the cluster is working on a new national center to foster knowledge and create synergies. The consume apple and cider segments are interdependent, and knowledge in one area is crucial for the other (NIBIO, 2022a). The rising popularity of cider, particularly in Hardanger, has attracted many young people to come back to their hometowns and work in the apple industry. New enthusiasm has transformed cider into a trendy field, resulting in an increase of young people moving back to their home town to work in the apple industry (Moholdt, 2020).

2.3.4 Sales and volume

The prices for class 2 apples have experienced a significant increase in recent years, particularly after 2018, as depicted in the figure below. In 2022, the average price was 8,37 per kg apples (Siderklynga, n.d.).

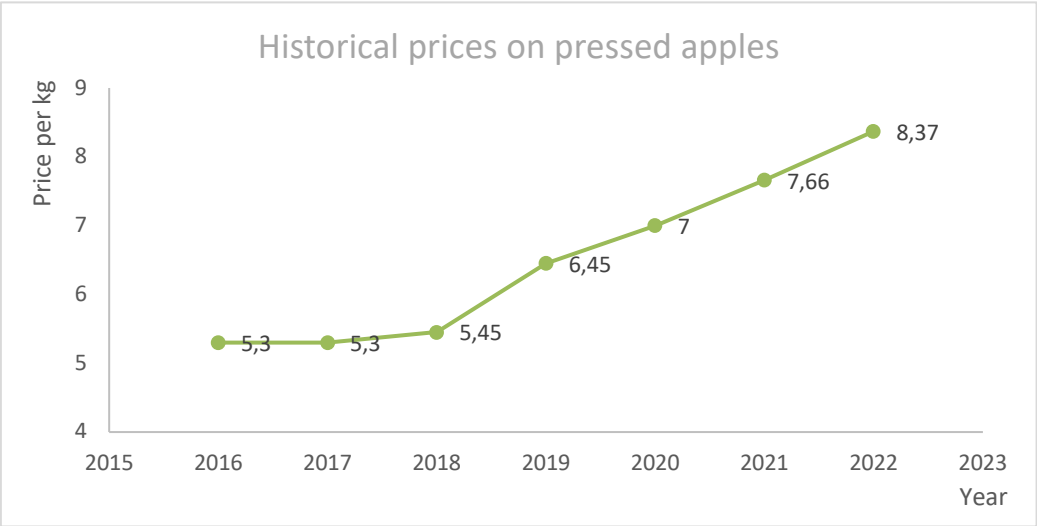

Figure 7: Historical prices on class 2 apples from 2016 – 2022 (Siderklynga, n.d.)

Norwegian cider producers have successfully managed to increase cider production and sales. Total sales of Norwegian cider amounted to approximately NOK 100 million in 2021, including sales from farm outlets, the restaurant market, and the grocery trade (Regjeringen, 2022). Vinmonopolet is the primary distribution channel for cider, accounting for the majority of cider sales. The figure below illustrates the overall sales volume of cider through Vinmonopolet. From 2016 to 2021, there has been a remarkable 819% increase in sales (Jaastad & Rasmussen, 2022). Clearly the development and the market presence of cider has been successful, securing their allocation of shelf space at Vinmonopolet (NIBIO, 2022a).

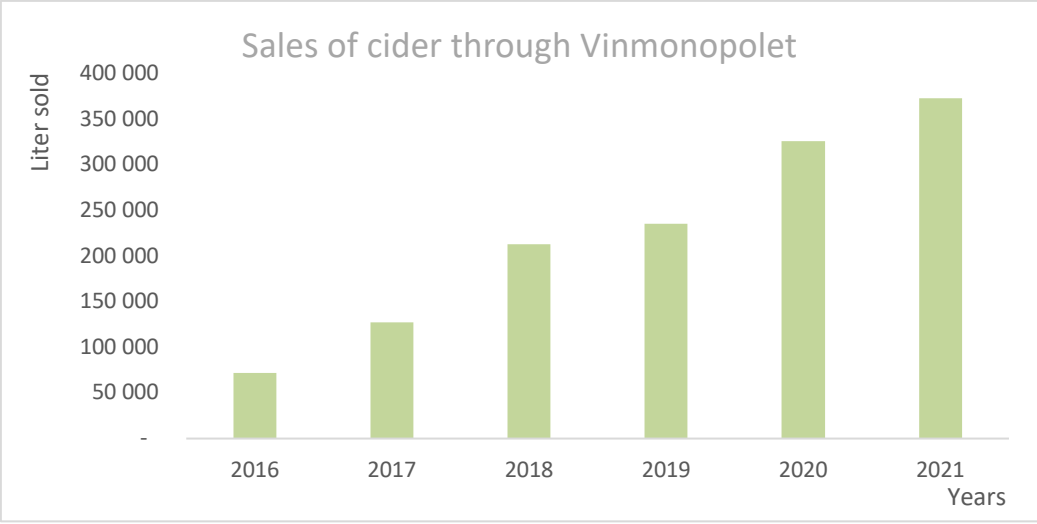

Figure 8: Sales of cider through Vinmonopolet (NIBIO, 2022a).

2.3.5 Trends and goals

The cider segment holds good prognoses for the future. During the Hardanger International Cider Festival in 2022, the Cider Cluster in Hardanger and the interest organization Hanen presented a forecast for the future cider production in Norway. The forecast estimated a total demand of 2.9 million liters by 2030, with a market value of 580 million Norwegian kroner. The figure below illustrates the projected demand for cider across various sales channels for 2030. Vinmonopolet is expected to continue being the primary sales channel, while export is projected to be the second largest (NIBIO, 2022a).

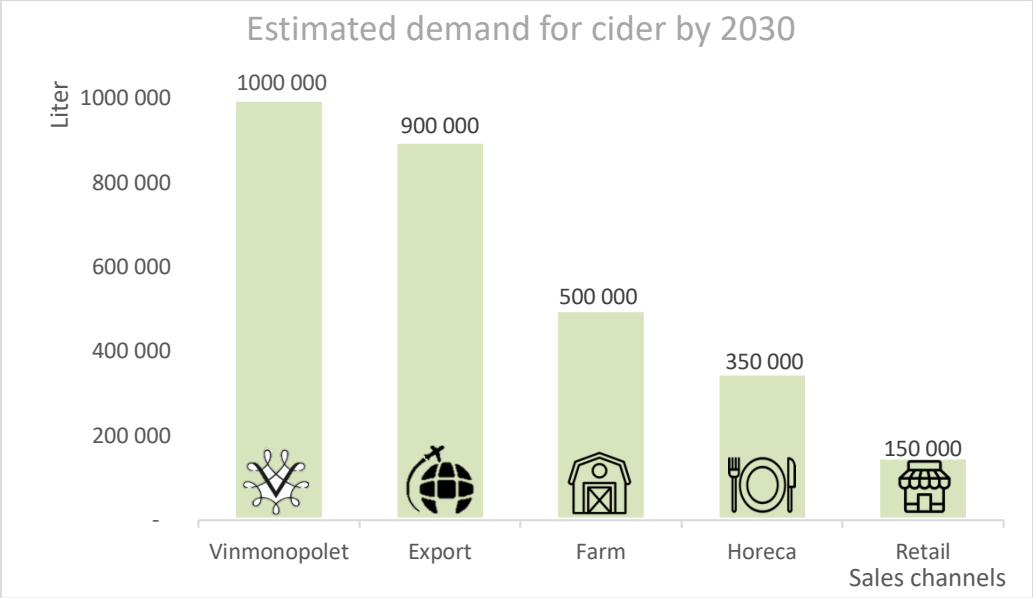

Figure 9: Estimated demand for cider in liter for 2023 (NIBIO, 2022a)

There is a goal within the market to have 100 cider producers in Norway by 2030. However, achieving these growth ambitions also requires significant efforts and a focus on knowledge, competence and quality will be crucial (Kongsnes, 2022b). The cider cluster in Hardanger has set a target of annually producing 1 million liters of cider, which necessitates over 1400 tons of apples. This represents a fourfold increase compared to the production level of approximately 250,000 liters in 2018. (Børve et al., 2021). If the growth in demand for cider continues, it appears that there may be a shortage of press apples. In fact, the situation may arise where class 1 apples need to be used for pressing (NIBIO, 2022a).

2.4 Other segments

2.4.1 Industrial purpose

Apples that fail to meet the class 1 classification have traditionally been utilized for industrial purposes in Norway. These apples are sourced either by purchasing them after sorting from fruit packages or directly from producers. During years with an excess volume of class 1 apples or when unwanted apple varieties are present in the market, they are designated for industrial use. This includes production of concentrates, fresh juices, apple jam, and other industrial products. In 1994, 50% of all industrial apples in Norway were of Norwegian origin, whereas this figure declined to only 10% by 2008. Norway has implemented a preservation scheme, known as "konserveringsordning," which allows for duty-free import of industrial apples when all Norwegian press apples are utilized in the market. Currently (as of 2008), Norway has a relatively low production of industrial apples, with only one area in Svelvik specializing in direct production for industry (Vangdal & Haukås, 2008).

Apples for concentrate

One of the uses of industrial apples is to process them through concentrate. There has been a decline in the production of Norwegian concentrate, which can be attributed to a lower production of Norwegian apples alongside an increase in the demand for apples for fresh-pressed juice. Simultaneously, packaging companies provide incentives for producers to have the highest possible class 1 apples by doing a higher deduction if less than 85% of the apples belong to class 1. Consequently, more apples with damage, incorrect color, or size are left on the ground. In the 1990s, approximately 400 tons of apples were sent for concentrate, compared to 83 tons in 2007. In this year, Gro Industrier in Hardanger was the only producer of apples for concentrate, where producers were paid an average of NOK 2 per kilogram apples for concentrate (Vangdal & Haukås, 2008).

Apples for fresh juice

Another application of industrial apples is fresh juice. In recent years, there has been a growing interest in freshly pressed juice, resulting in a larger proportion of industrial production being dedicated to this sector. Alongside larger companies, several small and medium-sized producers utilize apples as raw material. In 2007, Lerum and Tine individually produced approximately 1,000,000 liters of fresh-pressed juice, equivalent to 1,300 tons of apples. There are also multiple pressing facilities that either utilize their own cultivated apples or source them locally from producers. The payment for apples used in freshly pressed juice is significantly higher than concentrate, ranging from NOK 2.45-7 per kilogram in 2007. The higher payment is attributed to the combination of low production in the market and high demand (Vangdal & Haukås, 2008).

2.4.2 Organic apples

Another segment is organic apples. Organic apples are grown without the use of soluble synthetic fertilizers and chemical pesticides. These apples are more costly to produce, and in return have a higher content of vitamins and antioxidants. (Serikstad, 2007). In 2019, barely 1 percent of the apples sold through traditional channels were organically grown. A significant portion of organically grown fruit is sold outside of the traditional market channels, although there is no comprehensive overview of the quantities sold (Haukås & Romsaas, 2020). The figure below demonstrates the sales of organic apples through traditional sales channels in the Norwegian market, with production stabilizing at around 80-90 tons annually.

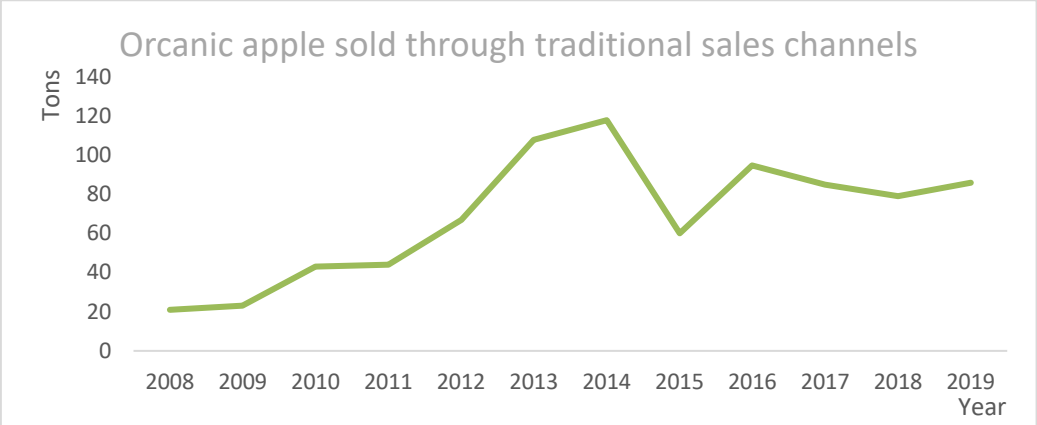

Figure 10: Organic apples sold through traditional sales channels (Haukås & Romsaas, 2020)

In recent years, being an organic apple producer has become increasingly challenging. In 2022, about 23,000 kilograms of Norwegian apples were organically produced, but only 7,000 of them were packed and sold as organic in stores. Several farmers have expressed that this is not economically sustainable, and they cannot continue to bear the additional costs (Nationen, 2023).

2.5 Trends and consumer behavior

2.5.1 Demand

The amount of apples sold per capita has decreased in the timeline from 2006 until now, and in 2021 a total of 9,2 kg was sold per capita (Opplysningskontoret for frukt og grønt, 2021a). This represents a decline of 27% from 2006 to 2021, signaling a substantial decrease in the demand for apples.

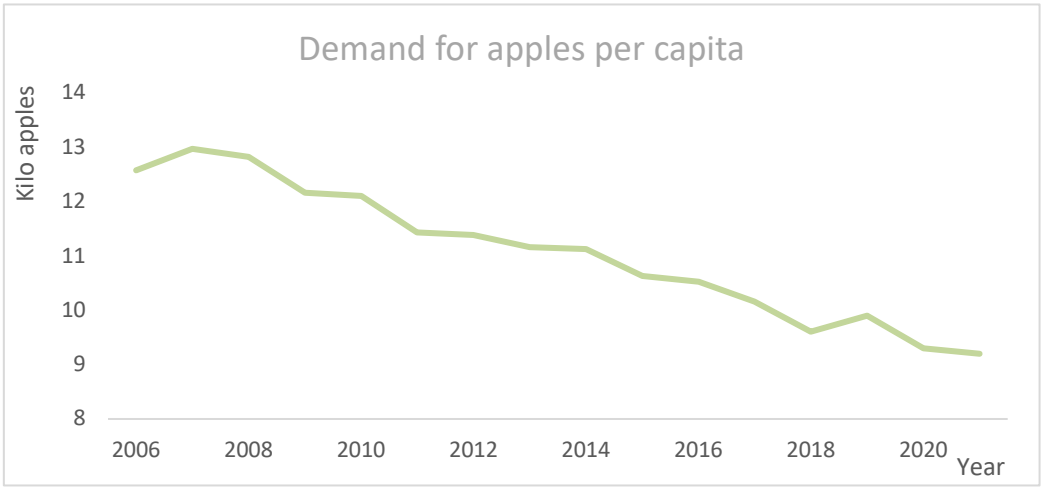

Figure 11: Kg per capita per year (Opplysningskontoret for frukt og grønt, 2021a)

2.5.2 Consumer preference

According to a survey conducted by Kantar in 2021, price is the most crucial criterion for consumers when selecting fruits and vegetables, followed by origin, packaging type, and labeling. Furthermore, Norwegian preference is highest for berries, carrots, and potatoes, while it is lowest for onions, apples, and tomatoes. Women, older, and those residing outside Oslo are more concerned about Norwegian origin when it comes to fruits and vegetables. The Norwegian flag serves as a significant indicator of Norwegian origin, but a certified labeling

scheme (Nyt Norge) holds greater trustworthiness than the Norwegian flag itself (Stiftelsen Norsk Mat & Stiftelsen Opplysningskontoret for Frukt og Grønt, 2022).

