Universitetet i Stavanger

UIS BUSINESS SCHOOL

MASTER'S THESIS

STUDY PROGRAM:	THESIS IS WRITTEN IN THE FOLLOWING SPECIALIZATION/SUBJECT:
MSc. Business Administration	Strategy and Management IS THE ASSIGNMENT CONFIDENTIAL? **Yes**

TITLE:

Can urban farming in southwestern Norway be profitable?

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Abstract:

Commercial urban farming is a common phenomenon in developed countries, and urban actors find numerous ways to utilize vacant land for food-production purposes. One of the limitations of farming in urban environments is land scarcity, and as a result, production volumes are low compared to the rural counterpart. As a result, profit margins tend to be low, and economies of scale are hard to achieve. This requires alternative methods of production and supply. Through alternative food-supply chains, products can be sold directly to the customers, facilitating higher profit margins. In Norway, commercial urban farming is a relatively new phenomenon. There is not a lot of actors as of yet, and information about the topic is scarce.

The purpose of this thesis was to explore whether urban farming in southwestern Norway can be profitable. To investigate the matter, research into business models for urban farming has been conducted, along with studies of alternative short food supply chains (SFSC).
The thesis is a comparative case-analysis of four study objects located in the urban-, and peri-urban areas around Stavanger, operating with various farming activities involving vegetable production. Data was collected through interviews, and results were analyzed in reference to a theoretical framework of urban farming, business models and short food supply chains.
Results from the analysis suggest that given the right circumstances; by producing the right product and utilizing the supply chain most appropriate for the business model and product in question, urban farming can be profitable as long as the Norwegian economy is good.

Preface

This paper presents my master thesis, completing a degree in Master of Science in Business Administration at the University of Stavanger.

I would like to take this opportunity to thank all of my study objects for participating and providing valuable insights into their operations.
I would also like to express my gratitude to my supervisor, professor Jan Frick for his encouragement of topic selection, his valuable inputs, feedback and guidance throughout the process. His constant availability is greatly appreciated.

To my fellow students, for your newfound friendships, support and encouragement throughout these years, thank you!
To my friends and family, who have been patient and supporting me along the way, to my parents, my brothers and their spouses for babysitting in times of need, thank you!

Last but not least; the greatest thanks of all, to my husband and our children. For your patience, constant love and support, Thank you! I would never have been able to do this without you.

Stavanger, June 2019.

Siren Røyrøy Eliassen.

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1. Introduction

Commercial urban farming is a common phenomenon in developed countries, and methods used to find solutions for utilizing vacant land is numerous. Various actors offer a selection of standardized and specialized products, and by utilizing alternative supply chains, the products can potentially sell with high-profit margins (Mincyte & Dobernig, 2016). In Norway, however, commercial urban farming is a relatively new phenomenon, even though conditions are suitable for such initiatives in certain parts of the country. Agriculture, in general, is a challenging task in the northern parts of Norway due to weather- and climate conditions, but the south- and southwest have perfect conditions for growing resilient fruits and vegetables (Wiig & Hansen, 2019). Food awareness and sustainability in food processes is a rising trend, and studies performed by Kawecka & Gębarowski (2015) suggest that customers´ primary motivation for purchasing locally produced food is perceived quality and transparency. This is transferable to Norwegian consumers.

Presently, little research is available about commercial urban farming initiatives relatable to Norwegian conditions. Most case studies performed abroad suggests that only a few initiatives experience rapid growth and increasing profits, while most start-ups only last for a limited time (Stolhandske & Evans, 2016). In order to be able to assess whether urban farming can be profitable in Norway, four farming initiatives located in the urban-, or peri-urban areas around Stavanger, at the Southwest coast of Norway, will be studied with the aim of uncovering how their business model and choice of food supply chain facilitates profit. The study objects will be assessed against relevant theory and each other in order to see whether the initiatives are relatable.

2. Background

Food trends nowadays follow two different paths. On one side, consumers demand easily prepared, processed food products fitting their busy schedules. On the other side, consumers are increasingly aware of what they eat and demand healthy, locally produced food, and sustainable production methods (Valley & Wittman, 2018). Urban farming is the production and cultivation of food products in metropolitan areas (Buehler & Junge 2016). Food production in- and around city centers is not a new phenomenon but has had an upswing in the last decade as a response to urban consumers´ demand. Growing food in urban areas reduces the need for transportation, packaging, processing, and storage, hence contributing to sustainable processes (Pölling, 2016). Urban food production requires alternative distribution channels as most initiatives are too small to fit into traditional food distribution. By utilizing short food supply chains, small and medium-sized actors can gain market access and achieve profits by selling directly to consumers without intermediaries. This allows for a shared value between producers and consumers as producers achieve higher revenue through direct sales than by using intermediaries, and the consumers receive quality produce for a lower price than what they pay in the stores (Galli & Brunori, 2013). In Norway, there is no need for urban farming activities for food purposes, but there has been a rise in commercial urban farms, and several urban actors are joining the trend. Thus far, a lot of start-ups have failed. The purpose of this thesis is to study whether urban farming can be profitable in Norway by looking into four urban-, or peri-urban, farming initiatives, put them in a business model context, and study their supply chain. Criteria´s for the study objects is that their operations are commercial and that they produce their own fruit or vegetables. Actors reselling imported food through short food supply chains have been excluded in this thesis due to the fact that this action makes them intermediaries instead of producers. Farms operating in animal husbandry is not included in the thesis.

3. Theory

3.1 Urban farming

3.1.1 What is urban Farming?

There are several definitions of urban farming, and criteria for what is considered urban farming activities varies. The City of Vancouver describes urban farming as "The cultivation of fruit and vegetables for sale, rather than for personal consumption or as a hobby" (Valley & Wittman, 2018, p.1). According to Pölling, Sroka, & Mergenthaler (2017) urban farming is commercial farming activities occurring in metropolitan areas and at the fringe of (peri-urban) city centers. Although the meaning varies, the essence of commercial urban farming is described by Stolhandske & Evans (2016) as follows:

> *Commercial urban farming represents a grassroots entrepreneurial activity, spearheaded by individuals and groups, who combine the practices of growing and direct marketing fresh food products, in urban spaces for urban consumers. Considered as part of the agricultural renaissance occurring in cities and an example of the incremental shift toward more place-based food systems, commercial urban farming transforms underutilized and unproductive land traditionally zoned for residential, commercial, or institutional use into intensive food-producing spaces. (p. 29)*

Vegetables grown in and around the city requires minimal transportation. The food is supplied directly to consumers within a short amount of time after harvest, eliminating the need for additives and packaging in order to keep the produce fresh for a longer time. It requires less energy in terms of cooling, handling, and storage. Producers are generally conscious of using environmentally friendly production methods, which, for the most part, eliminates synthetic fertilizers and the use of pesticides (Mincyte & Dobernig, 2016). The value of combining agri-food systems with the urban setting is starting to become acknowledged by policymakers, and urban farming is already an integrated part of the city and is part of the city´s social and cultural life, its economy and metabolism (Lohrberg, Lička, Scazzosi, & Timpe, 2016). Non-traditional and underutilized areas within the urban city boundaries, such as rooftops, walls, vacant lots, parks, and pavements are being used by commercial actors to provide locally sourced produce to individual consumers, institutions, restaurants, etc. (Valley & Wittman, 2018).

Urban farming is a good complement to rural agriculture as it can supply highly perishable products, specialty products, and products that for other reasons require minimal handling and rapid delivery after it has been harvested (RUAF Foundation, 2014). Economies of scale are mostly achieved by rural agriculture as urban farms often have limited space and capacity for their activities. Instead, urban actors can adjust to urban demands by offering high-value products and niche products it would be hard or even impossible for rural actors to manage. Urban farming is utilized not only for food production, but also related recreational experiences and education, allowing urban actors to link services to their production in order to reach a larger consumer group and hence profit from the proximity to the city. Urban farmers use different marketing approaches outside the traditional supply chains to reach consumers, as "cities offer favorable conditions for direct sale or other short supply chains, eliminating additional intermediaries" (Pölling, et al. p .168., 2017).
Urban farming initiatives are run by private individuals, institutions, municipalities, non-profit organizations, etc. The commercial urban farms may also initiate non-profit operations such as educational activities and hiring at-risk youths or people who are struggling to participate in the traditional job market (Mincyte & Dobernig, 2016).

3.1.2 Why urban farming?

Urban farming is a reaction to today's industrial agriculture and is a back-to-the-roots movement where urban actors start to utilize available land in and around city centers to produce food (Urban Plantations, 2016). Another contributing factor is the environmental aspect of today's global food economy, which makes "food from anywhere available everywhere" (Stolhandske & Evans, 2016, p.31). There is an increasing desire by consumers to know where and how their food is produced, seeking food sourced from local farms known to practice sustainable food production. Products grown locally and sold through short food supply chains offer transparency, which is important for consumers (Wiig & Hansen, 2019).

Traditionally, urban farming has been a recurring necessity during the last century for citizens to have access to certain types of food, generally peaking during wartime or at times of economic recession. Even though urban farming has had an upraise in the last decades, the movement has become apparent recently after the financial crisis in 2007. The difference this time is that the motives appeared to have changed from an actual need for fresh food to urban sustainability, environmental issues, and social justice (Mincyte & Dobernig, 2016).

Producers report different motivations for being involved in commercial urban farming. Some bring up lifestyle choices and that working close to home provides more available time, others highlight autonomy of work schedules and self-employment. Environmental issues and positive contributions are typical motivations for many urban farmers, and it provide an alternative for city dwellers to get in touch with nature (Mincyte & Dobernig, 2016).

3.1.3 Three policy perspectives on urban farming: "triple-bottom line perspective"

Urban farming is associated with sustainable food production, which means to meet the demands of today without compromising the needs of the future. In order to be sustainable, producers need to consider the triple bottom line; people, planet, profit (Heizer, Render, & Munson, 2017).

People: Producers need to consider how their production affects the people involved. The fundamental idea of urban farming is to provide healthy, fresh food to consumers at affordable prices. In addition, the social perspective relates to people who experience self-achievement by getting in touch with nature through urban farming. This can be city dwellers joining in community gardens or pick-your-own fruit and vegetable concepts, institutional farming in medical institutions, or recreational farms. Urban farming can have a substantial social impact on individuals and the community (RUAF Foundation, 2014). Better health through increased consumption of fruit and vegetables, increased well-being, engagement of at-risk youths, community coherence, increased urban biodiversity, greening of the city, better food knowledge, job creation, and job-training programs are among the reported benefits of urban farming (Valley & Wittman, 2018).