In a recent survey conducted by Stiftelsen Norsk Mat, the trend of individuals consistently choosing Norwegian food when possible has shown stability in recent years, following a consistent upward trajectory from 2017 to 2020. In 2022, the survey revealed that 64% of respondents expressed their preference for Norwegian groceries whenever the option is available (Appendix 5). One of the major drivers for choosing Norwegian food is attributed to the perception of safety and trust, along with the support for local farmers and preference for locally sourced food (Stiftelsen Norsk Mat, 2022). For apples, the taste is the most important reason for appreciation. Juicy, fresh, tangy, and sweetness are commonly used descriptions. Additionally, crispness and texture, as well as being locally produced or Norwegian, are mentioned as qualities that consumers appreciate (Angelsen, 2023).

2.5.3 Purchasing behavior for apples

A survey on apples and consumer behavior conducted by OFG revealed a significant variation among Norwegian consumers in their apple purchasing habits. Some consumers buy them frequently, while others buy apples relatively rarely. What is consistent, however, is that there is no significant difference between normal season and extended season. Most people who buy apples at least once a month during the fall months continue to do so during the winter months. In addition, one out of five stated that they had purchased Norwegian apples during the winter months this season (Angelsen, 2023).

2.6 Competition and regulations

2.6.1 Import

About 85% of all apples sold in Norwegian grocery stores are imported from other places in Europe (Opplysningskontoret for frukt og grønt, 2021a). The main reason for this is that compared to Norway, other countries have much lower production costs, which enables them to sell their apples at significantly lower prices, even counting the import and transportation costs to Norway. The biggest exporter of apples to Norway is Italy (SSB, 2022), which is also one of Europe's largest producers. They have exceptionally widespread operations, which enables them to reap the benefits of economies of scale. This includes, amongst other, massive storages, large apple farms and communities, as well as being located in a central place in Europe with excellent growing conditions. Moreover, they also export to many other countries (Gerritsen, 2017). This in turn reduces the costs margins for transportation. All the factors mentioned above are examples of reasons why the imported apples in Norway can be noticeably cheaper for Norwegian stores to purchase compared to their Norwegian counterparts.

Despite the lower costs of production for imported apples, some of the apple varieties are still more expensive than the average Norwegian apple when sold in stores, such as the brand Pink Lady (Meny, n.d.). These apples are branded as high-quality luxury apples due to their consistent prime quality. The imported apples have several varieties, which are all different in taste and consistency compared with traditional Norwegian apples and are typically sweeter and crunchier. Due to these characteristics, import apples are generally preferred as consumption apples rather than pressed apples. According to studies done by OFG, Norwegian consumers prefer this kind of apples (Opplysningskontoret for frukt og grønt, 2022), which has contributed to a rapid increase in import of international apple sorts for Norwegian cultivating, specifically from the Netherlands and Belgium (Kristiansen, 2022).

2.6.2 Customs protection

Norwegian apples are relatively expensive to produce, whereas the production of imported apples has a distinct competitive advantage due to lower costs, and in turn, lower prices. Because of this, the Norwegian government has implemented some measures to protect Norwegian products from losing market share to imported products (Norsk Landbrukssamvirke, 2017). One of these measures is imposing custom fees on imported apples during the season for Norwegian apples. This begins at 1st of August and ends on the 30th of November (Landbruksdirektoratet, 2021). After this period, the customs fees are dropped down to the usual level.

2.6.3 Extended season

There has been a change in the Norwegian apple industry the past few years. Recently COOP, Telefrukt, SNM, and OFG started an initiative that they called the extended season for Norwegian apples. The intent for this initiative is to sell Norwegian apples during the period after the Norwegian season is over (Opplysningskontoret for frukt og grønt, 2021b), with a goal of achieving a market share of approximately 20% market share for during the winter months (Sagen, 2022). With the help of new technology, it is possible to extend the Norwegian apple season by several months. After COOP entered this project, both Norgesgruppen and Rema 1000 has joined in. A large focus area within the extended season initiative has been to develop new apple varieties that can be produced in Norway and keep a good quality over the winter and into the spring. In this way, the actors can maximize the length of the extended season. Another central focus area relevant for the extended season, is the usage of new storages, called ULO-storages, that enables the apples to stop their maturing process while being in the storage (Kongsnes, 2022a).

2.7 Different Value chains

2.7.1 Actors in the value chain

There are three dominant players in the value chain for consume apples; Norgesgruppen, Coop, and Rema 1000 (Wifstad et al., 2018). Amongst these actors Norgesgruppen has the biggest market share, followed by Coop and Rema 1000, who is second and third, respectively (Jordheim, 2023b). Furthermore, the main player in the apple cider segment is Siderklynga I Hardanger, which is a cluster consisting of half of all Norwegian cider producers and other supporting actors. The different value chains and supporting actors for both are shown in the three figures below.

Value chain for Norwegian consume apples			
Retailers	**Norgesgruppen**	**Rema 1000**	**COOP**
Distributors	ASKO	BaRE	COOP
Packaging companies	Telefrukt and four producers owned	Telefrukt and four producers owned	Telefrukt and two producers owned
Wholesaler	Bama	Bama	COOP
Producers	Gartnerhallen and some independent	Gartnerhallen and some independent	Nordgrønt

Figure 12: Value chain for the consume apple segment

Value chain for Norwegian cider	
Retailers	**Vinmonopolet and producers**
Packaging and press	Packaging companies and producers
Producers	Class 1 + class 2 producers and class 2 producers

Figure 13: Value chain for the cider segment

Supporting actors			
GPS	Opplysningskontoret	Stiftelsen Norsk Mat	R&D institutions

Figure 14: Supporting actors in the value chain for Norwegian apples

2.7.2 Structure

Although the three main actors in the industry are competing, they do have several commonalities in their value chains. For instance, Norgesgruppen and Rema 1000 have the same value chain from producer until wholesaler. On the other hand, COOP has very similar build-up of their value chain, but has a more independent structure from the other actors. Most parts of the value chains are deeply rooted in the companies, with the collaboration often dating back decades.

2.7.3 Norgesgruppen/Rema 1000

Norgesgruppen and Rema 1000 have mostly the same value chain for Norwegian fruits and vegetables, hence we introduce the value chains in combination. Through this structure, the two groups ensure efficiency; however, by not being fully integrated with each other they still get the benefits of privacy to protect competition.

Producers:

Gartnerhallen is a cooperative organization made up only by farmers, with the members of Gartnerhallen functioning as board members. Both Norgesgruppen and Rema 1000 have production agreements with Gartnerhallen (Gartnerhallen, 2021). This agreement ensures that Norwegian producers get access to two of the largest retailers in the market. Through the agreement, they also collaborate on planning the production. In this process, the retailers make production plans, pass it through the value chain and lets the producers know how much they are desired to produce (Johansen, 2021). Norgesgruppen and Rema 1000 covers most of their Norwegian fruit and vegetable demand through this collaboration, although it happens that they buy from independent farmers as well.

Wholesalers:

In the value chain for Norgesgruppen and Rema 1000, the next level consists of the wholesaler, Bama. Bama Gruppen AS is partially owned by Norgesgruppen ASA and Rema Industrier AS (Bama, n.d.-b). Hence, both Norgesgruppen and

Rema 1000 have a certain control over Bama, though Bama considers themselves an independent actor. The role of Bama is to function as a middleman between the retailers and the producers. Furthermore, Bama's main focus area is the category planning and development.

Packaging:

Both Norgesgruppen and Rema 1000 use the same packaging companies for their value chain. Bama has a collaboration with five packaging companies in total. Which packaging companies the apples are sent to depends on the region of production. For instance, the production in Lier is packaged at Fellespakkeriet, located in Lier (Fellespakkeriet, n.d.), and the production in Telemark is packaged at Telefrukt, located in Telemark (Telefrukt, n.d.-a). From the packaging companies, the apples are transported to the distributors. The ownership of these packaging companies varies, but are mostly owned by the local producers. This is the case for four out of the five packaging companies, however the packaging company, Telefrukt is partially owned by producers in Telemark and the members of Gartnerhallen, as well as Bama (Telefrukt, n.d.-b).

Distributors:

The distributor level of the value chain is where there is a separation between Norgesgruppen's and Rema 1000's structure. Norgesgruppen distributes their groceries through the company ASKO, which is a part of Norgesgruppen ASA (ASKO, n.d.). On the other hand, Rema 1000 distributes their groceries through the company, BaRe, which is 50/50 owned by Bama Gruppen AS and Rema 1000 Norge AS (Proff, n.d.).

2.7.4 COOP

COOP has a relatively similar value chain as Norgesgruppen and Rema 1000, however there are some noticeable differences between them. The most significant difference is that COOP has fewer actors in their value chain.

Producers:

Similar to Norgesgruppen and Rema 1000, COOP also has an agreement with a group of producers, a cooperative called Nordgrønt SA. Nordgrønt functions very similarly as Gartnerhallen, in terms of the relationship between Nordgrønt and the producers. However, a central difference in this part of the value chain is that COOP is actually an active part of the organization, with COOP employees having significant roles in the board of directors (Nordgrønt, n.d.). Another notable difference is that all producers of Norwegian fruits and vegetables that aims to deliver to COOP, must be a part of the producer organization; Nordgrønt.

Wholesaler and distributor:

A significant distinction in the value chains of Norgesgruppen/Rema 1000 and COOP lies in the fact that COOP operates without a separate wholesaler or distributor entity. In the COOP value chain, they have integrated all their activities under the COOP name. The way COOP solves these needs is by having their own departments covering the critical areas in the value chain.

Packaging:

COOP uses three packaging companies, two of which are cooperatives owned by the local producers. The third one is Telefrukt, which is also used by Bama. Hence, COOP does not own any packaging companies themselves, even though most of their value chain is vertically integrated.

2.7.5 Cider

The Norwegian cider segment is relatively newly established and has experienced significant growth over the past years. Due to the recent development of the segment, there has yet to be established a clearly structured value chain for Norwegian cider. As of now, there are fewer actors in the value chain, as the level of the value chain are less specialized.

Producers:

There are around 50 producers of apple cider in Norway today. Most of these are located in Hardanger and Western Norway (Regjeringen, 2022). The apples used in the production are produced alongside consume apples by member of all producer organizations, including Gartnerhallen and Nordgrønt. Since the apple producers mostly prioritize class 1 apples, there are generally low economies of scale in the cider production, though the value chain is experiencing increasing collaboration and better adapted supporting activities.

Packaging:

Most packaging companies in the segment are owned by the producers or the producer organizations and are especially fragmented in the cider segment. Similar to the consume segment, the class 2 apples are sent to a local packaging company for further treatment and preparation. Moreover, the packaging companies also contribute with knowledge distribution, agreements, and encourages collaboration amongst both the producers and the higher levels of the value chain (Jaastad & Rasmussen, 2022).

Sales

This level of the value chain is quite different for the cider segment compared to consume. The cider segment does not have any leading wholesalers to distribute the products. Instead, the distribution has gone strictly through Vinmonopolet, until 2016, when there came a new law allowing for sale of apple cider directly from the farms (Dagens Næringsliv, 2016). As a result of this law, more farmers began to sell their cider directly to the consumer. However, Vinmonopolet still works as the majority actor for sales, with an 82% share of the sale of Norwegian cider (Langesæter, 2023).

Supporting activities:

Although large parts of the operations are covered by the main actors in the value chain for Norwegian apples, there are several supporting activities handled by external actors. These actors often collaborate closely with the value chains to reach a common ground regarding price, marketing, and development, etc.

Examples of actors like this are Opplysningskontoret for frukt og grønt, GPS, and Stiftelsen Norsk Mat, who assist the actors in the value chains with such activities. The actors also work with several R&D institutions regarding new solutions and development of production.

3.0 Theory

This chapter consists of relevant theoretical aspects connected to the fruit and vegetable market, including theory of the value chain structure, market conditions, import regulations and growth strategies. Appendix 6 presents the search criteria employed for this section.

3.1 Value Chain

3.1.1 Value Chain theory

The concept of "value chain" was introduced by Porter (1985) to explain the range of activities a product or service requires from conception, through various phases of production, distribution to consumers and final disposal after use (A, 2016; M. Porter, 1985). As the product transitions from one actor in the value chain to another, such as from the producer to the intermediary to the consumer, it accumulates value (Hellin & Meijer, 2006). Value chain activities can be categorized into two main types: primary activities and supportive activities. Primary activities encompass production, logistics, processing, and marketing. Supportive activities support the primary activities and each other by providing purchased inputs, technology, human resources, and various firm-wide functions (Akyüz et al., 2023; M. Porter, 1985).

3.1.2 Value chain analysis

A value chain analysis (VCA) can include a variation of tool and outcomes. For example, it can generate information of the production processes, investment planning, quality control schemes, price transmission and product delivery channels. Furthermore, it can generate information of contribution to economic growth and whether the value chain is sustainable. Many argue that by focusing

on the value chain and the links between the actors spread along it, development interventions can better identify common problems among actors in the chain and solutions that generate win-win outcomes (Donovan et al., 2015).

Hellin & Meijer (2006) has structured a comprehensive manual for value chain analysis, focusing on agricultural markets:

1: Mapping the value chain

The first step of the analysis is to delineate the value chain, such as in the figure below. In practice, value chains are often complex and comprise more than one channel and final market. The mapping holds information of the interacting and competing channels and the variety of final markets into which these connect.

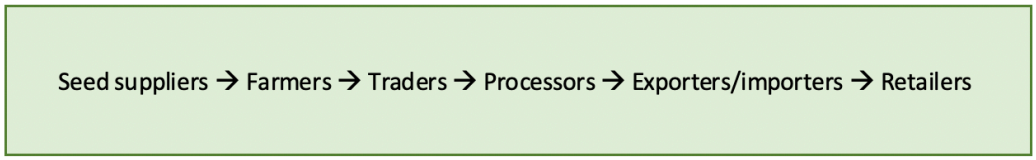

Figure 15: A simplified example of a value chain in agriculture industry (Hellin & Meijer, 2006)

When the components within a value chain are separated, we can observe their individual functions, but we lack information about the interconnections and relationships between them. By using qualitative approach (e.g., semi-structured interviews and focus groups) and/or quantitative (e.g., household survey or a questionnaire) tools, the understanding can be enhanced. It the study contains time or fund restrictions, Hellin & Meijer (2006) propose to focus on qualitative research, bearing in mind that a great deal of information on prices and quantities can still be figured out from qualitative research and secondary sources, such as national statistics. Figure 16 represents a more complex described value chain.

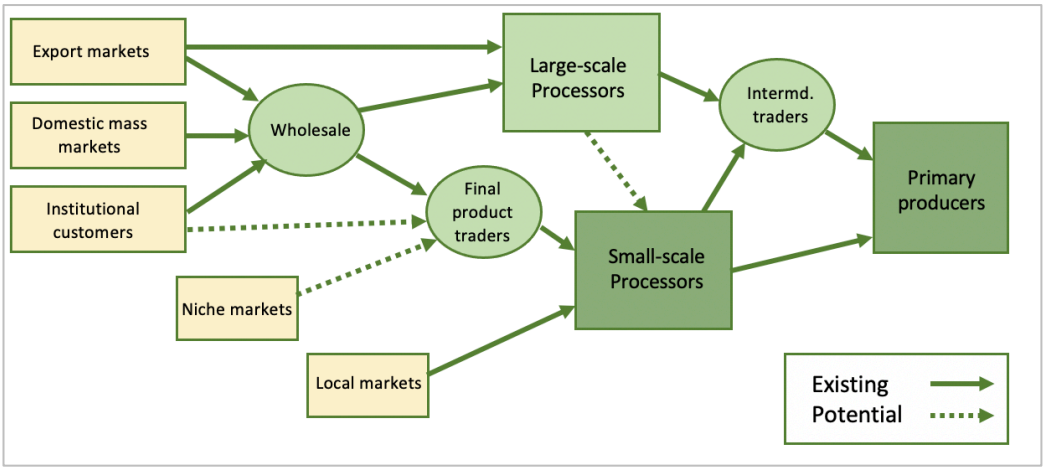

Figure 16: A more complex described value chain (Hellin & Meijer, 2006)

To generate realities of the different actors in the value chain is not an easy process, as we are dependent on information from them. It is important to question whether the findings are valid and reliable. In other words, does it measure what it is designed to measure and can we trust it. Ensuring high degree of validity and reliability is highly concerned in any social science research strategy.

Questionnaires are a popular tool in quantitative research, offering various benefits. However, relying solely on questionnaires can be problematic due to the inherent inaccuracies in the measurement process, making it impossible to enhance rigor during analysis. Additionally, questionnaires can introduce power dynamics and distort the realities of value chain actors by forcing them into predefined frameworks, while also reflecting the researcher's subjective biases, similar to qualitative research. Methods such as observation, interviews, and casual conversations tend to evoke less suspicion and encourage more open and unguarded responses compared to research techniques that involve external individuals documenting the answers. Therefore, questionnaires are best utilized as a complementary tool or an expansion of qualitative research methods. By integrating quantitative studies with a comprehensive comprehension of intricate real-world scenarios typically associated with effective qualitative studies, we can acquire a robust understanding of the challenges and prospects encountered by diverse actors within the targeted value chains.

2: Market map

To gain deeper insights into farmers' decision-making processes regarding seed purchases and similar factors, it is essential to consider the external factors that impact the overall functioning of the value chain. The market map serves as both a conceptual and practical tool, enabling us to identify policy challenges that may hinder or improve the chain's operations. Moreover, it helps us pinpoint the institutions and organizations responsible for providing necessary services like market information and quality standards to empower chain actors in making well-informed decisions.

The market map can be divided into three inter linked components: value chain actors, enabling environment and service providers.

Enabling environment

The enabling environment encompasses pivotal factors and trends that shape the operational landscape of the value chain, while also possessing the potential for modification. These factors, often originating from authoritative structures (national and local entities, research agencies, etc.) and institutions (policies, regulations, practices), lie outside the direct control of economic actors within the value chain. The purpose of analyzing this enabling environment extends beyond of mapping of the current state; it aims to comprehend the influential trends impacting the entire value chain and explore the driving forces behind change. Such knowledge facilitates the identification of feasible avenues, opportunities, and strategies for advocacy and policy engagement.

Service providers

Within highly functional value chains, the key players responsible for transacting the main product receive essential assistance from various enterprises and support organizations, such as seed suppliers and intermediaries. These chain actors have a continual requirement to access diverse types of services, both market-related and technical in nature. The third element of the Market Map framework focuses on delineating these services that contribute to or have the

potential to enhance the overall efficiency of the value chain. The range of services that can potentially provide value is extensive and includes:

- Input supplies (seeds, livestock, fertilizers etc.)
- Market information (prices, trends, buyers, suppliers)
- Financial services (such as credit, savings or insurance)
- Transport services
- Quality assurance - monitoring and accreditation
- Support for product development and diversification

The figure below shows the combination of all three dimensions in one chart, showing how the environment and service providers can highly influence the function of the value chain (Hellin & Meijer, 2006).

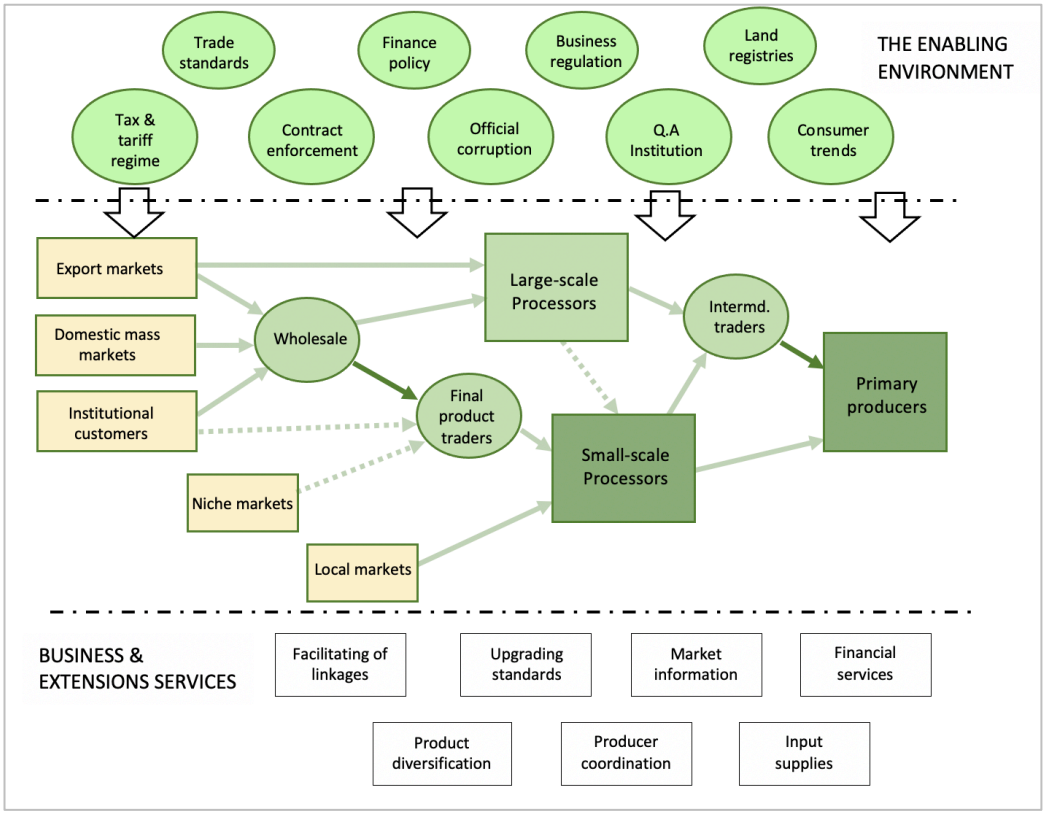

Figure 17: All three dimensions in one chart (Hellin & Meijer, 2006)

3.2 Norwegian fruit and vegetable sector

3.2.1 Market situation

The availability of Norwegian fruits and vegetables is affected by seasonal variations, primarily driven by the fluctuating production caused by the climate in Norway. As a result, the supply of Norwegian products is not consistent throughout the year. While certain products like potatoes, onions, and cabbage can be sourced from Norway all year long, berries, cauliflower, and apples are considered seasonal goods (Opplysningskontoret for frukt og grønt, n.d.). Due to the climate conditions, Norway is dependent on import for several good throughout the year, for example oranges, bananas and avocados (Landbruksdirektoratet, 2020).

3.2.2 Market structure

The Norwegian fruit and vegetable sector is characterized by a concentrated market structure, where a few large companies dominate the sector (Pettersen et al., 2014). There are three main retailers in Norway, where Norgesgruppen holds the biggest share (44%), followed by Coop (29,7%) and Rema 1000 (22,9%) (Jordheim, 2023a). At the next level, the wholesale level, Coop has direct deliveries of fruits and vegetables from the producer organizations Nordgrønt, while members of Gartnerhallen have been selling their products to the wholesaler BAMA, which supplies NorgesGruppen and Rema/Bunnpris, through BaRe (Milford et al., 2016). The structure of the value chain often consists of activities that can create dependency and challenges in the process of delivering a product or service. Furthermore, Integration involves one or more actors in a value chain collaborating for maximum profit and can be achieved both vertically and horizontally (Hjelmeng & Sørgard, 2014).

3.2.3 Vertical integration

The vertical dimension refers to the relationships between actors at different stages in the value chain with same interests (Von der Fehr, 2012). There are two groups of motives for vertical integration. Firstly, motive of efficiency is based on

the effort to minimize production cost or transaction cost. Secondly, market power is not solely a result of horizontal expansion, where also vertical integration leads to market power and a growing share in consumer price (Grega, 2003).

The market for fruit and vegetables in Norway is characterized by stronger vertical integration compared to most other markets for domestically produced agricultural goods in Norway. In the market, major retail chains have established their own supply chains from primary producers to consumers. This means that primary producers are connected to wholesalers that are partially owned and controlled by the grocery store chains. The agreements provide access to the market and dictate the quantity, quality, and delivery conditions, but they also limit the producers' ability to supply to others (Landbruksdirektoratet, 2020).

A characteristic of the evolution of the value chain is the increasing integration of production and processing by major retail chains. By establishing agreements that give them exclusive rights to products, thereby linking industry and suppliers to their operations, they can be differentiated from competitors. In the food sector, major retail chains are increasingly focusing on private label products, leading to greater vertical integration. This means that retailers directly compete with established brands to supply their own stores. Market shares of private label products are consistently growing and now span across all quality categories, not just lower-priced options. This expanded range allows retailers to compete with established brands in terms of quality and leads to intense price competition in the industrial segment (Landbruksdirektoratet, 2020).

3.2.4 Horizontal dimension

The horizontal dimension concerns actors at the same stage in the value chain, but often with conflicting interest. It is an underlying assumption that actors at the same stage are involved in the same or equivalent activities, with the producers particularly manufacturing the same or similar products. The intensity of price competition generally increases with the number of competitors and the

similarity of the products they offer. It is generally assumed that competition or rivalry leads to lower prices and greater cost efficiency at the respective level; particularly, actors are forced to set prices so low that they do not appear more expensive than their competitors (Von der Fehr, 2012).

Although actors within the same value chain are fundamentally rivals, they can also share common interests. This is particularly true when it comes to dealing with authorities and the regulatory framework for their businesses. Actors also have shared interests with upstream and downstream counterparts within the value chain. In particular, actors can benefit from procurement collaboration with their suppliers and sales collaboration (cartels) with their customers. However, such collaborations, as they weaken competition, are generally prohibited (Von der Fehr, 2012). Exceptions to the competition law's prohibition on horizontal, competition-restricting agreements allow apple producers the opportunity to organize themselves to collaborate on anything that can affect prices and competition among individual producers (Pettersen et al., 2014).

3.3 Import and regulations

3.3.1 Trade agreements

Norway has entered into free trade agreements that grant trading partners access to the Norwegian market at reduced tariff rates. The EEA Agreement is the most important free trade agreement for Norway. Through the EEA Agreement, the Norwegian green sector is influenced by market conditions in the EU. Additionally, the agreement has harmonized regulations within EU for inputs such as plant protection products, seeds, and more. Concessions made in Article 19 negotiations have had a significant impact in recent years, leading to strong competition for many crops in the green sector, without Norwegian production successfully capitalizing on negotiated export opportunities. If prices in Norway increase more than prices for imported goods, combined with the limitation that tariff rates cannot exceed WTO commitments, the value of import protection will be reduced (Landbruksdirektoratet, 2020).

3.3.2 Competition with import

Within agriculture, Norwegian farmers often have the disadvantage of small subsistence farms when competing against global businesses that possesses advanced technology, exerts control over capital resources, and can efficiently manage costs related to other factors such as land and labor on a worldwide scale (Requier-Desjardins et al., 2003). Norwegian demographic and geographic conditions make it challenging to leverage economies of scale in agriculture, food processing, and the grocery retail sector that distributes agricultural-based food products. Norwegian farms are generally smaller and more scattered compared to our neighboring countries (Røtnes et al., 2020). The fruit and vegetable sector faces significant competition from import, and import prices often serve as a guideline for prices in the Norwegian market. The tariff protection in the green sector provides a basis for higher prices in the Norwegian market for certain products. However, the tariff levels are still low enough, so the wholesalers often have a real choice between domestic and imported goods. It is likely that Norway will continue to enter into new free trade agreements. The situation is complex, with the Norwegian market share decreasing in several categories. For certain products, the increase in consumption is achieved through higher import volumes (Landbruksdirektoratet, 2020).

The key for finding a suitable position in the competitive environment is by achieving a competitive and sustain advantage. Competitive advantage can be defined as “a set of capabilities that permanently enable the business to demonstrate better performance than its competitors” (Bobillo et al., 2010). Consequently, achieving competitiveness in the global food market appears to hinge on the availability of production factors at the lowest possible cost. However, a notable shift is occurring within the industry, placing greater emphasis on environmentally friendly agriculture and the production of high-quality goods (Requier-Desjardins et al., 2003). For Norwegian producers, the ability to deliver a wide range of crops to the market with less use of pesticides can be a competitive advantage compared to import (Landbruksdirektoratet, 2020).

3.4 Growth strategies

3.4.1 Exploration and exploitation

Both exploration and exploitation are drivers for growth and innovation. Exploration refers to the discovery of new products, resources, knowledge, and opportunities, and it is associated with radical changes and learning through experimentation. Exploitation refers to the refinement of existing products, resources, knowledge, and competencies, and is associated with incremental changes and learning through local search (Benner & Tushman, 2002; J. G. March, 1991). The unknown needs to be discovered or explored, and the known needs to be exploited, to generate more rents for the organization. Exploration involves activities such as search, variation, risk taking, experimentation, discovery, and innovation. Exploitation involves activities such as refinement, efficiency, selection, implementation, and execution (J. March, 1991). Value chain development is an example of an organizational learning process where exploration and exploitation transcend the boundaries of individual organizations. In value chains, several companies set out to jointly develop new ideas, products, or processes (exploration). Once they have found a way to create shared value, they work to make better use of it, for example by optimizing the flow of goods or information between the companies involved (exploitation) (Braun et al., 2022).

3.4.2 Challenges and growth ambitions

In a report by "Norsk institutt for landbruksøkonomisk forskning" (Pettersen et al., 2014), it was acknowledged that Norwegian fruit and vegetable production must constantly adapt their products to competing imports. There is a high level of engagement within the industry, with numerous ideas and critical evaluations of both organizational structures and specific decisions (Pettersen et al., 2014). The European fruit industries are experiencing increased competition, where factors such as new production technologies, greater product availability, the entry of cost-effective and high-quality suppliers, globalization in trade, the growing influence of retail chains, and shifts in consumer behavior all contribute to enhancing competitiveness (Reid & Buisson, 2001; Zanetti et al., 2020). Some

economists have argued that apple industries are in a state of hypercompetition (Axelson & Axelson, 2000), described as "a condition of rapidly escalating competition based on price-quality positioning, competition to create new know-how and establish first-mover advantage, competition to protect or invade established product or geographic markets, and competition based on deep pockets and the creation of even deeper pocketed alliances" (D'Aveni & Gunther, 1994; Harker et al., 2003). Despite of many challenges, the world apple sales have increased in the last ten years with the emergence of new producer countries and the expansion of traditional producers (Statista, 2022; Zanetti et al., 2020).

Achieving success in global markets requires nations to leverage unique advantages and develop specific competencies to gain a competitive edge (Lucas, 1988). Norway has responded with effective horizontal and vertical coordination, resulting in relatively profitable domestic production. Norwegian producers have expectations for further growth, relying on import protection and a favorable perception of the quality of Norwegian products. To achieve growth, it is acknowledged that changes are necessary in both producer cooperatives and the overall coordination within the value chain (Pettersen et al., 2014). In 2020, Landbruksdirektoratet published a report of the ambitions and goals for fruit and vegetable industry within 2035. The overall market for green produce in Norway has reached a plateau after a period of continuous growth. A committee has been selected for the overall fruit and vegetable market, and they have established goals that are in line with the government's objective of promoting the "five a day" initiative. This initiative encourages individuals to consume five servings of vegetables, fruits, and berries on a daily basis. If achieved, this would result in a 75% growth for the entire sector. The committee has set an ambition of a 50% increase in the Norwegian market share, acknowledging that this growth cannot happen naturally. There is significant uncertainty surrounding the development and opportunities for innovation and growth. To succeed, strengthened collaboration throughout the value chain is crucial, with systematic efforts to enhance quality and distinctiveness (Landbruksdirektoratet, 2020).

3.4.3 Product development and quality

There is a common agreement and strategy among the actors in the horticultural sector that the focus on quality and product development needs to be enhanced to increase demand of green products. A differential strategy fosters brand loyalty, reduces price sensitivity, increases margins, and creates entry barriers. However, achieving differentiation may come at the expense of gaining a high market share. It often involves trade-offs with cost position, especially if the activities required for differentiation are inherently costly. Even though many customers will acknowledge the superiority of the firm, not all customers will be willing or able to pay higher prices (Porter, 1980).