Planet: Urban farming actors put focus on environmental management in food production. This can happen through recycling and composting, re-use of organic waste, rainwater, and municipal wastewater, no-car deliveries, or the like. There are several environmentally friendly alternatives farmers can use production and supply of products. Farming activities, both production and recreational, within a city keep areas from being used to construction. Greening of the cities is thought to improve the urban climate by potentially regulate city temperatures (RUAF Foundation, 2014). Food waste is an environmental issue. Locally produced food can reduce food waste as it requires less transportation and time between harvest and consumption (Urban Plantations, 2016). Through the elimination of pesticides and synthetic fertilizers in production, manufacturing pollutants are reduced, and by reducing transportation, packaging, processing, and storage, urban farming activities contribute to a reduction of greenhouse emissions (Urban Plantations, 2016). Several of the

techniques used by urban farmers reduce the need for water, which is a scarcity in many countries. The reduction of water usage and re-use of municipal wastewater and collected rainwater is environmentally friendly (RUAF Foundation, 2014).

Profit: Producers need economic sustainability in order to have social and environmental sustainability. Commercial urban farms can be run by private investors or larger producer associations and can be both small scale enterprises and large-scale farms. The farms cooperating with other businesses supplying inputs, processing, and marketing often have higher profitability than other small-scale urban farms (RUAF Foundation, 2014). Urban farming contributes to the development of the local economy by creating jobs in and around the city. Waste can be reduced due to the fact that produce can be harvested when it is demanded, allowing producers to utilize just-in-time principles. Waste reduction is cost-saving, hence potentially increasing profit (Urban Plantations, 2016).

3.1.4 Benefits and challenges

One of the main challenges is the lack of public vacant land in the cities (Stolhandske & Evans, 2016). Larger urban farming enterprises face profitability challenges because of high labor costs, capital-intensive production and costs of owning or leasing property, while at the same time trying to produce sustainable and affordable food for consumers and achieve livable wages (Valley & Wittman, 2018). Urban farmers are most often unable to achieve economies of scale, and labor costs tend to be higher in small-scale initiatives than in large-scale rural enterprises, resulting in prices and marketing strategies aimed at high-income customers and recurring customers, such as restaurants, in order to finance operations, moving away from the initial motivation of most urban farming initiatives (Valley & Wittman, 2018). Urban farming contributes to an improvement of biodiversity and greening of the cities by taking advantage of under-utilized spaces to produce food close to home, simultaneously having the potential to create green jobs and thereby enhancing the local food economy and shorten traditional food supply chains (Valley & Wittman, 2018). Local food networks provide a separate niche in which small-scale urban farmers can achieve profitability, and where large-scale global actors cannot compete (Stolhandske & Evans, 2016).

3.2 Food Supply Chains

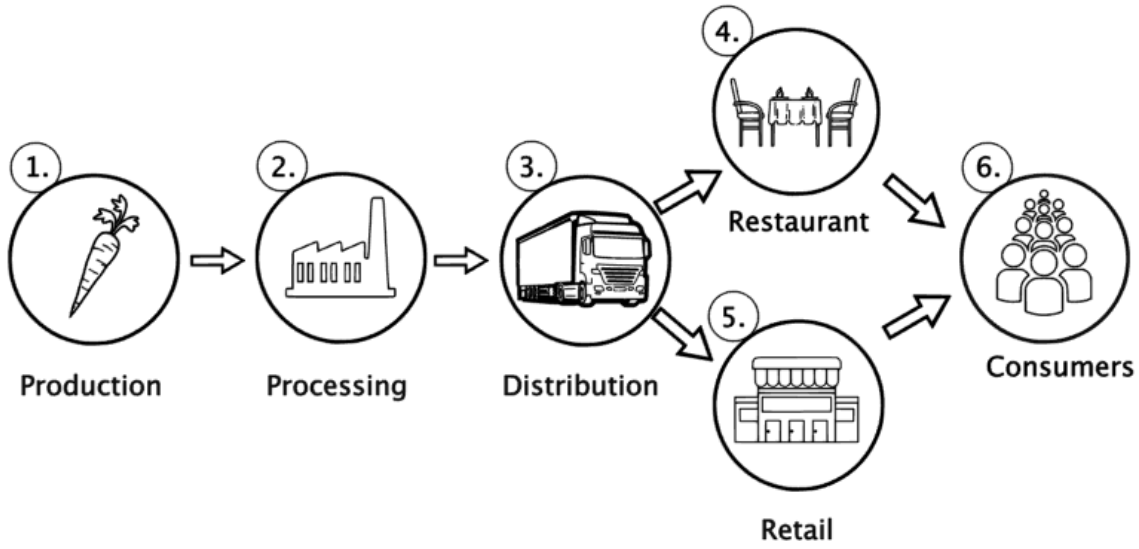

Figure 1: Traditional food supply chain.

Simplified illustration, as the chains can be shorter, longer or have additional outputs as well. This is one most suitable for this paper. (Personal illustration.)

3.2.1 Traditional Food Supply Chains

Kawecka & Gębarowski (2015, p. 459) describes the supply chain as
"a group of organizations jointly executing the actions necessary to meet the demand for certain products in the movement of goods throughout the chain – from sourcing raw materials to delivery to the final recipient." Producers and consumers are separated through a chain of manufacturers, distributors, and retailers. Relevant activities include product- and service development, production, sales and services, distribution, support, and management, among others (Euractiv, 2018). The power structure in traditional food supply chains is asymmetric, and the producers and consumers are detached from one another (Åsebø, Jervell, Lieblein, Svennerud, & Francis, 2007). Supermarket food is often characterized by standardized low price products with long production lines located far from the consumers, and they are dominated by a few powerful industrialized actors, benefiting from economies of scale (Engelseth, 2016). Small and medium-sized actors find it hard to negotiate against wholesalers, food processors, and retail chains, as they often provide the producers only market access. Their main problem, according to Michalopoulos (2018, p. 5) is "low prices

imposed within a value chain dominated by oligopoly and the lack of profitability of their work." In addition, governmental food production subsidiaries are most often distributed between producers based on hectares used in production, further indiscriminating small local, urban and, peri-urban actors (Michalopoulos, 2018). It has been ascertained that traditional food supply chains are "rarely to the advantage of the farmers" (Staes & Heubuch, 2018, p. 5)

3.2.2 Short Food Supply Chains (SFSC)

Because of the imbalance in power distribution, short food supply chains play an important part in today´s food supply networks as a parallel to the globalized long food chains we are custom to (Galli & Brunori, 2013). SFSC focuses on supporting local food production, sustainability, transparency and close, personal interaction between producers and consumers, (Sellitto, Vial, & Viegas, 2017) in sharp contrast to the detachment between the two in traditional wholesaler culture (Åsebø et al. 2007). It significantly reduces the number of intermediaries in the supply chain, and facilitates new direct marketing channels, making it a competitive tool for those without power, such as small and medium-sized actors with limited access to conventional channels (Nazzaro, Marotta, & Stanco, 2016). Through SFSC, they have an alternative outlet for their products where they can sell their products directly to consumers, making them less dependent on the big actors in traditional value chains. SFSC also provides an opportunity to offer small, inconsistent quantities and specialty niche products to a market of interested consumers. The established SFSC´s facilitates low entry- and set-up costs for the producers (Galli & Brunori, 2013).

3.2.3 What is a SFSC

There is no formal definition of SFSC and what local food is, as "short" is often a subjective opinion referring both to physical- and social distance (Galli & Brunori, 2013).
Social distance describes the number of intermediaries between producer and consumer. SFSCs is characterized by zero- or a few intermediaries, but no more than two. Short social distance enables direct communication in the supply chain. Transparency is important and allows producers to provide good information and receive instant feedback from customers. Personal relationships between producer and consumer facilitate the possibility of achieving mutual knowledge and trust, shared values, and balancing of power between the two. This, in

turn, reduces the need for formal acknowledgements or proof of food quality as the actors know and trust each other (Galli & Brunori, 2013).

Physical distance refers to the distance a product has to travel from production to sales, also called food miles. The definition of short is relative to the context in each location. A short distance in one country is not the same in another, and there will be contextual definitions (Galli & Brunori, 2013). " ... Short is first of all perceived as something that is comparatively close physically and/or located and grown in a certain region or a locality." (Galli & Brunori, 2013, p.4).

Some authors narrow the supply chain down to a maximum number of operators, while others claim that distances and intermediaries are irrelevant, what matters is transparency and personal interaction between producers and consumers (Marsden, Banks, & Bristow, 2000). A common assumption describes local producers as being small to medium sized within a certain geographic area with limited market size, using natural ingredients and sustainable practices in the production (Kawecka & Gębarowski, 2015). The growth in SFSC in recent years is attributed to increased customer preference and demand for local products, and a growing interest from both the public and the policymakers. SFSC is a distributive model that provides fresh food of high quality, nutritional value, and variety to consumers while consumers support local food production. It can also be utilized to actively shape and support jobs in the local region (Migliore, Schifani, & Cembalo, 2014).

Sustainability

The short distances in SFSC are believed to have favorable impacts on sustainability. A products nutritional quality and the safety of a food product are affected by numerous factors in the production chains, such as harvesting, processing, means of storage and transportation. The availability of safe and nutritious food is essential for people's health and wellbeing. The proximity to consumers allows SFSC to offer a wide variety of fruits and vegetables, contributing to balanced diets and food security (Migliore et al. 2014). The availability of personal information and transparency in the supply chain is contributing to increasing consumers´ knowledge of and access to healthy food (Perrett & Jackson, 2015). Environmentally, SFSC is not automatically more friendly than the traditional food chains; however, they are advantageous as shorter distances reduce emissions, less packaging is required, the need for preservatives and extensive processing is removed or greatly reduced, and the short time between harvest and sales results in less spoilage and nutrient loss. There

are quality standards that need to be met in food production. 2/3 of all fruits and vegetables produced is disposed of in manufacturing or retail because it is not fulfilling the required standards. SFSC´s contributes to a reduction in food waste as it provides consumers with knowledge (Galli & Brunori, 2013).