Lundbruksdirektoratet (2020) highlights that one of the key strategies of increasing demand on green products is the ability to deliver a wide diversity of cultural products that can be a comparative advantage over imported goods. The Norwegian identity must be strengthened. By focusing on the products' high standards and sustainable production methods, Norway can build a strong reputation and attract international customers. There is recommended to shift focus from productivity to innovation and product development, emphasizing Norwegian distinctiveness and quality (Landbruksdirektoratet, 2020). Primarily producers could pursue greater control over product identity and quality, but this strategy necessitates altering relationships within supply chains (Pettersen et al., 2014). For the apple industry, the work done in recent years with cider production serves as a good example of differentiation based on local uniqueness and tradition (Landbruksdirektoratet, 2020).

3.4.4 Consumers preferences

Another strategy for increasing the Norwegian share in the sector is to investigate Norwegian consumers preferences. The goal of the industry must be to satisfy the varying needs of consumers. However, this does not occur frequently. In many cases, the apple industry has not used the existing expertise in government, universities, or the private sector in identifying apple consumption patterns. In addition, due to the long lag between planning of an

orchard planting and first commercial harvest, and work of removing trees, very often mature orchard has not adapted to changes in consumption patterns (O´Rourke, 2018). Consumers have a wide range of concerns, encompassing the environment, family farms, animal welfare, human nutrition, and food safety (Grey, 2007; Rikkonen et al., 2013). The willingness of consumers to support alternative producers and premium pricing for selected items has provided a significant measure of encouragement to farmers who might elect to target their efforts to the specialty and local markets (Smithers et al., 2008).

The green committee asserts that a sustainable, lasting increase in the Norwegian market share must be driven by demand to avoid overproduction. Norwegian production is primarily sold in the domestic market, and small shifts in the balance between production and demand can have significant consequences for individual producers' economy. The committee believes that this can best be achieved by improving market information and building knowledge about the Norwegian consumer. This knowledge should be utilized by the Norwegian value chain to work on product development, develop innovative solutions, and strengthen the Norwegian reputation among consumers. Norwegian consumers prioritize healthy diets, locally sourced food, preserving local traditions, and sustainable solutions (Landbruksdirektoratet, 2020).

3.4.5 New markets

According to Porter (1990), nation’s competitiveness depends on the capacity of its industry to innovate and upgrade. Some innovations create competitive advantage by perceiving an entirely new market opportunity or by serving a market segment that has been overlooked by others (Porter, 1990).

To meet the industry's growth ambitions, there is a heightened emphasis on expanding sales into multiple segments. In case of increasing the growth of local food, niche markets have to be discovered (Rikkonen et al., 2013). The share of Norwegian products is intended to increase within the total volume traded in all relevant market channels, including the grocery retail sector, food service

industry, and various forms of direct-to-consumer sales (Landbruksdirektoratet, 2020). The demand for value-added products is highly segmented across different consumer types. In addition, modern population has been more nuanced where choices about food have been increasingly complex. The requirements for products and the significance of their origins have emerged as crucial factors in consumer purchasing decisions (Loureiro & Hine, 2001).

4.0 Research Methodology

This chapter outlines the research methodology employed in our study. The majority of the content in this section was originally written as part of our preliminary master's thesis, which was submitted this January.

4.1 Research question

When developing our research question, it is important to find the most suitable research design. Straits and Singleton (2018) argue that research is typically driven by three main purposes: (1) exploring a phenomenon to gain a deeper understanding, (2) accurately describing a specific subject, and (3) examining and formally testing relationships between variables (Straits & Singleton, 2018). Considering our primary objective in participating in this project is to gain insights and enhance our understanding of the Norwegian horticultural food system, particularly the Norwegian apple industry, we believe that an exploratory research design is most suitable.

During the formulation of our research question, we considered several factors regarding its structure and phrasing. Firstly, we recognized the importance of concluding the research question with a question mark, as it provides clarity and delineates the specific focus of the thesis. Additionally, we referred to Watson's framework for crafting research questions, which guided our approach. Following this framework, we engaged in a series of inquiries involving "what," "why," and "how" questions. This process allowed us to establish a foundation for the thesis's focal point and facilitated the formulation of a well-defined research question. (Bell et al., 2019)

When conducting exploratory research, it is common to employ qualitative methods, as they are often more effective in providing in-depth insights into a phenomenon. Considering our aim to produce accurate results for our research, we have made the choice to adopt a qualitative research approach. This decision has implications for our research question, as qualitative methods are well-suited for addressing questions that begin with "what", "why", and "how" (Sallis et al., 2021).

When deciding on our research question, we decided to stay relatively open-minded to include all relevant data on the research area. However, we were careful not to make it too open-ended, to ensure that the gathered information is relevant and that the research question is answerable. Based on this, we decided of restricting our research focus from general Norwegian horticultural products, down to Norwegian apples. Furthermore, it is important to formulate a clear research question to keep the process and results accurate and reliable. We also considered that the research question must be both researchable and contribute to better knowledge of the area (Bell, Bryman, & Harley, 2019). During the research process, we changed our research question several times as new interests and new problems was investigated through interviews and observation. Considering all the aspects above, we formed this research question:

"What are possible growth strategies the Norwegian apple industry can adopt to increase sales of Norwegian apples?"

The chosen research question allows us to capture the basic goals of our study in one major question. The development of new questions, especially sub-questions, often occur during the data collection and analysis, especially necessary if the research is evolving over longer time (Aage, 2009). To break down our research questions into specific components and provide a structured analysis, we formulated two sub-questions:

1: "*What strategies is used by the actors in the value chain?"*

2: "How does the strategies affect growth opportunities in the apple industry?"

4.2 Research method

4.2.1 Population / sampling

The population represented in our research is the Norwegian apple industry. We will use a multiple case study to answer this proposal, where the level of analysis is actors in the whole value chain. The unit of analysis, what we are going to describe and compare, will consist of questions regarding dynamics in the value chain and actors view on Norwegian apples (Bryman and Bell, 2011).

We used purposive sampling with a "sequential approach" as our method to find sample research participants. Purposive sampling is chosen when the selection of units of analysis aligns with the research goals, enabling us to answer the research question effectively. By employing a sequential approach, we had the flexibility to adapt and modify the sample as our research question evolves. Following, it allowed us to gain new insights about the industry and explore various interesting aspects during the process. Within the framework of purposive sampling, we utilized both snowball sampling and generic purposive sampling. Snowball sampling involved recruiting new participants through our existing participants, thereby identifying relevant individuals who possess the desired characteristics. On the other hand, generic purposive sampling provided us with control over selecting a diverse range of roles within different organizations (Bryman and Bell, 2011).

When choosing our sample size, we recognized the importance of having a sufficiently large and diverse sample to ensure the validity and reliability of our data. During the selection process, we began with identifying the main actors in the value chain, such as the producers, wholesalers, packaging companies, and retailers. During these interviews we learned of new actors who proved to be relevant for our study and was recommended contacts in different positions in

these organizations. We are confident that our sample size was both diverse and sufficiently large to provide the necessary insights for our research.

4.3 Research design

4.3.1 Multiple case study

For our study, we employed a positivistic multiple case study research design to investigate our research question. Case studies focus on bounded situations or systems, representing entities with specific purposes and functioning parts (Bryman & Bell, 2011). The positivistic approach aims to identify variables within the context to generate generalizable propositions and contribute to theory development (Eisenhardt, 1989). The case study is an embedded case study where we examined selected relevant aspects. By employing a multiple case study design, we can compare and contrast the findings across different cases. We preferred to conduct a multiple case study over a single case study, as it allowed for comparisons and provide a deeper understanding of the studied phenomena (Yin, 2018). We conducted an inductive approach as we were not able to test hypothesis based on our data collection. Our finding depended on conducting data based on interviews or observations of actors in the value chain to look for patterns to make a general solutions. (Straits and Singleton, 2018).

Our case study comprises one main case, which encompasses the entire value chain of Norwegian apples, along with three sub-cases that specifically examine producers, cooperatives, and wholesalers within the value chain. The sub-cases provide a solid foundation for understanding the various components within the value chain, allowing for discussion and comparison in the main case where everything is consolidated. By examining these sub-cases, we aim to attain a comprehensive understanding of the industry, enabling us to draw a conclusive analysis in the subsequent chapter.

4.4 Data collection

4.4.1 Primary data

We conducted qualitative interviews of relevant actors as the primary data for our research. Qualitative interviews have a much greater interest in a person's reflections and points of view and can be more flexible than quantitative interviews. For example, they can go beyond the interview guide and ask new questions that follow the replies of the participant. Furthermore, qualitative interviews allows interviewing the same subject for more than one occasion (Bryman and Bell, 2011), which enables us to ask follow-up questions throughout our writing process.

We conducted interviews through both physical and digital means; however, we prioritized in-person interviews whenever possible to capture unspoken cues and expressions. This approach allowed us to gain a more comprehensive understanding of the interview subjects and, consequently, ensured more reliable data. However, due to geographical limitations and scheduling constraints, we were only able to conduct in-person interviews with stakeholders located in Eastern Norway. Amongst these are apple farmers, packaging companies, wholesalers, and retailers. During the face-to-face interviews conducted at farms and packaging companies, we had the opportunity to sit down with the interviewees at their respective venues before being given a tour of the facilities. These tours provided valuable insights into the production processes, including infrastructure, machinery, and farm stores. In our meetings with wholesalers and retailers, we were seated in meeting rooms within their departments, where we were provided with explanations regarding task distribution among employees. Additionally, we had the chance to sample competing products of Norwegian apples and briefly interact with other employees of the respective companies.

When conducting our research, we aimed for a high degree of triangulation. Triangulation in research is a way of increasing the credibility and validity of research findings (Noble & Smith, 2015). There are three main types of

triangulation: data triangulation, methodological triangulation, and investigator triangulation. Data triangulation means to use different data sources to collect complementary and comparable data. By using a variety of data sources, the study can increase in both validity and reliability. Methodological triangulation means to use multiple methods in a study. The idea behind methodological triangulation is that the strengths of one method can make up for the weaknesses of another. Investigator triangulation means having more than one person conducting the research and analyzing the data. The importance of investigator triangulation revolves around reducing bias of the study (Hales, 2010).

To ensure data triangulation, we interviewed actors from all levels of the value chain, as well as multiple actors within each level. We also chose actors residing in different places in Norway, to avoid biased research. Furthermore, we used multiple methods for ensuring method triangulation when conducting the interviews. We cross checked the informants' answers with other interviews, as well as our secondary data, to make sure the information provided by the interviewees is relevant and reliable. To ensure investigator triangulation, both of us retrieved the data and analysis it in order to reduce the risk of bias in the study. Since we conducted a multiple case study, our interviews were semi structured in order to ensure cross-case comparability (Bryman, 1992; Bryman and Bell, 2011). A semi structured interview consists of a list of questions on relatively specific topics. However, the questions are still flexible and can be asked in different ways and orders. Following up questions were also included when wanting a deeper insight (Bryman and Bell, 2011).

4.4.2 Interview guide

We created an interview guide with 15-18 broad and open questions about relevant subjects, in addition to some standard demographic questions and numerous probes to collect more information. The goal of the first minutes was to guide the participant into regularity to gather more detailed answers. It was crucial that we asked good following up questions to be able to fully answer our

research question. Due to this, we allowed ourselves to deviate from the interview guide in some degree to ensure a more rewarding data collection. We aimed to conduct most of the interview's face to face, as we can be more able to read the situation and gather more details of sensitive topics (Lareau, 2021).

The interview guide followed Kvale´s (1996) nine different kinds of questions in order to create a good balance and give the participant possibility to comment on the topic concerned and raise new ideas Being part of a larger project, we had the advantage of having relevant actors already involved in the research who were willing to participate in the interviews. A total of 19 interviews were conducted, presented in figure 18, with some actors playing multiple roles within the value chain.

Role	Number of actors
Producers	7
Wholesalers	2
Packaging companies	3
Distributors	2
Retailers	3
Supporting actors	3

Figure 18: Participants for interviews

The interview guides were tailored to suit the various actors within the value chain, including producers, intermediaries, retailers, and supporting actors. The interview guides for producers, intermediaries, and retailers shared many similarities, as they focused on common aspects within the value chain, while the interview guides for supporting actors are more specified, although they too have strong similarities with the others. To provide a comprehensive understanding of the interview guide structure, we present below the interview guide specifically designed for producers. The remaining interview guides for intermediaries, retailers, and supporting actors can be found in the appendix (Appendix 7-12).

Interview guides for producers	
Start	- Can you tell about yourself and your role as a producer? - For board members: what do you do in this position and what do you work for?
Production	- How does the apple production process work from start to finish? - What types of varieties do you produce, and how do you plan the production? - How do you choose which varieties to produce? - Which stores do you sell the most to, and where in the country are they located?
Value chain	- How does the value chain of apples work? - What do you think about the power balance in the value chain?
Collaboration	- How is the collaboration between actors in the value chain? - Are you collaborating with other apple producers in the area?

	- How is your collaboration with Bama or Nordgrønt? (if you collaborate with them)
Growth	- What are your thoughts on the possibility of a longer season with Norwegian apples? - If you were to suggest ways to increase the sales of Norwegian apples, what would you identify as important areas for improvement?
Consumers	- What is the behavior of Norwegian consumers towards Norwegian apples? - Why do you think some Norwegian consumers are willing to pay more for Norwegian apples?
End	- Is there anything else you would like to add on this topic? - Do you have any suggestions for other contacts to interview regarding this subject?

Figure 19: Interview guide for producers

4.4.3 Secondary data

In addition to qualitative interviews, we also wanted to include other sources of information in the research. Secondary data is a good way of gaining additional information on a subject and can be divided into internal and external categories. Internal data consists of data published by a company, for example previous research results, reports, records, and other internal database information. We need to remember that the information from the different actors in the Norwegian apple industry published by themselves may be biased, in regard to the content of the sources and the selection of reports they are willing to share. On the contrary, external data is data a company does not own, such as news articles, journals, scholarly literature, governmental data, and other information accessible for the public. We used articles from high ranked journals to build up the theoretical part on our themes in the study, as well as reports from acknowledged reliable sources, e.g., the Norwegian government, SSB, the GreenRoad Project etc. Our goal was to gain a higher understanding of communication between actors in the value chain and to verify and interpret the answers given in the interviews (Sallis et al., 2021).

5.0 Data Analysis

5.1 Recording and transcribing

The interviews were all recorded with permission from the interview subjects and assured all participants that their answers were kept confidential and anonymous. We also were aware that some participants may be self-conscious of being recorded where their words can be preserved. Moreover, this may even lead some participants to not accept being recorded (Bryman and Bell, 2011). However, we got consent from all participants, and they willingly agreed to be recorded. Recording an interview gave us the opportunity to have full focus on the participant and follow up with relevant questions during the interview. It also helped to fill in and correct our memories from the conversation and allows more thorough examination of what people say (Bryman & Bell, 2011).

All interviews were transcribed shortly after being conducted. To retain the meaning and ensure accuracy, we preserved the original language of the

interviews by transcribing them in Norwegian. This decision allowed us to capture the participants' perspectives and nuances in their native language, enabling a more authentic and comprehensive analysis of the data. If we discovered gaps or error of important parts, we would contact the participant to fill the gap (Straits and Singleton, 2018). If there were words we do not understand, we filled a convention for the missing word instead of guessing it (Bryman and Bell, 2011). In addition to providing a solid foundation for analysis, transcribing also made it possible for other researchers to analyze the data and helped counter accusations that an analysis might have been biased (Heritage, 1984).

5.1.1 Coding process

When entering the process of data analysis, we discussed the right tool to ensure the most accurate analysis. A well acknowledged tool for analyzing qualitative data is the analysis program NVivo (UiO, n.d.). We instigated the process by determining the themes that we considered the most relevant, and divided these into top-level codes, and sub-codes (Appendix 13). To include the relevant data from our interviews, we ran a text search query that included words we considered central within the given codes a criteria (Appendix 14) (QSR International, n.d.). This provided us with some insight into the themes most mentioned in our primary data. However, given the objective of our research, which is to identify alternative growth strategies to the ones already in existence, we determined that relying too heavily on the focal areas of the existing strategies would be counterproductive. Consequently, we shifted our focus towards understanding the overall dynamics of the value chain with presentation different cases. Even though the coding was not used for our findings, we have chosen to include it here as it reflects our dynamic research process in order achieve the most reliable results.