Critical success factors

SFSCs are in constant competition with supermarket chains, and these have also seen the benefits of offering locally grown food (Galli & Brunori, 2013). Based on literature review, Sellitto et al. (2017) presented a list of what is believed to be critical success factors in the implementation of SFSC. These include environmentally friendly operations, the specificity of territorial brands, direct and ethical relationships between producers and consumers, food safety and traceability, cultural heritage, consumers´ health, origin identification of products, local work, cooperation and pride. To successfully implement SFSC, producers need procedures focusing on locality and enhancing value creation (Sellitto et al., 2017). SFSCs provides information about products´ place of origin, and the transparency provides social relationships, information about price and quality of products, freshness, use of additives in production and other product information. According to Lombardi, Migliore, Verneau, Schifani, & Cembalo (2015) consumers in SFSCs has wider appreciation and understanding of local production, food quality and the impact of production on social, environmental and ethical issues. This knowledge and the added value achieved through personal interaction between the producer and consumer is believed to increase their willingness to pay, resulting in fair wages for the producers (Nazzaro, Marotta, & Stanco, 2016).

3.3 Business models

Definition: “A business model describes the rationale of how an organization creates, delivers, and captures value” (Osterwalder & Pigneur, 2015).
The business model describes how a firm can translate ideas and operations into money, based on the business´ existing capacity and competencies. The business model provides a foundation to evaluate how a business should operate, how to utilize its abilities, and whether it can be financially viable. The business model must be based on actual competence and reflect the business´ dynamics. It is meant to answer questions such; “how can operations be profitable?”, “what does it take?”, and “can we achieve revenue growth and sustainable income?” (Newth, 2012). The profit formula of the business model is made out of revenue, cost-structure, and profitability. Revenue streams describe how the business receives its revenues. Revenue streams can, for instance, be product based, service-based, on a subscription basis, transaction-based, etc. Cost-structure is based on actual existing competencies and the business value chain. The business´ cost-structure can be cost-based; focusing on lowering costs in all aspects of operations, or value-based; recognizing costs as a contribution to value creation. Typical costs-structures are fixed costs, variable costs, related to economies of scale, or achieving synergy effects. Profitability is a result of combining revenues and costs. Revenue depends on market demand for its offerings. When revenue exceeds costs, the business is profitable. The business´ profitability or deficit is proof of the business model´s financial viability or non-viability (Newth, 2012).

There are several tools businesses can use in order to comprehend business models. One such tool is the “Business Model Canvas”, developed by Osterwalder and Pigneur (2015). The canvas is a framework to be used as a tool to resolve and understand business models. It consists of nine interrelated components that combined amount to the firms business model.

The nine components are divided in the canvas. External factors are located on the right side, including value proposition, customer relationships, and customer segments. Internal factors are located on the left side, including; partners, activities, and resources. In the middle is the business value proposition. The economical components; revenue streams, and cost structure are placed at the bottom. The interrelation between the components in the canvas creates the business model (Osterwalder & Pigneur, 2015).

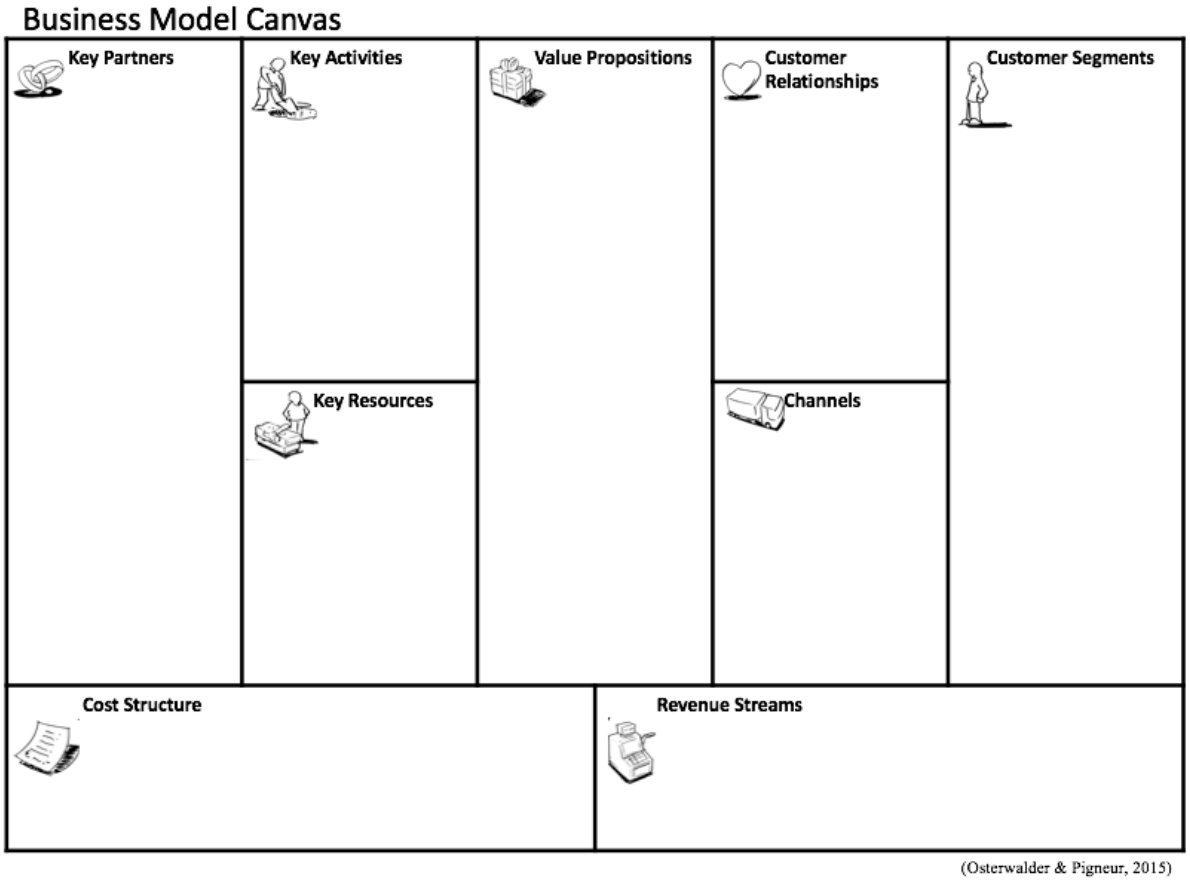

Figure 2: Business Model Canvas

The canvas is easy to use and visualizes all aspects of the business. By placing the various activities in the designated boxes, the business can express its key-dimensions in few words, hence the overall operations are presented on one single page. The simplicity makes it easy to revise and update the model, and ease the process of evaluating possible change (Osterwalder & Pigneur, 2015).

4. Method

4.1 Basis of the thesis

The objective of this thesis is to research whether urban farming can be profitable in southwestern Norway. The research is conducted through comparative case analyses of four farming operations located in the urban-, and peri-urban areas around Stavanger, at the southwestern coast of Norway. Temperatures and tidal currents create ideal conditions for the production of resistant sorts of fruit and vegetables, and the region provides the first ripe vegetables every year. As a result, there is a lot of agricultural production and rural farms in the area.

To be able to study urban farms among the rural activity, the first step was to determine what could be defined as urban farms, and what kind of processes was related to urban farming. Once this was established it was possible to start searching for potential objects to study.

In order to select study objects for the case research, potential candidates had to comply with the following criteria´s:

i. The object fit under one or more of the farm types covered in chapter 5.1.
ii. The object is not operating in animal husbandry or animal products.
iii. The objects produce their own fruit or vegetables.
iv. There is no import or re-selling of other producers´ products.
v. Farming is commercial.
vi. The object is not a wound up or failed project.

The search for study objects proved difficult as there are few urban farms as of yet, most of the projects had little-to-no marketing, and potential candidates were often found by chance or as a result of word-of-mouth. The search for- and screening of potential candidates resulted in the selection of four candidates. The chosen study objects are by no means similar in the way that they can be directly compared to each other, but the nature of their operations serve to illustrate similarities and differences.

4.2 Research design

Research design presents the framework of how data is collected and analyzed.
Generally, there are two main approaches; quantitative- and qualitative approach.

Quantitative research methods are appropriate when working with quantifiable data, and when well-established theories already exist (Kvale & Brinkmann, 2018). Qualitative research is an appropriate approach when one wants to gain deeper insights into the studied phenomenon, and when there is little data or knowledge available (Aase & Fossåskaret, 2018).

The theory describes three types of research designs; descriptive, exploratory and explanatory. Descriptive design is concerned with studying the frequency of events and how variables relate. Explanatory design conducts and studies experiments in order to determine cause-and-effect. The exploratory design emphasizes the discovery of new insights and ideas emerging along the way (Iacobucci & Churchill, 2015).

Urban farming is a relatively new phenomenon in Norway, hence there is little-to-no empirical literature available. This fact, combined with the thesis´ objective, suggests a qualitative approach. As the purpose is to gain knowledge into a fairly unknown phenomenon, an exploratory process is necessary. The exploratory design means that the path is created as new insights emerge.

The thesis´ objective is to study whether urban farming can be profitable in a certain area, which means answering "how" and "why" questions. According to (Yin, 2018), social science research methods answering these research questions is experiments, history and case study. As there is little prior literature, the history approach is excluded. Conducting experiments is not a suitable approach for this objective, hence leaving a case study as the appropriate alternative.

An exploratory case study involves a focused study of the case in question in order to gain insights about a phenomenon (Iacobucci & Churchill, 2015). Case studies can be single-case studies or multiple-case studies.
To best suit the purpose of this thesis, a comparative analysis of a multiple-case study is conducted. By studying more than one object, the thesis provides the potential for analytical benefits as the study objects are likely to vary from one another, providing a wider set of results. Another reason for choosing to study multiple cases is that it provides a better chance of receiving a useful result if one of the study objects falls through.

A negative profit in a study-object will provide an altogether different conclusion for the thesis if this is the sole study object, as opposed to it being one of several.

Some scholars claim that exploratory strategies are threatening validity, while others emphasize the flexibility that allows the processes to be mobile. It is not always appropriate to have a pre-designated destination (Kvale & Brinkmann, 2018).

4.3 Data collection

The data collection for the thesis consists of primary data and secondary data.

4.3.1 Secondary data

Secondary data is collected and analyzed by others at an earlier stage, originally intended for other purposes (Aase & Fossåskaret, 2018).
The secondary data used in the thesis mainly stem from literature research, peer-reviewed articles, scientific journals, and reports. The literature used in the thesis reflects the general characteristics of urban farming, business models, and short food supply chains (SFSC). It has proven hard to find useful articles using keyword searches in databases, and as a result of this, backward snowballing (Engelseth, 2016) have been utilized extensively.

4.3.2 Primary data

Primary data is collected by the researcher, directly from the primary source, with the intention of providing answers to the objective of the thesis. The data is typically collected through interviews, experiments, surveys or observations (Kvale & Brinkmann, 2018).
In this thesis, the method of choice is interviews as it is seen as the best option to collect useful data. The information sought from the interviewees is qualitative data based on their experience from- and first-hand knowledge of their own farms and operations.

Interview objects

Based on the criteria´s listed in chapter 4.1, the search for urban farms in the region resulted in four study objects. All four businesses responded positively interview-requests.
The respondents were all willing to participate, but they have busy days and limited time available, so some of the interviews were conducted fairly late in the process, and mainly based on recurring reminders from the interviewer.

Even though it was not one of the criteria's, there was an initiate, genuine desire to find study objects that could represent each of the business models described in chapter 5.3. The reasoning behind this is that it would present an opportunity to research the possibilities that exist in each channel, combined with the curiosity of what kind of businesses choosing to utilize the various channels.

Interview guide

The study objects are different from one another in all aspects of operations; therefore, it would not have proven purposeful to develop a standardized interview guide. Each interview has its own individually developed interview guide. The question topics are related to products, processes, supply chains, general finances, and individual questions relating to operations. Semi-structured interviews are not required to follow the interview-guide closely, one is allowed to proceed as seemed appropriate. The guide worked as a way to keep the interviewer on topic.
The interview-guide developed for the e-mail interviews is similar to the in-person interviews, as the interviews were initially intended to be in person but changed by the interviewee as it was the best alternative for them. To account for losing the ability to dictate the desired direction, and the ability to clarify if questions were incomprehensible, the questions sent per e-mail were added potential follow-up-questions for clarification purposes.
(See appendix 1, 3, 5, 7, 9.)

Interview-execution

Interviews performed can be structured, unstructured or semi-structured.
Semi-structured interviews are conducted in accordance with an interview guide containing topics to discuss, and questions the interviewer wants to ask, but the conversation is open to changes in succession or wording, and the interviewer can ask follow-up questions and follow new leads is it suits the purpose (Kvale & Brinkmann, 2018).

Three of the interviews are conducted in-person, at the study object´s facilities. In addition to facilitating good, personal communication between the interviewer and the interviewee, the possibility to receive a guided tour in the production area and make visual images provided a deeper insight into the further conversation. Once present at the business´ facility, some of the prepared questions proved unnecessary while other questions emerged as the interviews went

along. The interviewees were encouraged to speak freely, but due to the nature of the interviews, they appeared to prefer to be initiated by questions. Interview number one and three (Table 1) did not entail time-limitations, while number two only had one hour available, causing the interviewee to rush.
Two interviews were conducted via e-mail. This was interview number four, and a follow-up interview after interview number one. They were changed because of time limitations for the interviewee.

The interviewees were told beforehand about the topic of conversation. They were open to most questions but became evasive and reluctant to provide detailed information about general questions regarding finances, even though these were meant to be answered qualitatively, not quantitatively.

	1	2	3	4
Study object	Smågrønt	Miljøgartneriet	Victoria Hotel	Stavanger airport
Interviewee	Kamil Slowik	Kåre Wiig Simon Hansen	Kristine Aukland	Ingvald Erga
Title	CEO	CEO/ Production manager	Chef	Environment manager
Location	Stavanger	Nærbø	Stavanger	----------
Date	01.02/14.05.19	29.04.2019	28.05.2019	10.05.2019
Type of interview	In-person e-mail	In-person	In-person	 e-mail
Duration	01:04	00:54	01:14	

Table 1 - Overview of conducted interviews and study objects

Transcription:

Two of the interviews were recorded and transcripts were written shortly after. One of the interviews was hand-recorded in detail, and an interview summary was developed immediately after the interview was conducted. (See appendix 2, 6, 8.)

4.4 Analysis

Hermeneutics is the study of interpretation of texts. The purpose of the interpretation is to obtain a valid understanding of what a text means. Hermeneutic interpretation claims that a text is understood through an intuitive understanding of a text as a whole before individual

elements of the text is interpreted separately before it is all put back together to create a wider understanding of it all. The fourth principle of hermeneutics tells us that a text should be understood from its own frame of reference (Kvale & Brinkmann, 2018).

The results from the interviews were interpreted individually once all the primary and secondary information was obtained. The results are found in chapter 5.5. The primary information was put into the context first created by the secondary information. In order to put the received information into context, a synopsis of the interview was transferred into Osterwalder & Pigneur´s (2015) business model canvas. This canvas provides an overview of the businesses inputs and outputs, supply chains, cost-, and revenue-structure. The business model canvas was used in the following analysis to define the appropriate business model for each of the study object. It provided information enabling individual analyses of urban farming concepts and utilization of supply chains. For study object one, the information achieved formed the basis for performing a profit analysis.
Such an analysis was not performed for the other study objects as a result of the information obtained, but the collected data provided insights into factors affecting cost-, and revenue-structure, hence facilitating educated assumptions of potential profit opportunities. Once these analyses were established for each of the study objects, the foundation for a comparative analysis was set. The findings in study object one were supplemented with tangible evidence. In other words, I have used tools within quantitative theory, which are measurable, tangible evidence to support the validation and reliability of the findings. (chapter 5.5.1 and appendix 11).

4.4 Validity

The research method for this thesis was a comparative study of four urban farming businesses operating in urban and peri-urban areas around Stavanger, located on the south-west coast of Norway. Based on the literature review, objects fitting the criteria´s for urban farming were evaluated according to what type of urban farm it was. Potential candidates were excluded in the selection process if their operations involved animal husbandry, animal products or imported food.

Research design: The results of comparative case analysis can often not be generalized and is therefore not necessarily transferable to other similar cases. The collection of data is a result of in-person, and e-mail interviews. One of the benefits of in-person interviews is that they

are flexible, and the interviewer is able to elaborate on the questions if necessary. This is also the case for the interviewee. Potential drawbacks of personal interviews can be the personality traits of either interviewer or interviewee (Kvale & Brinkmann, 2018).

Data collection:

The secondary data collected was generally peer-reviewed scientific reports that have been subject to reviews from experts and scholars prior to being published, thus being a good account for its reliability.

The primary data was collected directly from the source:

Sampling: There is a limited number of urban farms available in the area, and they had to fit certain criteria´s in order not to be excluded as potential study objects. At the same time, I was actively looking for diversity in candidates, this makes the sample not random, and sampling errors may therefore occur.

Interview: The interview as a research method is not considered to be valid. As the interviewees are free to answer as they see fit, the information may be false or untrue. Even though the information is false, it may be what the interviewee believes to be true, which in turn is also telling for the person. The interview allows the study object to share what fits their objective, accentuate themselves and their motives (Kvale & Brinkmann, 2018). The answers received from the interviewees was sometimes notably colored by their personal opinions, however, the results achieved through the personal interviews emphasize key characteristics of the literature, hence, affirming the general literature presented throughout chapter 3 and 5. The personal interviews did provide a wider understanding, and more detailed and useful information was received through these interviews than what was received through the e-mail interviews. A noticeable drawback in the e-mail interviews is the fact that the message sometimes is not perceived as conveyed, hence providing different answers than intended. The interviewee is also able to choose their own interpretation and also choosing which questions to answer and which not to answer. The preferable alternative would be to conduct all interviews in-person, but that was not possible due to the limited time available for the interviewees. Follow-up interviews with all the objects after analyzing the results would also have been useful to provide deeper insights.

5. Analysis

The following chapter will start by presenting various types of urban farming, short food supply chains, and business models. The latter part of the chapter contains case-study presentations, comparative analysis and final remarks with a summary of the similarities and differences between the studied objects.

5.1 Types of urban farming:

Urban farming, in general, is characterized by land constraints. In order to be able to produce food in and around the cities, urban farmers look for suitable growing techniques and alternative space utilization (Buehler & Junge 2016). The following will present some of the most common types of urban farming.

5.1.1 Vertical farming

In vertical farming, crops are grown indoors in a controlled environment. It can be grown in small or large scale, in containers, new buildings, greenhouses, existing commercial buildings and the like. By using led-technology alongside technology such as hydroponics, aeroponics or aquaponics, actors can avoid seasonal farming challenges and achieve year-round production under ideal growing conditions, and thus facilitating the maximization of yields. Due to the indoor location and rigorously controlled conditions, the produce is less prone to challenges in traditional farming, such as crop illnesses, weather conditions, pests, etc.
The benefits of the process of urban vertical farming, if done correctly, is that it uses significantly less water than traditional farming systems, it produces less waste and requires less transportation, thereby reducing carbon emissions (Despommier, 2009).

> *Hydroponics:* In hydroponic systems, plants are grown directly in a solution made of water and plant nutrition. It is typically grown without soil. This allows the roots to have access to the nutrient solution and oxygen at the same time, giving optimal growing conditions. As a result of being directly in contact with water, nutrition, and oxygen, the plants don't have to expand its root system the same way as it would need if grown in soil, and its efforts are therefore directed at growing the plant itself. If done correctly, the maturity phase of the plants is significantly faster, and the plants will grow bigger. Due to the hydroponic system being enclosed, the water evaporation

is lower, thus less water is being used in the system (Fullbloom Hydroponics, 2011). In today's commercial urban farming, hydroponics is viewed as the key technology for food production, and in theory it can be used to grow almost anything, but it is best used to grow leafy crops, vine crops and herbs due to the space necessary to grow root vegetables, fruit or cereals (Buehler & Junge 2016).

Aeroponics: An aeroponic system is a hydroponic method where the plant roots are suspended in the air and exposed to periodically mists of nutrient solution in one end, either by spray directly at the roots or by fog, and light at the other end. The plant roots are held together by pieces of foam. The roots are continuously exposed to oxygen, resulting in faster growth. Aeroponic systems are water efficient, and closed-looped, which allows for the nutrients used in the water to be recycled. The system allows small spaces to produce large quantities of plants (Barth, 2018). In theory, anything can be grown in an aeroponic system, but it is primarily used to grow herbs, leafy greens, tomatoes, cucumbers, and strawberries. An aeroponic system is also well suited to grow root crops (Barth, 2018).

Aquaponics: Aquaponic systems combine fish raising (aquaculture) and hydroponics in an integrated system. Plants get nutrition from fish waste and filter the water so that it does not become toxic for the fish to live in. This way the fish and plants can live of each other, creating a natural eco-system. The combination of hydroponic and aquaculture is thought of as getting all possible benefits from each system while eliminating the individual systems disadvantages. The fish is fed with inexpensive feed and waste from the vegetables grown in the system, and the fish waste is used as nutrition and food for the plants. The system requires intense monitoring at start-up, but once the system is established, it only needs systematic or sporadic ammonia- and PH-level checks. Aquaponics allows for growing large amounts of plants on limited space and is good for growing crops that don’t need support to grow, like leafy greens and strawberries (The Aquaponic Source, 2019).