5.2 Trustworthiness and Authenticity

To measure the trustworthiness of our research we consider the validity and reliability of the study. We acknowledge the critique of multiple case study associated with weak validity and reliability in the literature (Ferreira et al., 2020), and will have this as an important focus in our study.

5.2.1 Validity

Internal validity concerns whether the causal effects found in the study may be affected by other factors, while external validity deals with the generalizability of the study and determines to which extent the study can be applicable in other cases (Sallis et al., 2021). A study has high degree of validity if it precisely captures the research question and effectively aligns the operational definition with the concept it intends to measure (Straits and Singleton, 2018).

The inclusion of open-ended questions in our qualitative interviews gives the participants the possibility to include all kinds of factors that can influence the topic. Additionally, we cross checked answers from our conducted interviews using relevant secondary data to increase the accuracy of our study and strengthen the internal validity of our research. We also used triangulation to improve the validity of our findings. In conclusion, we assume to have reached a high degree of internal validity as we aim to accurately measure the concept our study is supposed to measure. Further on, we perceive the external validity of this paper to be limited, as the generalization of our findings is low due to large differences amongst different fruit markets.

5.2.2 Reliability

Reliability concerns questions of stability and consistency in research (Straits and Singleton, 2018). We interviewed several actors for each level of the value chain. For each level we used the same interview guide for consistency. However, it should be noted that there may be some variation in the follow-up questions, which can potentially impact the overall consistency to some extent. Furthermore, as the paper is written in English, we found it necessary to

translate the quotes from the interviewees into English as well. Some of the meaning of the quotes may be lost in translation, however we tried to capture it to the best of our abilities to ensure reliability. Nevertheless, we have taken precautions to ensure consistency during the primary data collection process and have carefully integrated it with our secondary data. Based on our awareness of consistency throughout these processes, we believe that our findings provide a reliable measure.

6.0 Case presentation

We have conducted a multiple case study with one primary case and three sub-cases. Our primary case is the value chain of Norwegian apples, and our sub-cases are the producers, cooperatives, and wholesalers in the value chain. The case study revealed some interesting insights into the complex dynamics of the value chain of Norwegian apples. Through a comprehensive analysis of our cases, we were able to identify a number of common factors, shedding light on the chosen strategies at each level of the value chain and their growth opportunities. This chapter will present the findings of our sub-cases, through answering the research sub-question for each case. These cases make a foundation for our primary case and the final discussion.

Sub-questions:

1: "*What strategies is used by the actors in the value chain?"*

2: "How does the strategies affect growth opportunities in the apple industry?"

6.1 Producers

We interviewed a total of eight producers in the value chain of Norwegian apples. Our main objective of studying the producers was to explore how the producers' strategies relates to their operations. We were especially interested in what segments the producers operate in and why they have chosen this segment. Moreover, we aimed to investigate the growth opportunities within these strategies.

6.1.1 Strategies and results

In our research we found that there is a range of segments in the production of Norwegian apples. This includes consume apples (class 1), pressed apples (class 2), such as cider and juice, organic apples, self-picked apples, spirits, and other industry products. The consume apple segment is the largest segment in the industry, with around 60% market share, which also makes up the majority of production.

Through our interviews with the producers, we learned that most producers prioritize class 1 apples over class 2 apples as they have the highest price. This leads the producers to invest heavily in their fruit gardens as the production requires significant resources to achieve the obligatory quality of the class 1 apples, as specified by a producer in one of our interviews:

"Today it is class 1 apples that have the best economy, and class 2 apples have acceptable economy. That is why we should have highest percentage of class 1 apples. But that requires high investments in every single tree, and you need more trees to get the same number of products." (Producer A, 02.09.2022)

These investments include costs related to fertilizer, electricity, fuel, transportation, and hired workforce, which are all areas where the costs are increasing. During our visits to the apple farms, we got to witness this firsthand – the heavy fences, the hired workforce, well-groomed trees, the complex machinery, and overall comprehensive infrastructure.

Picture 1: One of the apple farms we visited

The hired workforce on the farms is usually from abroad due to lower salary requirements and low willingness from Norwegian workers. There are some challenges related to using foreign workforce, namely indirect costs of training and culture differences, uncertainty due to political vulnerability, such as migration limitations, as well as a lack of creating jobs locally. The apples that do not meet the requirements for class 1, are sent to press for a lower price. This share can be quite significant, as Norwegian laws are restricting the usage of pesticides. Due to the high costs of production and the low price on the class 2 apples, the producers often end up not obtaining substantial profits.

We learned that most of the producers of class 1 apples, are in some kind of partnership with actors higher up in the value chain, e.g., through Gartnerhallen and Nordgrønt. The producers receive production plans from these actors. The purpose of the production plans is to decide what and how much the producers get to sell to the wholesalers/retailers. There are relatively high producer risks involved in this strategy, as production can be volatile, particularly within class 1 apples. Additionally, in the contracts with the cooperatives and wholesalers, the producers sign up to be responsible for all production risks, as explained by a producer:

"In the green sector, the producers bear all risk. The wholesalers are not required to accept the apples, like they are in other cooperatives. I am okay with that as long as the market is not pressed, but we have to fight for Wholesaler A to accept us selling Norwegian apples after the 1st of December." (Producer B, 17.10.2022)

Due to the varying climate in Norway, it can be difficult for producers to have a stable production volume and quality and deviating from the production plans can lead to over- or under production and bring high costs for the producers. For instance, a higher production leads the producers to having to taking a lower target price per kg. Although it is possible for some producers, such as the members of Gartnerhallen, to produce beyond the limitations of the production plans, aside from Norgesgruppen, Rema 1000, and COOP, the buyer options are narrow and involves high risks. This makes it difficult to sell the products for the necessary price. The producers are also being pressed on price due to

competition with imported apples, which has lower production prices and higher economies of scale, and thus can take a lower target price from wholesalers.

Due to the limited profit and the high risks of a class 1 apple production, there has emerged an increasing trend of producers seeking other ways of structuring their operations. In this pursuit, several producers value class 2 apples more and more, and some have even decided to exclude class 1 apples from their portfolio and only invest in class 2 apples. In these gardens, the producers are not required to invest as heavily into the infrastructure of the garden and the maintenance of the apples as the requirements for quality are significantly lower for class 2 apples than class 1 apples. Moreover, the producers get subsidies based on geographical location and class of apples, to encourage production, which can lead even higher profits when excluding other costs. We interviewed an actor in apple cider segment, who has this to say about the profitability of cider compared to consume apples:

"There is no doubt that my industry considers the profitability of cider production to be higher than for consume apples. You get a lot more for the money." (Producer C, 24.01.2023)

Through our data, we especially observed an increasing demand of Norwegian cider. The sale of Norwegian produced cider at Vinmonopolet increased with 819% between 2016 and 2021. During the same time, the production of cider has increased rapidly, both in volume, number of producers, and demand. For instance, there has been established a cluster of cider producers in Hardanger who collaborate on activities and work knowledge flow between producers. In terms of results, Norwegian cider ranks very high internationally, and was even assigned the title "Ehrengast 2022", which means guest of honor. The cider is very competitive internationally and ranks higher than the countries from which we import consume apple, such as Italy and Spain. It is also preferred over imported ciders at Vinmonopolet. Based on the reduced costs of cider production, high international ranking, and high demand, we see a great potential in this segment, both domestically but also for in terms of export. Furthermore, due to the current success in the cider market and the potential

thereof, the segment is facing a risk of lacking class 2 apples, which creates a need for new producers in a relatively untouched market.

An alternative way some producers are reducing production costs is to focus on organic production. Organic production involves excluding pesticides and artificial and chemical fertilizer from production. By doing this, producers can survive a low price, but at the same time may have slightly more negotiating power as the demand is high for organic products compared to production. Certainly, this also poses the risk of increased waste in production, primarily attributed to factors such as pest infestations and challenging climatic conditions. However, in these cases producers often get dispensation to reduce waste. Organic apples can be used both for consumption and as pressed apples. Hence, they have the option to sell the apples that quality for class 1 apples with a larger margin or a lower price, as well as sending the rest to be pressed and still obtain a larger margin than some alternatives. Due to the high risk of damaged apples, it may be more beneficial to send these apples to press, as commented by a producer:

"I have a colleague who produces organic apples, and some years, he delivers the entire crop to press and got a higher price for organically pressed apples compared to consume apples and decided to reap it all in one go to simplify things." (Producer D, 25.01.2022)

Another way to obtain profits from a "class 1 apple garden", rather than removing class 1 apples from their strategy is organizing self-pricking of apples. Some farmers organize their operations independently with arrangements like self-pick of apples for the consumers, where customers go to the farm, pick their own apples, both class 1 and class 2, and pay the same price per kg for both types, which is lower than in grocery stores. During our visits to the apple farms, we got to see how the producers organized their gardens to accommodate this activity, from the enclosure surrounding the designated area to the layout for the customers. Through organized self-picking, the producers reduce costs related to salary, transportation, and packaging, as well as the products being fresher for the consumers. One producer explained this well in an interview:

"I am pretty sure that I make a lot more money on my first 50 acres, than on my last 60. This is because hired workforce is my largest cost. There is a lot of manual work as you can see. If I could go back to when I took over the farm, when there was 30 acres with fruit, I could do it all by myself, except for the harvesting. That would be low costs for workforce, and then I could have sold it all directly to the consumer." (Producer A, 02.09.2022)

Moreover, by selling class 1 and class 2 apples for the same price, the producers generally do not loose profits, and often gets even larger margins on their production. However, through our interviews we learned that self-picking of apples heavily relies on trends:

"Self-picking of apples is based on trends. The trend exploded during the pandemic, and I released that I was suddenly the only one to advertise it in the paper." (Producer A, 02.09.2022)

Hence, self-picking of apples may not be sustainable in the long run. Additionally, the contracts with the cooperatives requires that the producers follow the production plans. Both of which are the main reasons why no producer has a 100% self-picking strategy.

Many producers have their own small farm stores, where they sell products from their production. We were showed how the farm stores worked during a couple of our visits to the apple farms, and even got to shop in one of them. Here we experienced the layout-, packaging-, quality- and price strategies of the store. Similar to the self-picking strategy, the prices in the farm stores are lower than the market price and often the same for both class 1 and class 2 apples.

Picture 2: One of the farm stores we visited

Furthermore, the producers often pick and organize the products themselves, as well as run the store, which in turn reduce the costs related to workforce, transportation, and packaging, and ensures a larger margin, as well as a good buyer experience. According to the producers in our interview, it seems that the downside with the farm stores is the demand, in that there is simply not enough local demand for this to be sustainable as a full-time strategy and could require higher costs related to marketing to increase the demand. It can also be time consuming for the producers to take on even more themselves. We talked to a producer who explained the profitability of self-picking of apples and farm stores as followed:

"I sell both apples and plums cheaper here than in the store, but I am left with more, because I do not have expenses related to harvesting, sorting, or packaging. Plus, self-picking is not like wholesaler A when it comes to quality requirements. The consumers pick both class 1 and class 2 and pay the same price." (Producer A, 02.09.2022)

A different strategy some producers use to boost demand is what is called "farm tourism". Farm tourism is organized tours of the farms and the apple production area. The purpose of this is to raise knowledge and awareness of Norwegian apples, as well as using it as a sales channel. One of the largest tours is the cider tour in Hardanger. Here, the participants get to see the area, the farms, and even try and buy the products. During the writing process one of us went to Hardanger and participated in a tour of the farms. This provided us with an insight into both the production and environment surrounding the apple farms, as well a wider understanding of the structure and activities the producers to in the cider segment. The trip provided observations of the numerous farms scattered in the area, along with the great enthusiasm surrounding cider production. Along the roads, many farmers were selling fruits from their farms, offering an opportunity for passing drivers to make purchases.

Picture 3: One of the small roadside stands observed in Hardanger

Additionally, the local Vinmonopol had an extraordinarily large variety of apple cider. Farm tourism has become a large part of the tourism industry in Hardanger as well, and has proven to be a profitable strategy, where tourist come from all over Norway and even different countries to participate. This strategy brings some increased costs in terms of labor in addition to the current production, but also provides the producers with additional income.

6.1.2 Comparative analysis

The purpose of our case study was to answer our two sub-questions, as a way of answering our research question:

1: "*What strategies is used by the actors in the value chain?"*
2: "How does the strategies affect growth opportunities in the apple industry?"

We found that more often than not, producers combine different strategies to optimize their production. These strategies include, but is not limited to, consume apples, pressed apples, organic apples, self-picking of apples, farm stores, and farm tourism. Looking into these, we found that there is different potential within the strategies based on a variety of factors, mainly related to the profitability within each segment.

When comparing the production costs, we see a clear pattern of consume apples, or class 1 apples, having extensively higher costs than any other segment.

Simultaneously, we found that consume apples have the least bargaining power regarding pricing, due to lacking demand, which results in an overall low margin compared with other segments. The segments with the lowest production costs are pressed apples. Within this segment, we found great potential for increased production compared with other segments. The cider market is experiencing a growth in demand and have the bargaining power to take higher prices, resulting in larger margins high competitiveness against similar imported products. An alternative to cider in these areas can be organically produced apples, however, there are a lot higher production risks with organic apples than regular class 2 apples due to vulnerability against pests and rough climate. The self-picked apples are in a similar situation with high production risks, due to the dependence of trends and farm stores lack the demand to be a competitive strategy. Moreover, we do not consider the farm tours to be a supplementary strategy, but complementary instead. However, this strategy requires apple producer clusters to be able to create economy.

To conclude on the choices of strategy and their growth potential in the industry on producer level, we find that investing in cider is arguably the most sustainable strategy. This is a market experiencing significant growth and has a competitive advantage internationally in quality. Furthermore, the margins are one on the highest in the industry, with costs that can compete internationally. Moreover, the producers have more negotiating power, which enables them to achieve higher profits and opportunity to make their own brand.

6.2 Cooperatives

For our study, we have focused on three main cooperatives, e.g., two cooperatives for consume apples and one for cider. Although these cooperatives have similar structure, we found they have some significant differences in strategies. We chose these cooperatives as they include the majority of apple producers in Norway, thus represents the most comprehensive strategies. The purpose of studying cooperatives is to get a better insight in the strategies executed in this level of the value chain and understand why these are chosen. Furthermore, we aim to understand which strategy is the most beneficial for the

different actors. When discussing our findings, we will call the cooperatives “cooperative A”, “cooperative B”, and “cooperative C” to ensure anonymity.

6.2.1 Strategies and results

Each cooperative has adopted unique strategies to achieve their goals, with approaches ranging from market expansion and diversification to community development. In this chapter we will use our findings to describe the strategies of the three different cooperatives involves in our research.

Cooperative A

Cooperative A specializes in the consume apple segment but includes producers of both class 1 and class 2 apples. Their strategy centers around collaboration, planning, and structuring of production, allowing them to promote Norwegian fruits and vegetables and improve quality and sales of the products.

Cooperative A is strictly owned by their members. By entering this relationship, the producers must agree to sell their apples mainly through cooperative A. Through our interviews, we learned that the cooperative is relatively open for new members as long as they can contribute with production in the relevant segments and geographical areas, which is mainly in eastern and western Norway. There is room to sell to external parties till some extend, though there are strict rules in the contracts regarding competitors which for which parties are allowed. In these cases, the producer must apply to cooperative A and receive dispensation, while still paying the membership fee. Moreover, cooperative A has one wholesaler that makes up 90% of their clientele, which means that this wholesaler has a lot of power over the cooperative. Despite this, cooperative A can enter sales agreements with external parties as well as this wholesaler.

The collaboration between the actors ranges from enabling collaboration amongst the producers to participating in projects with the higher levels of the value chain, as well as other cooperatives. The cooperative enables the prior though for instance coordinating production and organizing seminars for the

members, which allows the producers to acquire new knowledge of the field and existing opportunities. A couple of interesting projects that cooperative A has been a part of, is the project for an extended Norwegian apple season and the SmartFrukt project, which provides an insight into knowledge of production, ideal storages, and optimal apple varieties. A common trait amongst the projects is that they involve different cooperatives and other actors in the value chain, which enables collaboration amongst the actors. A key point of the current projects cooperative A is involved in, is the development of new apple varieties, as requested by the wholesalers/retailers. The new varieties are more similar to imported apples, like Pink Lady, in taste and texture, in contrast to traditional Norwegian apples, like Gravenstein. According to our interviews, the new varieties will be more able to compete with imported apples, compared to the traditional types:

"Now we're seeing Eden and Fryd entering as apples that taste more international. Yes, those are competitors which can take the competition by competing with imported apples, but we cannot forget the Norwegian taste. Norwegian cider is doing well in international competitions, and a lot of the is owed to Norwegian sourness." (Producer E, 23.03.2023)

Cooperative A is also responsible for creating a production plan for the members. They do this to adapt the production to the costumer's needs. The production plans are developed based on production plans received by the customers. These plans includes both quantity, quality, and apple varieties. Moreover, cooperative A is not obligated to accept the products, though the practice is to do so if possible. Through the production plans, cooperative A obtain knowledge of the ideal production of Norwegian apples and get to assist the production of the apples.

Cooperative B

Cooperative B specializes in the consume apple segment but produces both class 1 and class 2 apples. Like cooperative A, their strategy centers around collaboration, planning, and structuring of production. Cooperative B is also owned by its members. Through this membership, the producers are allowed to sell their products to one of the largest wholesalers/retailers in Norway. During our interviews, we learned that the cooperative rather focuses on increasing capacity within its existing members, over introducing new members to the organization. The members of the cooperative are located in eastern- and western Norway, as well as in Trøndelag.

When entering the cooperative, the producers sign up to sell their products exclusively to one specific wholesaler, excluding all other distribution channels. The cooperative has a close collaboration with this wholesaler, e.g., representatives of the wholesaler sit in the board of directors of Cooperative B, and they have a close dialog regarding operations of the cooperative. Cooperative B receives production plans from the wholesaler, based on the perceived demand in the market, and forwards the plan to the producers.

"Wholesaler B makes the production plans. It has to be them, because they are the ones who knows what kind of apples they want in their stores." (General manager of cooperative B, 30.03.2023)

Moreover, based on the preferences of production, cooperative B participates in different projects, usually in collaboration with other actors. Overall, we learned that cooperative B is generally very positive to invest in projects regarding Norwegian apples.

"We started these projects a lot earlier and have worked with this for 3-4 years now. Cooperative A has also joined the project now, so we are actually collaborating on this project." (General manager of cooperative B, 30.03.2023)

A central project the cooperative has been involved in are the project for an extended Norwegian apple season. As part of this project, cooperative B is

working to develop a new apple variety as preferred by the wholesalers/retailers. This variety has characteristics closer to imported apples, compared with the traditional apple varieties, like Gravenstein. It is evident from our findings, that cooperative B has a large focus on developing the Norwegian apple industry.

Cooperative C

Cooperative C is a cluster organization that specializes exclusively in cider. The cooperative consists of several actors in the value chain of Norwegian cider, including producers in Hardanger, local municipal actors, and research organizations. The strategy of the organization mainly revolves around collaboration as a tool for enabling growth in the segment. The cooperative has a goal of educating members of the value chain in cider production and operations and create an economy within the segment, which created the need for collaboration with actors outside of the value chain for Norwegian apples, such as municipalities. The organization is financed by governmental funds and membership fees from the cider production organization that initiated the cluster project.

The reason behind the cooperative's choice of entering the cider segment is the observed potential in the market, which revolves around market growth, lower costs, and less external competition. According to a representative for the cooperative, there is an agreement amongst the actors in the segment that despite the lower prices, there is still a higher margin in pure cider production, compared to the production of consume apples.

"There is no doubt that our industry thinks that we get much more out of the apples in cider production. Alongside higher subsidies, specifically in Western Norway, we obtain profitability." (CEO of cooperative C, 24.01.2023)

Cooperative C is involved in several different activities, aiming to promote locally produced apple cider. For example, they organize local tours, which includes tours of the apple farms, cruising of the local fjords, and cider tasting. These tours are projects emerged as a result of high collaboration amongst the actors

and have created an experience unique for the area. This branding strategy contributes to raise awareness of the activities and products within the cooperative.

The cooperative is active in several projects. Most of these projects focuses on large scale projects related to increasing the general production of fruits or apples, as well as other projects related to cider. Through these projects, the cooperative executes their strategy of creating and sharing knowledge and demand for Norwegian apple cider, as well as expanding the current operations.

"The wholesalers have a lot higher demands for the selection of apples. Take the two new apple varieties; they are developed and decided by cooperative A with wholesaler A. Those varieties are a threat for the cider segment, as they are not particularly good cider apples." (CEO of cooperative C, 24.01.2023)

An example of a current project is a project with the purpose of gathering relevant strategic competence into a national center to have as a tool for further development of the industry. This is a large-scale project that includes actors both in the value chain and in other fields.

6.2.2 Comparative analysis

To answer our two sub-questions, we consider the strategies of the three main cooperatives from our study. By comparing these organizations and their respective strategies, we aim to explore how these strategies affect the growth opportunities of the apple industry.

We have studied two cooperatives operating mainly in the market for consume apples (cooperative A and B) and one operating in the market for cider (cooperative C). In this process, we find that cooperative A and B have relatively similar strategies regarding structure and activities, while cooperative C differs in this sense. The main difference between the two groups is that cooperative A and B function more as a middleman between producers and wholesalers in the

same value chains, while cooperative C functions more as a meeting point for several actors, both internal and external.

Looking at the structure of cooperatives A and B, we see that despite it being similar, there are some differences. The largest difference in the structures is that the higher levels of the value chain for cooperative B is more actively involved in the operations of the cooperative by integrating themselves into the board and decision-making organs of the organization, thus have even more power over the decision, but also a closer collaboration. Moreover, we find that cooperative A have slightly more flexible membership demands in terms of new members and buyer agreements. This can ensure more safety for the producers in seasons with over-production. However, we found that both cooperative A and B have a seemingly good collaboration with the wholesalers, where they usually find solutions for production volumes in unpredictable seasons.

A common trait in the strategies for all three cooperatives is that they have a heavy focus on collaboration, both with internal actors and, although in different degrees, external actors. We looked into the power dynamics in the value chain and found that the cooperatives in both the consumer segment and the cider segment have relatively little power. However, the power dynamics differs between the segments. Since cooperative A and B have a closer engagement with the wholesalers and retailers, their activities are more decided by the retail chains, while cooperative C is more involved with and affected by the producers. However, it is worth mentioning that the current cider segment is relatively new and small and is continuously being shaped.

Another similarity between the cooperatives is that they all participate in different projects related to Norwegian apples. Furthermore, they are all involved in the projects with a common goal of growing the industry, however they have different ways of getting there. Both cooperative A and B have invested in the development of new apple varieties based on consumer demand. However, cooperative C is skeptical to these projects, as this segment requires the characteristics of traditional apple varieties. Considering the differences in

reason behind the preferred apple varieties, it is evident that cooperative A and B experience a higher competition with imported apples compared with cooperative C, who experiences a competitive advantage with the existing apple varieties.

With the current cider segment, being relatively new and still under development, as well as the cooperatives being different in structure and function, we found it somewhat difficult to compare the cooperatives in the two segments. However, focusing on the cooperatives' chosen strategies and their growth potential, we find that there are less restrictions in the apple cider segments than in the consume apple segment. Moreover, we see more incentives and opportunities for the producers to produce more Norwegian apples when having more control over the cooperatives. We also found that the cooperatives in the cider segment are more actively participating in alternative ways of selling the products, rather than through retail, resulting in less narrow options for the actors.

6.3 Wholesalers

6.3.1 Strategies and results

We have conducted interviews with the two main wholesalers in the Norwegian apple industry: "wholesaler A" and "wholesaler B". The value chain for the cider segment is relatively new and there is no established wholesaler. Thus, we will explain the dynamics in the segment of the typical wholesaler activities. Although it is not a defined wholesaler, we call this "wholesaler C".

Wholesaler A

Wholesaler A is the largest wholesaler of fruit and vegetables in Norway but compete also on the international market. They work closely with Cooperative A and receive most deliveries of fruits and vegetables through this cooperative. Additionally, they can purchase fruit and vegetable of independent actors of their demand is higher than the supply in the market, with deviations from the target price, commented in an interview with a producer:

"And then it goes outside the wholesaler system, but they become cowboys and claim they can get the cauliflowers for one krone cheaper than what you get from cooperative A. So not everyone is loyal. It's a very important job to teach producers to understand that the cowboy is pushing the price down by acting like that. It drives down the price for all the other products we have and all the other colleagues' products. (Producer for wholesaler A, interviewed 02.09.2022)

This demonstrates that the highest possible prices can be achieved if everyone collaborates and adheres to the contracts. At the same time, it shows that the wholesaler holds significant power and can purchase at a lower price outside the collaboration. Naturally, the wholesaler aims for the lowest possible purchasing price, creating a conflict with the producers who seek the highest possible price.

Their customers in Norway are the two dominating retail chains in Norway, with one clearly having the largest and most important customer relationship. The wholesaler is primarily owned by their customers, which enhances the control of the two chains over the procurement of domestic and imported fruits. The wholesaler makes production plan based on demand and forecasts from their customers. These plans includes both quantity, quality, and apple varieties. Through interviews, it emerged that there has been little focus on good production planning and trends in the market. There have been some incidents where producers have produced something that the wholesaler has not approved. The wholesaler tries to buy everything that is produced, also outside the production plan.

"While here, it has been the case that... at least until now, the producers have pretty much done as they wanted and relied on us kind-hearted folks to sort things out for them. As mentioned, in the long run, it's not sustainable for anyone, and it's not sustainable for the category and growth the way we're currently operating. We need structure and guidelines regarding production plans and the right mix of varieties, so that eventually, we can establish a preferred Norwegian share both for retailers and with consumers" (Wholesaler A, interviewed 01.03.2023)

Wholesaler A works on a structured strategy for the coming years, with a focus on planning and finding trends in the market, so that producers produce what the consumer wants to buy.

The wholesaler engages in different projects in order to create growth in the sector. They have a close collaboration with Cooperative A on innovation and value creation over many years. The wholesaler is also a participant in the project for extended season of apples. Through interviews, the wholesaler mention that this initiative was started by the competing wholesaler/retailer. This led to pressure that the other chains had to follow in order not to lose customers or reputation. The apples must be substituted and the wholesaler finds it difficult to give incentives and motivate the following chain to sell it after customs protection disappear on a long term.

"We have a winter program, which was actually initiated by competing retailer, and then our customer had to follow" (Wholesaler A, interviewed 01.03.2023)

The wholesaler states that Norwegian apples cannot compete with imported apples on price due to economies of scale due to much larger production. Therefore, they have adopted a differentiation strategy, with a focus on increased quality. They state that customers should experience consistent quality for apples produced in all locations of Norway. The wholesaler´s strategy for the future is to differentiate based on different price segments, rather than maintaining nearly the same target price for all apple varieties as it is currently. This makes it possible to build different apple categories and avoid producers planting whatever they want. To achieve differentiation, they are planning on releasing two new apple varieties that they believe the young and future generation want. They will be packaged in 6-pakcs with same colors to ensure recognizability. The goal is that these apples should primarily be purchased by consumers for their taste, not because they are deliciated packaged or stamped with a Norwegian flag. Both apples have good storage capabilities and can be available during an extended season, explained by the wholesaler under:

My goal is for the apple category, whether it's Norwegian or imported, it doesn't really matter to me as long as we sell more apples because that will benefit the Norwegian category. And that we have such good varieties that people go to the store and say, "Oh, it is really delicious," and not just buy it because there is a Norwegian flag on the cardboard box (Wholesaler A, interviewed 01.03.2023)

The wholesaler openly acknowledge that Norwegian production is costly and yields a lower profit margin compared to imported apples. The wholesaler naturally has a focus on highest possible margin, which results in most of the apples being sold are imported. Expect from Pink Lady, has all the other imported apples a lower price than the domestic produced. The wholesaler hopes for a low production of Norwegian apples to avoid selling them at a loss after a normal Norwegian season.

In 2022, the Norwegian apple season was at 5,200 tons, which is perfect because then we finish by December 1st. No departments have to sell items at a loss, so the stores can sell them at a discounted price (Wholesaler A, interviewed 01.03.2023)

Wholesaler B

Wholesaler B is a subsidiary of one of the large retailer's chains and is fully integrated with the role as wholesaler for this chain. There is a close collaboration between the chains, where board members in "Cooperative B" are employed in the chain. The wholesaler get fruit delivered from producers that have membership in "Cooperative B". The category responsible is tasked with creating plans for both Norwegian and imported apples, referred to as "tennere." These plans are approximately planned and not tied to a specific volume. Furthermore, a production plan is collaboratively developed with producers on a weekly basis, ensuring a level of predictability. The plan is directly planned with producers, which gives them total control over the production.

The wholesaler supplies fruits and vegetables to retailers in Norway, both sourced domestically and imported from foreign countries. Fruit and vegetable are delivered to many districts in Norway, including Svalbard. The warehouses have well-organized delivery routes to ensure that fruits and vegetables are quickly and fresh sold. While some stores located farther away may not receive daily deliveries, they still get shipments approximately three times a week, while others receive them twice a week. The wholesaler covers the largest part of the

country, reaching stores in various locations with focus on the districts. It can be quite challenging to deliver to all these places, especially to Svalbard with flight.

The wholesaler has a high focus on Norwegian products and extending the seasons, with the goal of achieving a higher degree of domestic self-sufficiency to serve customers fresh fruit with short transportation. They aim to promote Norwegian fruits and vegetables, even though competitors may have better conditions and their competitive edge may weaken, mentioned in the interview.

"Well, competitively, it does make it more challenging. If they have better conditions than us, we lose our competitive edge. However, as I mentioned, we still want to promote Norwegian fruits and vegetables. We believe it is the most sustainable option. We are talking about being self-sufficient. We avoid transporting goods for five days on trailers from Italy, like the others have to do." (Wholesaler B, 09.03.2023)

They demonstrate significant interest in Norwegian apples in various ways. Firstly, they serve consumers in the districts who often display a greater preference for Norwegian products compared to those residing closer to urban areas. It is natural to guess that the wholesaler faces less favorable import conditions compared to their big competitor, which can be a crucial factor for their high motivation to promote Norwegian apples. Secondly, they act as a pioneer and leader in the project of extending apple season. Being the leader demonstrates their belief that class 1 apples will be advantageous to have in stores even after the removal of tariffs, even though the margin will be significant lower compared to import, explained in the quotation:

"We were the ones who started it. I was actually the spokesperson for selling Norwegian apples in December. In Norway, we remove the protective tariffs on the first of December. That means there are no tariffs on apples. So, imported apples become much cheaper than Norwegian apples. Even with transportation costs and all, they would be priced three to four kroner lower than a Norwegian apple." (Wholesaler B, 09.03.2023)

The wholesaler believes that by working for an effective and sustainable process and creating profit for the producers, more actors will be encouraged to join the extended season. Their initiative has encouraged competitors to follow, both in

fear of missing out and pressure from actors in the value chain. On the other side, the wholesaler misses support from the government to finance storage technology in order to increase the volume of Norwegian apples.