5.1.2 Rooftop farming (open air)

Rooftop farming is moving the traditional rural food production on top of roofs of existing buildings. It is challenging and requires knowledge on how to select the right crops, planning seasonality, how to handle pests and other obstacles typically occurring in traditional farming (Piezer, et al., 2019), in addition to its own characteristic challenges (Specht, et al., 2014), therefore these farms often need to be run by professional actors and be commercial operations. The right crops to produce in open air depend on the farm's location, but, in general, the crops selected must be more tolerant of weather conditions than crops produced indoors. In any case, open-air farms typically enable farmers to produce a wide selection of products, and they can quickly adapt to customer demand (Piezer, et al., 2019).

5.1.3 Rooftop greenhouse farming

There are two approaches to rooftop greenhouse production.
The first approach is to have production in greenhouses specially adapted to be on rooftops. Production is based on traditional agricultural greenhouse farming. The second approach is to combine commercial greenhouse and vertical farming, either on a rooftop or build into the sides of new tall buildings, called “Farmscrapers” (Coulter, 2014). Urban greenhouses using the second approach often use hydroponic methods, and therefore also produce the same types of vegetables as other hydroponic actors, such as leafy greens, vine crops and herbs (Specht, et al., 2014).

5.1.4 Edible walls and landscaping

Edible walls are vertical gardens growing on buildings´ surfaces, utilizing the verticality of cities (Benvenuti, Malandrin, & Pardossi, 2016). Edible walls, vertical gardens, living walls or green walls are often used as part of community gardens, social enterprises, private residences, etc., but it can also be used commercially. Edible walls can be both inside and on building surfaces. If placed outside, conditions such as temperature, exposure to sunlight, shade, and wind must be considered regarding the selection of plants (Growing Green Guide, 2014). Gravity limits what can be grown on walls, but it has proven to be good for food such as vine crops, beets, carrots, melons, leafy greens, etc. depending on natural conditions at the location of production. There are many ways of building edible walls, but a lot of them are made from aluminum or stainless-steel systems, either free-standing or mounted to the walls,

in which case, if necessary, with a water-proofing barrier between the wall and the system (Ogul, 2012).

5.1.5 Peri-urban farming

Peri-urban areas are areas at the fringe of the inner cities. As cities expand, the rural areas surrounding them are integrated into the urban regions, open spaces are converted into urban purposes, urban and rural living is intertwined, leading to the establishment of peri-urban areas. As a result, the farmers in these areas adapt their farming activities to benefit from the new conditions. The proximity to consumers gives the farmers a unique possibility to have personal interaction and create direct relations to their customers. In addition, being so close to urban areas allows them to identify and exploit niche markets, innovate and react to market demands. Peri-urban farmers can benefit both from the rural and urban elements available in their proximity (Zasada, Fertner, Piorr, & Nielsen, 2011).

5.1.6 Community gardens/ Traditional gardens backyard gardens

Apart from hobby farmers and people gardening in their own backyards for personal consumption, there is also commercial backyard farming. This type of urban farming is most often small-scaled and managed by individuals or small groups, producing food in residential areas, such as their own, or others´ backyards. This farming is mostly open-air or in a greenhouse, its seasonal, and what crops can be grown depends on the climate (Stolhandske & Evans, 2016). Community gardens are located on land owned by the municipal, churches, schools, or government. Users are given permission to utilize this land, and they can grow food and do gardening activities. The users share the land and are all responsible for looking after it. Community gardens are often non-profit initiations, managed by individual societies and a coordinator. These gardens are visible urban farming activities and are valuable in building communities by facilitating citizens within surrounding areas to come together to grow food and be educating in gardening and food production. The produce from these gardens is often given to community kitchens and charitable organizations and amongst the participants. Allotment gardens is another type of community garden in which the users have their own designated plots where they are responsible for their own production and harvesting (Valley & Wittman, 2018).

5.2 What is possible in our Nordic climate?

Growing food in Norway can be challenging compared to countries in a warmer climate, but there are a lot of fruit and vegetables perfect for growing on the southwest coast of country. The challenge of growing vegetables outdoors is seasonal changes. Fruit and vegetables can only be grown during a few months in the summer because of cold weather and sun conditions. Further north it can be challenging to grow anything at all. Outside farming also requires another type of maintenance. The produce needs more time to grow, it requires a lot of working hours and the size of productions varies with conditions out of the producers´ control. There are challenges to urban farming as well. Almost anything can grow in a hydroponic- or an aeroponic system, ranging from leafy crops to root crops (Barth, 2018), and farmers can have year-round production, but available space is a significant limitation affecting the volumes that can be produced (Slowik, 2019). According to Wiig (2019), it is possible to grow anything except for exotic species in a greenhouse by adding artificial light and heat. The challenge is to achieve cost efficiency and profits.

5.3 Business models urban farming

The business model describes how a company is doing business. It explains how the firm creates value for its customers, themselves and its stakeholders (Henriksen, Bjerre, Almasi, & Damsgaard-Gram, 2012). By successfully applying the right business model, urban farmers can achieve economic sustainability and competitiveness under conditions not suited for traditional agriculture.

> *Generally, a better understanding of the business model gives the company a good overview of how it creates and captures value. It gives the company insights to the relationship between what the company does and the company's successes, and it gives the company the ability to compare its business model with other competing companies and to understand what can advantageously be changed to keep its competitive advantage on the market so that future growth of the company will continue (Henriksen, et al. 2012, p. 32).*

Van der Schans (2010), has suggested three business models in urban farming, “low-cost specialization”, “differentiation” and “diversification”, which has come to be accepted as common for urban farming throughout Europe. Additional business model classifications have emerged since 2010, covering urban farming but also the wider urban agriculture. In collaboration with 25 other scientists in a European cooperation, the COSTaction plan, van der Schans has identified five potentially successful business models, extending the list to include “the commons” and “experience” (van der Schans, et al., 2016). These later additions are new classifications, building upon the first three business models defined in 2010. The following will focus on low cost, differentiation and diversification as these are well-established and commonly used for commercial urban farming in developed countries.

5.3.1 Low cost specialization:

Low-cost business strategies in an urban context can be reached through resource-efficient and cost-efficient production. Urban farms specialize in one or a few products in order to achieve profits and competitiveness. By focusing on a limited number of products, per unit production cost will be reduced (Pölling, Sroka & Mergenthaler, 2017). In situations where urban actors can expand the production areas, a low-cost approach can be very effective. Scaling up to reduce costs facilitates economies of scale and is often an answer to logistical deficits, high fixed costs, energy costs and competition from cheap import products (van der Schans, 2015). In general, being that urban farming lacks the same ability to achieve economies of scale as rural farming, due to lack of space, etc. the strategy of low-cost specialization is often aimed at producing high-value crops in order to increase margins. High yielding crops, crops with high perishability and crops with high transportation cost is among the most profitable products in urban farming. Specialized farms will struggle to compete with other actors, especially international trade due to low prices if their supply chains are long (Pölling, Sroka & Mergenthaler, 2017). The location of the urban farms allows them to benefit from the proximity to consumers, creating a competitive advantage. Farmers focusing on a greenhouse production of high-value crops in peri-urban areas is a common approach to this business model (Pölling, 2016). Use of underutilized land and empty buildings, urban heat waste and rainwater are means to achieve low-cost production. Labor cost can be reduced by allowing customers to pick their own crops. Another approach is to avoid long term fixed investments and apply for external funding through donations and subsidies (van der Schans, 2010).

5.3.2 Differentiation: specialty and niche production

Trends in urban food demand facilitate differentiation strategies for urban farms, introducing new methods of marketing and production. Differentiated farms search outside the traditional long value chains in order to find new revenue streams. The differentiation strategy can fill niches in the market by producing specialty products such as rare specialty products, ethnic products, high-quality products of regional branding, or by providing unique sales offers with personal contact, competent advice and a high degree of service (Pölling, 2016). Changes in food preferences and the proximity to potential customers allows urban farm businesses to utilize short supply chains where intermediaries can be eliminated or reduced to a minimum, with direct sales and exploration of market niches to potentially increase profit. The proximity also creates opportunities for customers to actively participate in the businesses. This helps reduce the need for intermediaries, but also, for some concepts, reduce labor cost for the business by allowing customers to engage in cultivating and harvesting with concepts such as pick-your-own or rent-a-field, where interested city dwellers pay to rent a pre-prepared plot where they cultivate and harvest their own vegetables. The short supply chains offer direct relations between the producer and consumers, it is authentic and transparent, unlike traditional long supply chains (Pölling, Sroka & Mergenthaler, 2017).

Vertical integration in the supply chain is a good way to realize a differentiation strategy. The farmer can easily control the process and maintain the elements that make the offer different, which in turn can create more profit (van der Schans, 2010). Relations between the buyer and supplier are crucial and are based on transparent and personal interactions which in turn can justify a higher product price. In order to achieve good personal relations, direct marketing is decisive, and the vicinity to consumers makes the conditions for direct marketing favorable. Horeca is a common approach in which the producers sell their products directly to hotels, restaurants and canteens/cafeterias (Pölling, 2016). The market is competitive, and a differentiation strategy can be good in order to survive. This is a strategy best suited for small actors and farms with limited production areas. Proximity to the customers removes the need for long food chains and transportation, allowing farmers to grow products that is otherwise expensive and hard to get hold of due to high perishability (van der Schans, 2010). Traditional, well-established food chains are efficient, but they provide low margins. As a means to increase on-farm margins, the differentiated farms actively step away from these food chains. (Pölling, Sroka & Mergenthaler, 2017).

5.3.3 Diversification – broadening the business

Diversification is the strategy of offering other goods and services in addition to the core activity. These additional offerings are usually well paying. There are two ways for this to happen. The first and most common approach is when farming is the core activity, expanding into other activities and offers. The second approach is diversification into agriculture, which is a strategy used by businesses coming into the agriculture sector from the outside. Diversification often takes the form of educational services, social- and healthcare, recreational activities, events, etc. People with social disadvantage or people struggling to meet the conditions in the regular job market can work on the farm as part of a job training program. Some farms are also used by mental care institutions (van der Schans, 2010). This is a compelling strategy for several farmers as the urban environment contributes to reaching a high number of potential customers. Diversification strategies facilitate economies of scope as farmers can make a profit of a resource in more than one way. In addition to food production, goods and services are offered, providing additional income. Social- and healthcare activities are often paid for by governmental, municipal or private institutions (Pölling, 2016). The combination of diversification and service integration creates multifunctionality on the farms. The proximity to cities is important in diversification strategies. City dwellers are drawn to landscapes and are willing to pay for the experience, using the farms for holidays purposes, recreational activities, gastronomic events and the like. This is a business model best suited for larger farms (Pölling, Sroka & Mergenthaler, 2017).