Furthermore, the wholesaler is focused on selling apples that serve a broad population. They are convinced that customers prefer Norwegian apples as long as they taste good. They have observed that different generations have varying preferences for apples. To some extent, they try to imitate Pink Lady, but they also recognize the need to offer different types of apples. In order to achieve variety, they have different apple varieties for different times during the season. Additionally, they are planning to have apples with good storage capability to extend the season. A special variety for the extended season has been developed in collaboration with one packaging facility, which closely resembles Pink Lady, and will be packed in packs of ten package of six units, explained in the quotation:

So, we create a product range where we provide specifications to the producers, stating that apples in December should be of a certain size, have a specific amount of red color, and so on, to make it appealing to consumers. Instead of offering Pink Lady and other options, we sell them in 6-packs or similar packaging formats (Wholesaler B, 09.03.2023).

During the recent analysis, the wholesaler has discovered a notable trend wherein a growing number of customers have been transitioning from higher-priced products to lower-priced alternatives. When questioned about their purchasing behavior regarding apples, the wholesaler sees a new trend:

"I would have probably answered yes to that if you had asked a couple of years ago. However, as we discussed, we are currently in a period where price has become extremely important, and we see that customers are choosing more affordable alternatives." *(Wholesaler B, 09.03.2023)*

The reason why they choose to sell Norwegian apples is because it can serve as a marketing tactic to encourage customers to choose their stores. The wholesaler admits that naturally, there is a lower margin on Norwegian apples. The purchase price of imported apples is lower, resulting in lower profits from selling

Norwegian apples. They hope that customers who prioritize Norwegian food will opt for their store over others. They try to maintain a similar selling price for apples to simplify the process for the cashier.

"No, we don't operate at a loss, we don't. However, we do earn less profit on Norwegian apples compared to imports, that's true. But we believe that in the end, customers will choose our stores because we can offer Norwegian produce. We are willing to accept a slightly lower margin when selling Norwegian products compared to imports and sell them at the same price." (Wholesaler B, 09.03.2023)

Wholesaler C

In absence of a defined wholesaler in the relevant value chain for cider, the already present actors must take it upon themselves to be responsible for the typical wholesaler activities, such as selection of apple varieties, marketing, and sales. In the case of cooperative C, they must conduct different approaches regarding these functions.

“The difference between consume apples and further processing apples is that cider producers follow their product the whole way. Both production and sale, marketing. An entirely different value chain. A consume apple producer delivers the apples and wait for the settlement.” (CEO of cooperative C, 24.01.2023)

In terms of marketing, both the producers and the cooperatives are actively involved through organizing farm tours and making an experience out of visiting the area to attract domestic and foreign tourists, as well as participating in and hosting international competitions to establish an international presence. By reducing the barriers between the countries’ consumers, Norwegian cider is marketed to both Norwegian consumers, as well as consumers in other countries. Furthermore, the cooperative C has a lot of collaborating partners in several fields with different projects for expanding knowledge both within and of the industry, for example by establishing a national center for fruit and cider. Moreover, due to the growth of the cider segment, the retailers also participate in the marketing of the products. For instance, Vinmonopolet has their own podcast about cider meant to educate consumers about cider and increase sales and demand.

There are several ways to sell cider without the use of a designated wholesaler. As mentioned before, the collaboration with Vinmonopolet is one of the most important factors, as this makes up 82% the sales. Additionally, direct sales from the apple farms, HORECA, grocery stores, an export are other sales channels of Norwegian cider, mentioned in accordance with market share. We found that export takes up the smallest share. Through our interviews, we learned that since the cider segment is still small, it lacks the resources for R&D in the respective market. However, through the collaboration and increased investments in the segment, there has become more interest in R&D and consulting for the segment. Furthermore, several of the projects that cooperative C has invested in are aimed towards improving this initiative, like the national cider center.

"There are many actors in the picture here. There are many actors working with R&D, such as Norfirma, Njøs, NMBU, NIBIO, as well as several educational institutes and universities. We see that Norwegian Agricultural Consulting (Norsk Landbruksrådgivning) are advising the consume apple producers, but we lack this for cider. That is something we are working on, to build competence about how to produce good cider." *(CEO of cooperative C, 24.01.2023)*

Another role that is typically acquired by the wholesaler is the assortment of apple varieties. Since the value chain for cider is not yet properly established, there are no production plans assigned from the higher levels in the value chains. This being said, Vinmonopolet, as the sales actor of 82% of cider, does have some power over apple varieties, in that they observe which ciders sell the best. That being said, after 2016, when Norwegian laws opened for direct sales from farms, this power was reduced. Hence, the producers have more say in the decision of apple varieties for production.

6.3.2 Comparative analysis

There are some differences in the interest of selling Norwegian apples between the wholesalers, even within the same segments. Wholesaler A is less motivated and hope for low production of Norwegian apples to avoid selling them at a loss after the normal season. While Wholesaler B has a significant interest in promoting Norwegian apples, especially in districts where consumers show a

greater preference for Norwegian products. They focus on serving fresh fruit with short transportation, promoting sustainability and self-sufficiency.

Wholesaler A aims to differentiate based on increased quality and plans to release two new apple varieties targeting the preferences of the young and future generation. They focus on taste and consistent quality, rather than relying solely on Norwegian branding. Wholesaler B recognizes the preferences of different customer groups and age demographic. There is an agreement that Norwegian apples cannot compete with imported apples on price, leading to a development of production focused on higher quality at every stage of the value chain. Both of the wholesalers focus on quality in production development and is inspired by imported apples, especially Pink Lady, when developing new varieties. Additionally, the new planned varieties have good storage capabilities to be used for an extended season.

Even though both actors focus on higher quality for apples, they also see the need to offer apples in different price segments. Wholesaler B has observed an increasing trend of choosing cheaper products. Although this has been observed, it seems that the overall strategy for the planning of new varieties still focuses on high quality and high price. One could question is this is the most suitable strategy adjusted for the demand, considering that demand is decreasing people will have less money for food in the next years. It may seem that they do not consider what the market is asking for, and only focus on consumer groups that prefer high quality goods.

In order to increase growth in the consume apple market, there are some different interests and strategies. Wholesaler A focuses on planning, finding market trends, and building a preferred Norwegian share. One can assume that they are pushed in the winter program by other actors in the value chain and highlights the need for a more well-functioning season before extending it. Wholesaler B engages in projects for innovation and value creation and is an eager participant in winter project. The wholesalers show divided interest in extended season and growth of Norwegian apples. It is debatable whether it is

sustainable to make such substantial investments in new technology when Norway will not be able to compete with the large volumes produced abroad. On one hand, extending the apple season allows customers who appreciate Norwegian apples to have the opportunity to purchase them for a longer period. This can enhance customer satisfaction and loyalty. However, on the other hand, achieving an extended season requires significant investments and subsidized funding to manage the logistics and resources involved. Additionally, there is a need for effective marketing and customer education to inform and educate customers about the availability and benefits of Norwegian apples during the winter months.

Although we find it difficult to compare wholesalers in the consume apple segment, such as wholesaler A and B, and the corresponding roles in the cider segment, here called wholesaler C, we still have basis to compare the typical wholesaler activities in the two segments. The most significant difference between the wholesalers is that in the consume apple segment the roles are more defined due to higher segregation between the levels of the value chain where each actor has their role. On the other hand, in the cider segment, the producers follow their product throughout the value chain process, all the way from production to sale.

Due to the producers being involved in the sale of cider, we found that cider producers have more power over the wholesale activities than in the consume apple segment, which has a higher concentration of power in the upper levels of the value chain. However, since the cider producers also are involved in consume apple production and must follow a production plan, the cider segment is threatened as well, due to the new apple varieties not being well suited for cider production. Despite this, we see that the structure of distribution of wholesaler activities in the cider segment enables the producers to participate in the development of the segment, amongst other by deciding on investment areas. This has participated in creating a potential of international competitiveness for Norwegian cider, which is an area Norwegian consume apples lack presence.

To conclude on the choices of strategy and their growth potential in the industry on a wholesaler level, we observe that implementing a high-quality, high-price strategy can be challenging in light of market trends for consume apples. Going forward, an increasing number of consumers are expected to prioritize price over other factors, resulting in a smaller share of the market that still prefers high-quality products. This raises doubts about the potential of both wholesalers' strategies to create growth in the industry. On the other hand, we see great potential in the cider segment, where one actor does not have all the power, which in turn has enabled the segment to grow more sustainably. Hence, we conclude that the strategy for cider enables positive growth, while strategy for consume apples has less potential for enabling growth with the current strategy.

7.0 Discussion

For the final discussion, we will consider the strategies for the whole industry and evaluate the actors in the segments of consume and press apples. We will answer our research question and draw conclusion based on an economic and strategic perspective.

"What are possible growth strategies the Norwegian apple industry can adopt to increase sales of Norwegian apples?"

The key for finding a suitable position in the competitive environment is by achieving a sustainable competitive advantage. In the consumer apple segment, the strategy revolves around differentiation based on high quality and high price, aiming to develop apple varieties that rival imported ones. However, this raises concerns about the competitive advantage of Norwegian apples. Investing in these varieties may not offer a unique taste or competitive pricing, due to similar characteristics as imported apples, but with higher costs. One can argue that the strongest remaining competitive advantages for Norwegian consumer apples lie in the utilization of less pesticides and the promotion of locally sourced food. Furthermore, the fact that the apples are aimed to taste the same regardless production district removes the advantage of consumers relating to local products. Conversely, the cider segment adopts a more traditional approach,

utilizing traditional apple varieties in the production. Their differentiation strategy lies in highlighting and make associations to the distinct regions in Norway for customers. This differentiation enables less price sensitivity and creates an opportunity for taking a higher price, and in turn may result in a larger margin.

To achieve a higher marked share, it is crucial to discuss competition from import. In the consumer apple segment, it is not feasible to compete with imported apples on price due to lack of economic of scale, with high need of manual work and a majority of small farms located in Norway. Producing for a extended season would necessitate significant investments in order to be profitable. Similarly, the cider industry also faces challenges due to limited economies of scale. However, they prefer traditional trees in their production, which enables them to exclude search costs for new apple varieties and investments related to this. Since Norway import little cider, it gives a better position in the market with possibility of growth in market share. Additionally, Norwegian cider is experiencing a lot of recognition and interest from foreign countries, and export market is expected to grow in the coming years. This provides an opportunity to sell cider to a larger population and be competitive globally. Exporting makes it possible to increase production in case of a saturated Norwegian market. Based on these factors, we argue that the cider segment is better positioned in competition with import than the consume segment.

There is a need for both exploration and exploitation to drive growth and innovation. On one hand, the consume apple segment, conducts explorational activities through investing in R&D related to new apple varieties and ULO-storages. At the same time, the segment exploits its current characteristics, such as apple measurements, color requirements, etc. The cider segment also conducts a lot of explorational R&D, especially related to structuring the value chain and optimizing production. However, the segment exploits the current apple varieties to optimize their production. A common investment both segments participate in regarding exploration, is new technology, e.g., robots and machines for production. We have identified an overlap in several aspects of

the segments' operations and find a knowledgeable benefit in this collaboration. Hence, to achieve increased growth in the entire apple industry, it is necessary to explore new possibilities to increase collaboration and achieve synergies between the segments.

Due to the extensive cultivation period required for apple trees, efficient planning becomes crucial in order to effectively navigate the dynamics of market demand. We have found that consume apples are experiencing a decreasing demand, as consumers now favor more affordable options. However, we also found that there is still a certain consumer that exhibit preference for healthy, Norwegian products. On the other hand, we found that the cider segment is experiencing significant growth, with both Norwegian and foreign consumers showing new interest in the products. The two segments have chosen different approaches to meet their respective market demand. Considering the strategy for consume apples of high price – high quality differential strategy, it is evident that they primarily target a relatively small population of Norway. It may be difficult for them to grow in a decreasing economic trend where more consumers are opting for cheaper substitutes. They may achieve a higher growth by changing and adapting their strategy in order to target more groups in Norway. Contrary to the consumer segment, the cider segment may reach a larger target group, as a great part of the Norwegian population consume alcoholic beverages and it is diverse in its consumption ways. Considering this perspective, it may be greater potential for increased growth in the cider segment due to a larger target group, both in Norway and other countries.

Another subject to discuss is the necessary investments int activities and the cost of growth. Both segments in the industry lack economies of scale, given the numerous small producers placed throughout the long country. With a production volume regulation of 7,500 tons per year for consumer apples in Norway, producing volumes beyond this in an extended season would be need high costs of investments. It also seems that there is little knowledge of what such an investment would cost, and who would finance it. Additionally, increased production would most likely require additional foreign labor, which is already

challenging to obtain and demands extensive planning for farmers. Moreover, significant resources would be required to inform consumers about the extended season and to change their purchasing habits. Sustaining long-term engagement from grocery stores may also prove challenging, as the wholesalers needs to justify selling with lower margins outside the Norwegian season. Based on the low potential for profits, the consume segment may be benefitted with investing in alternative revenue streams, e.g., farm tourism.

Since the cider producers can use the traditional trees without the need for substantial resources to search for new varieties, it allows them to increase volume without making major changes to existing plant gardens.
The cider segment is less regulated with fewer actors to deal with, giving the producer more freedom. Cider production can achieve greater efficiency by skipping certain value chain processes and deal with less restrictions compared to consumer apples. This increased efficiency has the potential to lower the costs of production. There are opportunities for the cider industry to engage in activities that can generate substantial profits. For example, they have been successful on creating cider cruises and show the production of cider for tourists, giving multiple revenue streams.

In conclusion, we see that both segments have opportunities for growth, but in different areas and levels. Based on our research findings, which has observed a higher sustainable growth potential of Norwegian cider compared to consume apples, as well as the potential for establishing an export industry, we believe that the cider segment holds significant possibilities for driving substantial growth in the Norwegian apple industry. Further, we consider it reasonable to keep consume apples on the current production scale to satisfy the current market demand and create synergies along with the cider segment.

9.0 Conclusion

9.1 Conclusion

Several aspects are addressed in our master thesis in order to answer our research question; *What are possible growth strategies the Norwegian apple industry can adopt to increase sales of Norwegian apples?* Our research question has been addressed by firstly analyzing the value chain of the apple industry, where two main segments were observed; consume and cider segment.

Subsequently, we discussed three different cases (producers, cooperatives, and wholesalers), with focus on the actors' current strategies and their potential for growth. For producers, we concluded that they have more potential of achieving a sustainably higher profit if concentrating their strategy more on cider but maintaining the current level of class 1 apples. For cooperatives, we found that cider cooperative has more power, thus more control of the value chain than the cooperatives for consume apples due to lower dependency of the wholesalers and retailers. As a result, cider cooperatives are better positioned to drive growth within the industry. For wholesalers, we found very different approaches. However, we ultimately concluded that the wholesale strategy for the cider segment possess a potential for more growth, compared to the current strategy for the consume segment, due to more evenly distributed power dynamics.

Based on the conclusions drawn from the subcases, our value chain analysis, and the theoretical framework, our primary finding is that Norwegian apple cider possesses a distinctive competitive advantage. This advantage positions it to compete on an international level and presents a low risk of substitution from imported products. In contrast to our findings on consume apples, which exhibited a weaker competitive advantage and a high risk of substitution by imported products, the cider segment displayed significant growth potential. This potential can be attributed to substantial investments in research and development, as well as a rising demand. For the consume apples, the high level of investment does not appear to align with the current or potential demand. Lastly, our research revealed that the cost to income ratio has the potential to be

significantly higher in the cider segment compared to the consume segment. This can be attributed to several factors, including lower production costs, a simplified value chain with fewer intermediaries, stronger producer power, and an overall higher willingness to pay for Norwegian cider.

To summarize our conclusion, we recommend that the Norwegian apple industry maintain the current level of apple production to satisfy the demand for Norwegian apples. Additionally, we propose allocating more resources towards the expansion of the Norwegian apple cider segment.

9.2 Implications

The findings of our study on growth strategies in the Norwegian apple industry has several relevant implications. From a practical standpoint' the results reveal a key insight into the dynamics of the value chain and the factors influencing growth potential of each segment. By understanding the specific characteristics that contribute to a successful growth, the actors in the value chain can make informed decisions regarding cultivation choices, collaborative partners, ideal wholesalers and relevant retailers. Additionally, this research sheds light on the potential for promoting Norwegian apples as a competitive product both domestically and internationally, emphasizing their distinctive flavor profiles and unique growing conditions.

From a theoretical perspective, this study contributes to the broader field of horticulture and fruit science by expanding our understanding of how to gain a competitive advantage that can contribute to an industry growth. By uncovering the specific factors that has an effect in each segment's competitive advantage, this research lays the foundation for future strategies aimed at increasing growth on an industry level. Moreover, these findings expand to the growing body of knowledge on the apple segments, providing insights into the factors that influence growth opportunities and enabling researchers to explore these dynamics. This can be useful for the GreenRoad project to understand what logistical measures and marketing strategies that can be used to increase sales of Norwegian apples.

The implications of this study also extend to the actors in the value chain and other policymakers. The actors in the value chain can benefit from insight into profitability the factors that contribute to this. Furthermore, both the actors in the value chain and other policymakers can gain a more objective insight into the dynamics between the actors, as well as understanding the areas of potential within the operations. The insights gained from this research can drive advancements in competitive advantage, collaboration, and sustainable growth in the Norwegian apple industry.

9.3 Limitations and future research

We are aware of several limitations that our research is subjected to. First, the qualitative method will provide findings that are not generalizable across industries or firms, though we assess that it has a high internal validity. Another limitation with the method is that our primary data is limited to the number of people and their positions, giving potential subjectivity and biases in the findings. Additionally, we could have interviewed more actors in the value chains, but time and capacity were limited. It would be interesting to include more cider producers and wholesalers to enhance our understanding of the segment. Finally, the industry faces constraints in data availability and accuracy, with substantial variations in the numbers and data discovered, thereby posing challenges in obtaining reliable and consistent secondary data.

Despite these limitations, this study contributes valuable insight into the Norwegian apple industry's potential growth, offering a foundation for future research and potential improvements. Exploring the dynamic evolution of collaboration and potential synergies between consumer apple producers and cider producers represents a captivating avenue for future research, encompassing aspects such as collaborative efforts, knowledge exchange, and the conflicts of interest associated with apple varieties. Additionally, delving deeper into the competitive advantage of Norwegian apples as they approach closer resemblance to imported varieties would offer further insight and intrigue.

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Appendix

Appendix 1: Project description of GreenRoad

Sustainable growth of the Norwegian Horticulture Food System – GreenRoad GS35 ("GrøntStrategi mot 2035)

Norwegian title: Økt verdiskaping i norsk grøntnæring - VEIVALG GS35

Relevance to the call

The primary objective of GreenRoad is to deliver knowledge and solutions for increased value creation and sustainability in the horticultural food system in Norway. Results will identify present status, opportunities, bottlenecks and possible transformation paths for the food system towards increased and long-term economic, social and environmental sustainability for the whole sector. The project proposal has been developed in close collaboration with business partners (Bama Gruppen AS, Gartnerhallen AS, Felleskjøpet AS) and a transdisciplinary group of R&D partners representing environmental and social science, economy, geography, ecology, biology, horticulture and food science. GreenRoad will generate knowledge and map the potential for value creation, improved sustainability and circularity of resources used by the food system by firstly, defining and prioritizing areas and regions suitable for production of selected horticultural crops. Factors included in the maps are soil and land, climate now and in the future, logistics, laws, regulations and policy frameworks. Secondly, activities in GreenRoad have a value chain approach from "farm to fork", and will assess sustainable value creation barriers and opportunities at all stages in the supply chain and identify market and policy measures to increase consumption of fruits and vegetables, and also focus on increasing the circularity of organic resources. The project relates to all three of the required thematic areas in the call: climate, environment and health. One recruitment position (PhD) addresses the importance of biodiversity, in this case with a focus on conserving habitats for pollinating insects, for high yields and good quality of fruits. The involved business partners will participate actively in the project. The selected case is on apple fruits and has a "farm-to–fork" perspective. Activities are present in WP1-6. Apple was chosen as it works as a good model for an integrated approach to study the horticultural food system.

Appendix 2: Master thesis description

TASK 4.2 Horticultural value chain and retail market structure

NIBIO: A. B. Milford, A. Prestvik, I. Pettersen, T. Haukås**, R&D partners:** Luke, NOFIMA, BI

Objectives: 1) Identify barriers in communication, transport, storage and retail sales for increased production and sales of fruits and veg, as well as possible remedies, considering growth in digitalisation. 2) Evaluate the effect of the retail market structure on possibilities for supplying high quality, affordable, Norwegian fruits and veg to consumers. Comparison with Finland will be made 3) Identify strategies to increase sales of Norwegian fruits and veg through better shop experiences. **Methods**: 1) and 2) Qualitative interviews with stakeholders in production, wholesale, transport and retail, observation data from retail, analysis of data from horticultural production, import and sales from Norway and Finland. 3) Intervention study in grocery stores with treatment and control groups. **Milestones**: **M4.2.1**: Master thesis (BI) on measures to improve logistical system and marketing strategies for increased sales of Norwegian horticultural products. **M4.2.2**: Scientific paper on retail market structure in Norway and Finland.

Appendix 3: Commercial sales (domestic and import) at wholesale level in Norway in tons (OFG)

	Apple				
Year	Domestic	Import	Total	Kg per capita per year	Average change 2012-2021
2000	8 335	42 089	50 424		
2001	7 451	44 438	51 889		
2002	10 408	42 110	52 518		
2003	7 731	45 531	53 262		
2004	9 533	44 208	53 741		
2005	7 306	50 632	57 938		
2006	9 236	49 613	58 849	12,58	
2007	6 205	55 255	61 460	12,97	
2008	9 204	52 307	61 511	12,82	
2009	6 998	52 026	59 024	12,16	
2010	7 028	52 106	59 134	12,1	
2011	5 254	51 448	56 702	11,43	
2012	5 948	51 259	57 207	11,38	
2013	6 843	50 109	56 952	11,16	
2014	7 698	49 756	57 454	11,12	
2015	5 422	50 022	55 444	10,63	
2016	7 717	47 411	55 128	10,53	
2017	6 909	46 693	53 602	10,16	
2018	7 301	43 740	51 041	9,61	
2019	8 144	44 656	52 800	9,9	
2020	5 768	43 996	49 764	9,3	
2021	9 141	40 874	50 015	9,2	-1,5 %

Appendix 4: production plan for apples 2023, provided by Torbjørn Haukås

gartnerhallen

Oslo/Lærdal, 16.05.2023

PRODUKSJONSPLANLEGGING FRUKT 2023

Bakgrunn

Behovstala som er kommunisert frå Bama for 2023 er det dei meiner dei kan selje til målpris og eit normalt aktivitetsnivå:

- Eple: 5542 tonn
- Plommer: 720 tonn
- Pærer: 127 tonn
- Moreller: 426 tonn

Dette er ein reduksjon i forhold til dei volumtala Bama har kommunisert dei siste 10 åra:

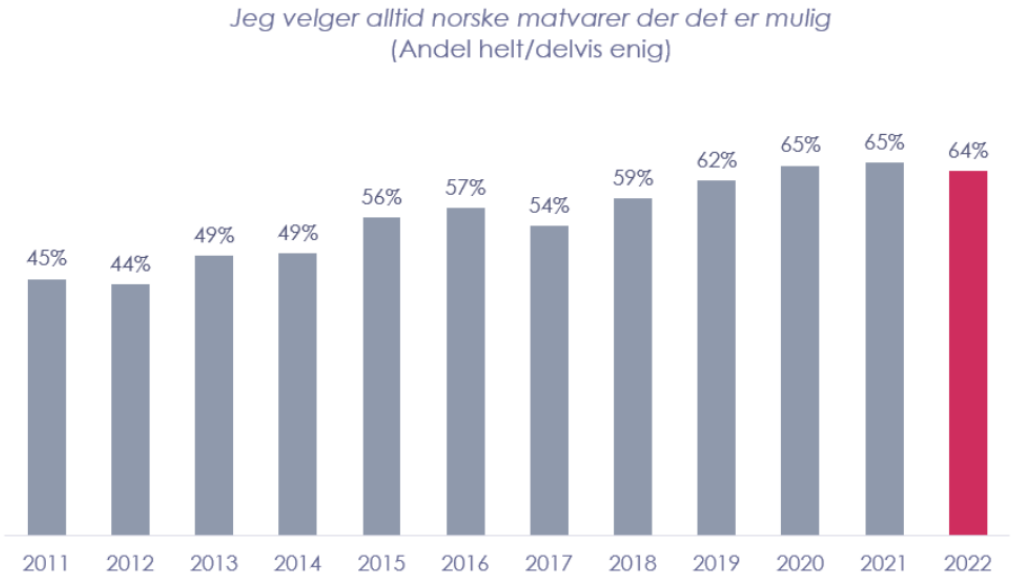
- Eple: 7500 tonn
- Plommer: 1750 tonn
- Pærer: 400 tonn
- Moreller: 650 tonn

Samtidig seier Bama at dei vil prøve å selje alt som vert produsert av norsk frukt, med ambisjon om å oppnå målpris, men at store volum kan krevje aktivitetar og prisreduksjonar.

Dette er prognosen til Bama fram mot 2030:

Prognose/plan	2024	2025	2026	2027	2028	2029	2030
Eple	5541841	5621841	5681841	5981841	6281841	6521841	6521841
Plomme	735000	740000	750000	765000	770000	778000	779000
Pære	155000	160000	165000	170000	175000	180000	185000
Moreller	430000	430000	430000	430000	430000	430000	430000
Totalt:	**6861841**	**6951841**	**7026841**	**7346841**	**7656841**	**7909841**	**7915841**

Appendix 5: Consumer preferanses (Stiftelsen Norsk Mat, 2022)



Appendix 6: Criteria for theory

What	Information
Publication period	- 2010-2023 (Some articles used before 2010 when lack of newer data)
Methodology	- All kinds of methods
Keywords for search	- Norwegian apple industry - Fruit and vegetable + Norway - Fruit + market + strategy - Agriculture + growth - Agriculture + Norway - Green + Norway + growth - Value chain theory - Value chain analysis - Value chain + fruit and vegetable - Value chain + agriculture

Literature	- Academic journals - Review articles - Books - Both Norwegian and international
Journals	- "Web of science" - "Google Scholar"

Appendix 7: Interview guide for intermediaries

Interview guides for intermediaries	
Start	- Can you tell us about yourself and your role?
Value chain	- How is the process of distributing fruit from producers to stores? - What aspects of the value chain are working well? What could be improved? - How do you determine which locations and stores to send the apples? - What is the power dynamic like within the value chain? - How do you decide which apple varieties to focus on, and how is the planning process?
Collaboration	- How is the collaboration between actors in the value chain? - Do you collaborate with other intermediaries in the value chain? - How do you decide who to collaborate with?

Industry	- What are your thoughts on an extended season for Norwegian apples? - What do you think are the most important areas of improvement to increase sales of Norwegian apples?
Consumers	- How is the behavior of Norwegian consumers towards Norwegian apples? - Why are Norwegian consumers willing to pay more for Norwegian apples?
End	- Is there anything else you would like to add on this topic? - Do you have suggestions for other contacts to interview regarding this subject? - Do you have any relevant of data to share with us?

Appendix 8: Interview guide for retailers

Interview guide for retailers	
Start	- Can you tell us about yourself and your role here?
Value chain	- What is working well in the value chain? - What can be improved in the value chain? - How does the sales process of Norwegian apples from producers to your stores work?

	- How is the planning functioning for Norwegian apple varieties? - Is the planning of Norwegian varieties dependent on those produced and imported from abroad? - Which suppliers/producers do you collaborate with? - How are the contracts between you, the producers, and the suppliers?
Collaboration	- How is the collaboration between the actors in the value chain? - Do you collaborate with the producers when determining apple varieties?
Industry	- Who decides how much to import and how much Norwegian apples to sell? - What is the difference in profit between selling Norwegian apples versus imported apples? - Do you import the same quality of apples throughout the year, or does this change during the Norwegian apple season? - Are you interested in increasing the volume of Norwegian apples? - Are you interested in extending the season of Norwegian apples? - How have you worked on extending the Norwegian season? - If you were to suggest ways to increase the sales of Norwegian apples, what would you identify as important areas for improvement?

Marketing	- How do you do marketing of Norwegian apples?
Consumers	- What is the behavior of Norwegian consumers towards Norwegian apples? - Are Norwegian consumers willing to pay more for Norwegian apples?
End	- Is there anything else you would like to add on this topic? - Do you have any suggestions for other contacts to interview regarding this subject? - Do you have anything relevant of data to share with us?

Appendix 9: Interview guide for supporting actor A

Interview guide for supporting actor A	
Start	- Can you tell about yourself and your role in the company?
Company	- How does the company work? - Which suppliers/producers do you collaborate with? - How does pricing of Norwegian apples work? - How does pricing of imported apples work? - What is the basis for pricing new Norwegian varieties? - Are price and volume only recommendations? - What do the chosen prices indicate? - Challenges in the value chain?

	- Do you have any thoughts on how to increase the share of sales for Norwegian-produced apples?
Consumers	- What is the behavior of Norwegian consumers towards Norwegian apples?
Ending	- Is there anything else you would like to add on this topic? - Do you have any suggestions for other contacts to interview regarding this subject? - Do you have anything relevant of data to share with us?

Appendix 10: Interview guide for supporting actor B

Interview guide for supporting actor B	
Start	- Can you tell us about yourself and your role in the company?
Company	- Can you explain how the company works? - How do you work with Norwegian apples? - How have you worked to promote Norwegian apples? Any future plans?
Value chain and collaboration	- What is working well in the value chain for Norwegian apples? - What can be improved in the value chain? - Who do you collaborate with? - How does the collaboration work?

Import	- How do you believe Norwegian apples can compete with imported apples?
Marketing	- How does the marketing of Norwegian apples work?
Consumers	- How is the behavior of Norwegian consumers towards Norwegian apples?
End	- Is there anything else you would like to add on this topic? - Do you have any suggestions for other contacts to interview regarding this subject? - Do you have anything relevant of data to share with us?

Appendix 11: Interview guide for SKP cooperative A

Interview guide for SKP cooperative A	
Start	- Can you tell us about yourself and your role in the cooperative?
Price	- How does pricing of Norwegian apples work on a weekly basis? - What factors come into play when determining the prices? - Do you take into account the prices of imported apples when setting prices for Norwegian apples? - What are the biggest challenges in pricing? - How does the pricing during the extended season work?
Value chain	- Who are you collaborating with in the value chain?

	- How does the collaboration work?
Projects	- Can you tell me about the projects you have been involved in? Are any of them related to Norwegian apples? - If you were to suggest ways to increase the sales of Norwegian apples, what would you identify as important areas for improvement?
Consumers	- How is the behavior of Norwegian consumers towards Norwegian apples?
End	- Is there anything else you would like to add on this topic? - Do you have any suggestions for other contacts to interview regarding this subject? - Do you have anything relevant of data to share with us?

Appendix 12: Interview guide for supporting actor C

Interview guide for supporting actor C	
Introduction	- Can you tell us about your and how you work with apples?
Extended season	- Can you provide information about the consumer survey you conducted on Norwegian apples during the extended season? - What are the major challenges in the value chain regarding the extended season? - How do consumers respond to Norwegian apples outside the traditional Norwegian season?

	- What is required for success in the extended season? - Can you send us the report/findings from the survey?

Appendix 13: NVivo codes

Top-level codes	Sub-level codes
Apple prices	- Pricing
	- Price - Quality
	- Price - Quantity
Norwegian vs. imported apples	- Structure
	- Quality
	- Prices
Projects	- X

Appendix 14: Text Search Query

Word search	Synonyms
Pris*	- Kr/Krone*, penger
Volum*	- Mengde*
Kvalitet*	-
Import*	- Utenland*, internasjonal*
Prosjekt*	-
Kost*	- Dyrt, utgift*