5.3.4 In general

"Urban farming business models differentiation and diversification are primarily looking for new revenue streams, while the low-cost specialization is predominantly reducing costs by focusing on one or few goods or services" (Pölling, 2016, p. 4).

It is common to use combinations of different business model strategies. A key element for success is to find a combination that suits the purpose and provide synergy effects (van der Schans, 2010). The environment in urban areas influences urban farming, which necessitates individual adjustments and strategies in order to run a competitive and profitable business. Urban farms are very heterogeneous, which is why they require individual strategies within the three main strategies. The three business models all have their benefits and challenges. Space limitations is generic for all and access to land can be ephemeral, making the farmers reluctant to invest in crops or technology that requires longer time horizons. Funding from

social services is often not systematic, but ad hoc, making it a variable income (Pölling, Sroka & Mergenthaler, 2017).

5.4 Supply chains and marketing channels

Short food supply chains typically consist of zero- to a few intermediaries. In a zero-level channel, there are no intermediaries between producer and consumer. One-level channels have one intermediary between producer and consumer. The producer can choose to utilize several distribution channels simultaneously.

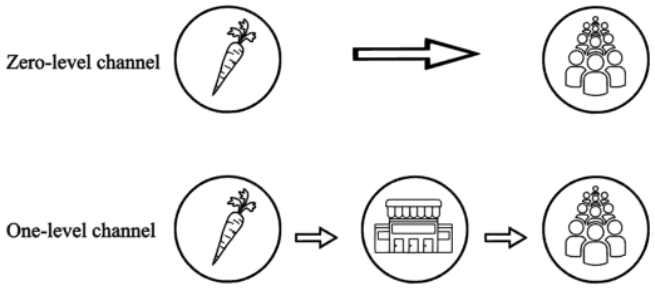

Figure 3: Zero-level channel and one-level supply channel.

Producers can utilize both channels and run channels parallel depending on whether they want exclusive, selective or intensive distribution. (Personal illustration.)

It is essential to choose the right type- and number of intermediaries. In exclusive distribution, the number of intermediaries is severely limited, which allows the producer to have control over output and service level. This requires close collaboration between producer and re-seller. Selective distribution has more than a few intermediaries, but not all available. This allows for a broader market coverage while the producer still has some control, and the outlets are not too many, as opposed to intensive distribution where products are placed in as many outlets as possible to increase coverage and sales (Kotler & Keller, 2009).

5.4.1 Short food supply chains (SFSC)

Short food supply chains play an important part in today´s food supply networks as an alternative to the globalized long food chains we are custom to. They are a response to an imbalance in traditional channels where small and medium-sized actors often don't have access. SFSCs often cover the market for niche- or specialty products (Galli & Brunori, 2013)

Small and medium-sized actors are generally unable to compete with large industrial actors operating with economies of scale, but the reduced number of intermediaries in short food supply chains provide a high degree of independence, lower overhead costs, and compared to traditional channels producers can receive a higher price for their products (Sellitto et al., 2017). This reduces their dependence on the large industrial actors. Small actors often face economic uncertainty due to variations in demand and production volume. This uncertainty can be reduced by entering long-term commitments which in turn may contribute to the reduction of food- and resource waste (Galli & Brunori, 2013). The reduction of intermediaries increases transparency and traceability (Sellitto et al., 2017). Customers want the benefits of local, short traveled food such as high quality, fair prices and the certainty of knowing where the food comes from and how it has been produced (Stam, 2018). SFSC enables direct relationships between producers and consumers, with zero or few intermediaries, which contributes to the exchange of information and knowledge instead of just exchanging a product for money (Kawecka & Gębarowski, 2015).
Producers benefit from the feedback they receive from personal interaction with consumers. They receive a higher price for their products than what they receive through traditional channels, while at the same time providing a less expensive alternative for consumers. (Nazzaro et al., 2016).

Vertical integration

Vertical integration happens when a firm control many or all parts of the supply chain. It can be forward or backward integration. In backward integration, a firm produces goods or services previously purchased from others, or buy their suppliers entirely, whereas in forward integration the firm owns its own sale channels, such as a retail store. Vertical integration facilitates higher control of the firm's processes, product- and service quality, cost reduction and reduction of inventory. There are many advantages to vertical integration, but there is also a lot of potential disadvantages making it an unsuitable strategy for many firms (Heizer, Render, & Munson, 2017).

Horizontal integration

In horizontal integration, producers can acquisition other businesses at the same level in a value chain in order to create economic benefits, higher differentiation and other synergy effects. Instead of acquisition, in a horizontal marketing system, two or more companies

cooperate to exploit an opportunity. The farmers´ market is a mutual sales channel for individual producers. It is more cost efficient to utilize this channel than if each actor was to sell their products individually or hire someone for the purpose (Kotler & Keller, 2009).

Producers can use SFSC´s as part of a mixed marketing strategy, complementing sales in both SFSC and traditional food supply chains (Galli & Brunori, 2013).
Engelseth (2016) describes SFSC as being similar to supply chains found in service, due to the fact that they both involve direct interactions, and that they are short. There are two main marketing channels in SFSCs, direct sales and channel sales. There are various ways of managing each channel, and producers often combine the two. Intermediaries increase network complexity, but they also make marketing easier as they connect producers and consumers (Kawecka & Gębarowski, 2015).

5.4.2 Direct sales

When products and services are sold directly to customers without the involvement of third-party actors, it is called direct sales. By excluding intermediaries, opportunities for increasing producer profits are created. Direct sales take place where the food is produced, through markets or events, or in the shape of outreach activities. It can happen individually face to face, online or in groups, directly from producers to consumers. Through direct sales, the producers are in control of their own sales operations, and they also bear the cost of marketing and distribution activities (Kotler & Keller, 2009). Examples of direct sales in short food supply chains:

On-farm sales

On-farm sales, or farm shops are on-location sales outlets where producers can sell home-grown or local produce directly to customers. These outlets are varying in size from small sheds to larger buildings set up for this purpose. Consumers can purchase local quality food, interact with the producer and get a different shopping experience than in traditional supermarkets. The location of the outlet is important with regard to sales. City dwellers traveling to peri-urban areas to purchase food are often only willing to travel a certain distance, therefore, the closer the shop is to the city centers, the more sales it can potentially have. Some farm shops offer only home-grown produce, which is mostly affected by seasonality (Stanley & Stanley, 2016). Farm shops are often divided into three categories: Local farm shops, serving customers within a small radius, selling home-grown products in a

simple fashion. Regional farm shops serving the region, selling local products from different parts of the area but also including additional offerings such as refreshments and activities for children. Niche shops, offering special products that customers are willing to travel for (Stanley & Stanley, 2016).

Farmer´s markets (collective stores of farm products)

A farmers´ market is a marketing outlet where local producers gather on a recurring basis at a temporary or permanent location to sell their products directly from market stalls to individual consumers in the local community. Consumers attend the market not only for the products but also for the experience. Some farmers´ markets have the potential to become hubs for the local community, arranging for consumers to spend time there and socialize. It is common that the producers themselves sell their own products in the market stalls. This way producers are able to interact with the customers directly. The farmers´ market retail concept is unique as the profitability of the market in general and for the individual stallholders is affected by the standards of each actor, which is why ground rules for every participant is a key success factor (Stanley & Stanley, 2016). Elements that are important for customers attending the markets is location, that it offers complementary products and that it is convenient. Many markets have regulations to ensure that products sold shall be grown, caught and/or processed by the stallholders themselves (Åsebø et al., 2007), while other markets have diluted their concept, allowing imported food and merchandise (Stanley & Stanley, 2016).

Direct internet sales

Digital farmers market. Where the internet is the new marketplace for farm produce, SFSC facilitates niche/specialty offerings, such as traditional, exotic and rare growths that is usually not available in supermarkets. Digital farmers´ markets are a good alternative for such products because of the direct sales approach that allows producers to increase their income, the consumers to receive fresh products, and at the same time, transportation is reduced and there is less need for packaging, etc. (Lorentz, 2018). Online food distribution stores can be divided into horizontal distribution where the producers have a wide assortment of products suitable for a large consumer group, and vertical distribution where the product range is narrow, and producers offer niche products for a smaller consumer base (Kawecka & Gębarowski, 2015).

Community supported agriculture (CSA)

There is a growing trend of producers and consumers initiating partnerships. These are called CSA. There are several forms of CSAs. They can be led by the producers, the community or as partnerships between the two (Chen, 2013)

A common practice is that CSAs form a mutual support network, where at the start of the growing season, consumers pay producers up front for a certain amount of the expected produce. In return, the consumer receives produce throughout the harvest season. Consumers receive greater value for their investment when the yields are high (Valley & Wittman, 2018). Another practice is one where consumers pay a subscription fee for the right to purchase, and in addition pay for the products they buy (Peterson, Taylor, & Baudouin, 2015). The payments can be one-time, several times or on a monthly basis. They are fixed up-front fees, meaning that the risk of uncertain quality and quantity of harvest is shared between producer and consumer, and the producer has a secure income. The produce is either harvested by the shareholders as a pick-your-own concept, by producers and picked up at the farm's location, or delivered at the shareholders´ home at a pre-arranged schedule, often once a week (Waltz, 2010).

Community gardens

The most visible urban farming initiative is community gardens. A community garden is a garden plot where local residents can grow flowers and food, and it can serve as a gathering place where they can work together and build a community (Valley & Wittman, 2018). The gardens are often owned by non-profit organizations, municipalities or neighborhood associations, but also by private individuals. In developed countries, community gardens are among others a way for the public to get in touch with nature and grow their own fruit, berries, and vegetables, and it is a good way for users to learn about healthy food. In commercial gardens, the participants pay an annual fee to support the garden. The commercial "landlords" facilitate production and harvest while the participants perform the necessary work. Through growing their own food, participants can access locally produced fresh fruit and vegetables at a lower monetary price than in retail stores (Stanley & Stanley, 2016).

Pick-your-own

Pick-your-own is a half-commercial, half- logistical distribution model where the consumers harvest their own fruit and vegetables (Rouquet & Paché, 2017). The attractiveness of this phenomenon is that it corresponds with some city dwellers desire to get back to nature. They are provided access to fresh and healthy local products associated with values such as traceability and trust. Consumers appreciate the fact that product freshness is guaranteed by the fact that they pick their product directly from trees, bushes or soil themselves, and they acknowledge that the seasonality and weather conditions are what dictate product availability, quantities, and product range, not consumer demand. Producers prepare and maintain the production, but transportation, handling activities and storage is left to the consumers. They facilitate a hedonic consumption experience for the consumers while both parties avoid unnecessary efforts. This model reduces labor costs as a large part of the job is left to the consumers (Rouquet & Paché, 2017).

5.4.3 Channel sales

Channel sales are indirect sales where an intermediary is involved in the sales, meaning that resellers sell a product or service for the producer. By delegating sales to intermediaries, the producer renounces some control, but at the same time, it allows them to focus on other parts of production which can increase efficiency and effectiveness. The use of intermediaries can be considered as an opportunity cost. Many producers lack the knowledge, time or manpower to handle the sales themselves, in which case, even though the producer pays for the service, the use of intermediaries can be cost-efficient, as labor cost and sales cost are reduced as opposed to the alternative of not outsourcing. The purpose of a sales channel is to move products from producer to consumer. Sometimes the combination of multiple channels is the optimal solution, such as different channels for sales, delivery, and service (Kotler & Keller, 2009). The producer receives a lower price for their products because the intermediaries must add their own charges to the products. Effective intermediaries result in lower prices for the customers, and if the customers perform parts of the job themselves, the prices will be even lower (Kotler & Keller, 2009). Examples of channel sales in short food supply chains:

Local shops

Local shops and retailers are increasingly implementing local food products as part of their assortment. Food with ties to the region or local community is increasingly demanded by consumers (NorgesGruppen ASA, 2013). As local producers often produce low volumes, their products are usually available through only one outlet. For producers, this provides access to a wider customer base than they would otherwise reach, while the retail store can provide a niche product not widely available (Stanley & Stanley, 2016).

Box schemes, basket delivery systems

Seasonal fruit and vegetable boxes are ordered from the farm and delivered to the customers, either at their home address or at a collection point (Brown, Dury, & Holdsworth, 2009), often as regular subscription plans (Thom & Conradie, 2013). This is most often carried out using an intermediary. Box schemes can be described as a direct farmer´s markets. The distance between producer and consumer is short, facilitating increased income through generating jobs in the local community. Box schemes are a good alternative for urban actors to achieve market premium on their products as they usually experience volume constraints which prevent them from entering traditional retail channels. Consumers receive fresh produce at affordable prices, and they are aware that seasonality and weather conditions make harvest unpredictable. For the producers, box schemes provide a secure and predicted income, thus reducing risk (Thom & Conradie, 2013).

Food hubs

Food hubs are food distribution intermediaries intended to provide small and medium-sized actors access to larger market outlets (Perrett & Jackson, 2015). Is can be described as a supply chain management strategy, focusing on local food distribution and logistics. It is an attempt to even out the power distribution in the food industry. Some municipal and governmental actors such as schools and health institutions often use food hubs as a way to provide local food for its users. In contrast to limited distribution possibilities, through using food hubs as intermediaries, small and medium-sized actors, which usually offer low volume seasonal products, are able to serve larger markets. By associating with enough producers, the food hubs are able to provide buyers with the demanded volume of quality products (Perrett & Jackson, 2015).

Consumer cooperatives

Consumer cooperatives are purchasing groups, where a group of consumers jointly source products directly from producers and share the costs. There are no official guidelines to how these groups are to be administered, but it is common for them to have individual guidelines on issues such as food miles, packaging, conditions for fresh products, product verification, delivery time and ethical considerations (Kawecka & Gębarowski, 2015).

5.5 Case studies

The following chapter contains case studies of four companies that all have various characteristics fitting the criteria´s for urban farming discussed in chapter 5.1.
The companies differ from each other as they have different business models, utilize various supply chains, and all have distinct purposes. Smågrønt is the company that can best be described as an urban farm; therefore, it will be given a greater focus than the others.

5.5.1 Smågrønt

Business Model Canvas

Key Partners

Stavanger Municipality

Store Outlets

Chefs

Business partners – new projects not yet revealed

Key Activities

Production:
- Seeding
- Harvest/collecting

Building customer relations

Key Resources

Know-how

Efficient growing system

Value Propositions

A unique product not widely offered in the region.
It provides qualitative value for the customers, such as taste, look, satisfaction.

"The little extra without the added calories"

Customer Relationships

Personal interaction with the customers.

Self- service

Value the relationship for instant feedback

Channels

Direct sales through on-farm sales and outreach-activities

Channel sales through intermediary outlets

Customer Segments

Hotels

Restaurants

Business Customers

Private Customers

Cost Structure

Low- cost
Operational costs are mainly fixed costs, and are the same regardless of output volume, resulting in reduced per unit costs as production volumes increase.

Revenue Streams

Customers pay for a physical product.
Three different output prices in three distinct sales channels provide total revenue.

(Osterwalder & Pigneur, 2015)

Smågrønt is an urban farm located at a parking lot in an innovative, developing part on the outskirts of the inner city center of Stavanger. It is run by Kamil and Barbara Slowik, a married couple from Poland. They do not have a background in farming, but for many years it has been an interest and a hobby for both of them. The business started up in 2017, and as of today, they manage the business by themselves. Kamil is working full time at the farm while Barbara has another job on the side. The innovative urban farmers offer a product called microgreens. So far, they are the only supplier in the area focusing solely on this. They brought their product to the city´s annual food festival in 2018 resulting in a nomination as one of the finalists to an annual food award hosted by "Det norske måltid". Even though they did not win it provided good exposure at an event with a lot of members from the food industry and media present (Slowik, 2019).

The farm is run inside an insulated shipping container, connected to water and electricity. In a short amount of time since the start-up, the farmers have found it necessary to increase its facilities to match an increasing demand by upgrading from a small container to one of twenty-eight square meters. The new facilities are running at more than half capacity, and the utilized area is increasing. At full capacity, the container is able to produce 1250 units a week. Microgreens are plants in the early stages of growth. It is vegetable plants being harvested just as they are getting their first leaves before they are ripe. It takes about seven days from the seeds are planted until the microgreens are ready to be harvested. They are small plants, not requiring much space. Microgreens have lots of taste and are, therefore, able to influence the taste of a food dish (Slowik, 2019). It provides the taste of a food product, such as mustard, without adding the calories of a processed mustard product, this way consumers can have the same taste, but at the same time be aware of what they put in their mouth. Smågrønt offers about twenty different varieties of microgreens. Not all vegetables are suited for consumption at such an early stage, hence this is the result after testing approximately fifty different types of vegetables in order to figure out how they taste and what conditions they need in order to grow. The amount produced every week is estimated based on pre-orders from recurring customers, enabling them to supply a sufficient number of products without unnecessary waste (Slowik, 2018).

Type of urban farm

Smågrønt is a vertical farm using a hydroponic system. Seeds are planted in a soil medium, allowing the roots to have direct access to water and nutrients. The plants are exposed to different color led-lights according to the minimal light required for plants in this early stage of growth. The farmers have spent a lot of time testing nutrients, growing-mediums and how much water each variety requires. Based on this research, they have been able to build an almost automated system watering the plant beds based on the required amount for each variety. Temperatures and airflow can also be adjusted in order to provide micro-climates in various areas according to the requirement of the plants. By automating large parts of the production, the farm can be left unattended in the time between seeding and harvest, enabling time spent on other parts of the business. Today, it is just the two farmers working at the farm, but as the business continues to grow, they plan to hire additional help.

With the volumes produced in the container today, working hours spent in the container are usually five to six hours a day, but if they were to achieve full capacity, working hours are estimated to increase to approximately ten hours. Additional automation solutions are planned for the near future. The facility is equipped with a system for collecting and filtering rainwater to be used in the production. By farming in a closed system with the benefits of hydroponic systems, the farm uses approximately ninety-five percent less water than what is required in rural farming methods. The soil and seeds used in production are organic, the climate control and water system are approved by governmental control, so there is no risk of contamination in production. The only artificial element in the process is the light. The farmers aspire to have a local product profile and emphasize the quality and environmental aspects of locally produced food. As of today, their products are mainly delivered by car as they see no other alternative. Self-transport provides flexibility for the producers as they are able to offer fast deliveries and high frequency (Slowik, 2019). For Kamil, part of the motivation for running an urban farm is lifestyle choices. The business facilitates. He prefers to work at night, and he wants to run a business that does not require all his time. He is concerned with environmental issues and emphasize the satisfaction he receives from growing his own food, and describes the work as energizing and relaxing, matching the findings in chapter 3.1.2.

Business model

Smågrønt use a combination of two of the business models defined by van der Schans (2010), low-cost specialization and differentiation. The business is run at a very low cost, and even though the microgreens originate from various vegetables and offer different tastes, it is ultimately just one category of product. Operations are cost-efficient and the automation reduces work-hours required on the farm. The collection of rain-water provides "free" resources, further keeping costs low. Long-term fixed investment costs are avoided by operating from a movable shipping container. If for any reason the current location is no longer optimal, the shipping container can easily be moved to a different location without causing financial loss due to investments made at a fixed location, and the work can be resumed immediately.

Cost is the same regardless of output volume, hence a high volume reduces production costs per unit. The container is strategically located in an area close to their customers, providing a competitive advantage, and profit margins are increased through producing a high-value product (ch. 5.3.2). Microgreens are a niche product not widely attainable. It is a highly perishable product primarily known and used by professional actors in the food industry. Another aspect of the business niche is personal interaction and also collaboration between the firm and the customers. In several of the customer relations, Kamil actively participates along with the chefs in working out new courses. He is trying out and developing new products on the basis of customer requests or contributes to product suggestions according to existing product selection. This relationship and service level further illustrates the niche element of their operations (ch. 5.3.2) (Slowik, 2019).

Supply chain

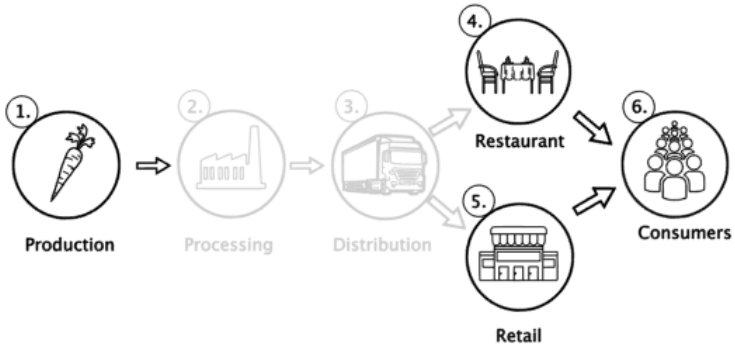

Figure 4: Smågrønt´s supply chain,

consisting of direct sales and channel sales. (Personal illustration.)

Smågrønt has short food supply chains and utilizes both direct sales and channel sales in marketing and distribution of their products. The customer group is mainly hotels and restaurants, as they are dependent on recurring customers. Stavanger provides a great market with good chefs and a common focus on quality food. They have built mutual cooperation with several of their customers, providing insight into customer preference and demand, applicable throughout the country, which will be beneficial in their future development plans (Slowik, 2019). Direct sales, in particular, on-farm sales, account for more than eighty percent of total sales. This channel is utilized mainly by business customers, although also by some of the private customers. They are welcome to visit the farm to pick their own products. Sales to business customers initially happen through direct sales with tasting and trying out different varieties of microgreens, while after quality and tastes are established, further sales are executed through pre-ordering of products and deliveries at the hotels or restaurants locations at schedules times (ch. 5.4.2). Channel sales account for the remaining sales, upwards to twenty percent. Smågrønt has exclusive distribution in the channel, for the time being limiting the number of intermediary outlets to two, Ostehuset Stavanger and Coop Mega Madla (ch. 5.4.3). The reasoning behind utilizing the two sales approaches is that the direct sales approach presents a good way to maintain good customer relations where they can both provide know-how and receive instant feedback and be able to react to customer demands, while the channel sales provide a way to reach a larger audience, thereby increasing the customer base and spread awareness of the product outside the niche market (Slowik, 2019).

The sales through both channels have grown since the start-up, with direct sales customers having the most expanding growth. The growth in the intermediary outlets has had steady growth since the start, but it has greater variations in demand. Smågrønt has not actively marketed themselves yet, and most of their marketing is happening through social media. Consumers are aware of the benefits of local products; they want to know what they eat and where the food comes from. Short traveled food is increasingly popular, and being that microgreens is considered to be very healthy; word of mouth has been an important marketing channel for them. They are currently in a process of developing their business further. The next step is to develop their business into a franchise, expanding to various parts of the country. This will require an altogether different marketing process which they will outsource when the time is right (Slowik, 2019).

Cost and revenue

Smågrønt has a is cost-based cost structure, aimed at keeping the costs as low as possible in all aspects of business operations. This is largely achieved through automation (Osterwalder & Pigneur, 2015). Costs are mainly fixed and related to salaries. The production facility is not expensive, and there are no costs related to investments in fixed installations as the container is moveable. Variable costs are low and mostly related to seeds and fertilizer. It is hard for urban farms to achieve economies of scale as there are constraints related to available space (ch. 3.1.1). Smågrønt´s container has a maximum capacity of 1250 units per week. Economies of scale cannot be achieved in these facilities, but the price of production is the same regardless of units produced, meaning that high production volumes reduce production cost per unit. The low production costs facilitate high margins given certain production volumes. The plants grow fast enough to be replaced every week, enabling them to grow large volumes. So far, Smågrønt is the only business in the area solely focusing on microgreens, providing a first mover advantage over potential competitors entering the market. Growing microgreens is a learning process and being the sole supplier for a long time has allowed them to focus on attaining high efficiency. Food waste is expensive, and through experience, and consumers pre-ordering products, they have learned how to calculate production volumes with minimal waste. The business started generating profits after half a year and report a fifty percent sales growth since the same period last year. In small-scale production, efficiency is key, it is what determines profit (Slowik, 2019).

Smågrønt has two different customer segments; business customers and private customers, generating revenue through three channels; restaurant, retail outlets and on-farm. Pricing mechanisms are dependent on the customer segment and sales-channel utilized. A common approach when selling products through intermediary outlets is to pay a fee for shelf space in the store. Typically, stores don't want the risk of purchasing items they might not be able to sell; therefore, the business keeps ownership of their items until they are sold and pay a provision fee to the store for the items that are sold. This way, the unsold products is the producer´s loss (Heizer, Render, & Munson, 2017). Output prices are determined as a combination of fixed- and dynamic pricing mechanisms. List prices are determined on the basis of inputs such as price of seeds, transport and production time. Nevertheless, it is reasonable to assume that prices vary according to the sales channel. The products sold to private customers directly from the container is likely to provide a different profit than the products sold to the same customer through channel sales, as the intermediaries get a share of the output price. Likewise, it can be assumed that these prices are different from those offered to business customers as they are recurring customers with larger orders. Output prices to business customers will vary as a result of negotiations and depending on amounts purchased (Osterwalder & Pigneur, 2015).

Background for the profit analysis

In one of the retail stores, the sales price per unit of microgreens is 30 NOK. Accounting for the various fees, assuming the above mentioned to be the case, Smågrønt receives revenue of a maximum 20 NOK per item sold through the outlets. Further, a natural assumption will be that the business customers pay less for their purchased items, so for comparison reasons, this price is set to 15 NOK per unit. In order to not compete with themselves, a common strategy is to set the same output price for the products sold directly from the container to private customers, as in the stores. As there are no intermediaries in this channel, the revenue is 30 NOK per unit.

As the business runs on low-cost, it is natural to assume that the highest cost-element is salaries. Kamil works full-time, while Barbara works part-time at the farm, therefore, calculating 1,5 employees. The annual salary in full-time employment is set to 500 000 NOK.

- Maximum output per week = 1250 Units
- Number of production weeks per year = 50 weeks
- Fixed costs: Annual salary * 1,5 = 750.000 NOK
- Assumed Revenue per unit (sales price – variable costs):
    - Direct sales:
        - Restaurant (80 % of total sales) = 15 NOK
        - Container (10 % of total sales) = 30 NOK
    - Channel sales:
        - Retail (10 % of total sales) = 20 NOK

Based on these presumptions calculations can be performed to determine the business´ sensitivity to variations. As the items produced cannot be stored, the analysis assumes that all products are sold.

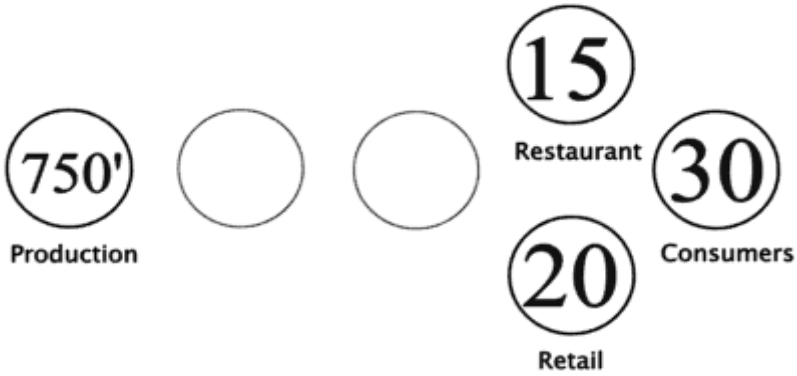

Figure 5: illustrating assumed annual fixed costs and revenue per unit in Smågrønt´s various sales channels. (Personal illustration.)

There are three main components affecting the business results:

Fixed cost salaries, price and production volume.

The calculations will be carried out by adjusting the components to see to what extent each of them is able to affect the profit.

Production volume:

I want to study how various production volumes affect achievable profit for the company. 100 % capacity utilization is the maximum volume and maximum profit achievable under current conditions. This is accompanied by 60 % and 80 % capacity utilization for comparison reasons. These are also probable utilization levels. Revenue is calculated based on the output price for each sales channel in accordance to the percentage sold in each respective channel.

60 % utilization =37 500 units			80 % utilization = 50 000 units			100 % utilization = 62 500 units		
15 NOK (80%)	=	450 000	15 NOK (80%)	=	600 000	15 NOK (80%)	=	750 000
20 NOK (10%)	=	75 000	20 NOK (10%)	=	100 000	20 NOK (10%)	=	125 000
30 NOK (10%)	=	112 500	30 NOK (10%)	=	150 000	30 NOK (10%)	=	187 500
Revenue		637 500	Revenue		850 000	Revenue		1 062 500
Fixed costs		-750 000	Fixed costs		-750 000	Fixed costs		-750 000
Profit		-112 500	Profit		100 000	Profit		312 500

All else equal, a production level at 60 % capacity utilization lead to a deficit, while an eighty percent capacity utilization provides a good profit. This means that the business must produce more than 60 % in order not to avoid a deficit. I want to know the exact capacity utilization required in order to break even.

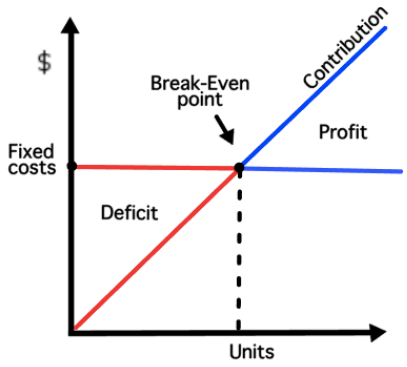

Figure 6: Break-even point

Profits are created at any point where contribution exceed fixed costs. The break-even point is where contribution meets fixed costs as there are no variable costs involved. (Personal illustration.)

A break-even analysis provides the point where total revenue and total costs are equal, which is the minimal production volume required in order to avoid a deficit. As Smågrønt operates with three different prices for the same product, the analysis must be based on a weighted average. As the value of variable unit costs is unknown, it is assumed to be already subtracted from the output price. This is called contribution average.

Contribution average = sales price – variable costs. The weighted contribution average is each price value multiplied by its respective percentage of sales.

	Contribution average NOK	% Sales	Weighted contribution average
Restaurant	15	80 %	12
Retail	20	10 %	2
Container	30	10 %	3
		100 %	17

$$\text{Break} - \text{even in units} = \frac{\text{Fixed costs}}{\text{Weighted contribution average}}$$

$$= \frac{750\,000}{17} = 44\,118$$

The analysis show that 44 118 units is the production volume requires in order to break even, which is equivalent to a 71 % capacity utilization.

In order to achieve profits, the capacity utilization needs to be higher than 71 %. Any production volume below this will lead to deficit.

The main goal for Smågrønt has been to be able to make the business profitable. From the previous calculations it has been shown that an 80 % capacity utilization creates a profit of 100.000 NOK. I would like to determine how much they would need to produce in order to achieve a profit of 200.000 NOK and 350.000 NOK.
This requires another break-even analysis where the desired profit it added in the numerator. The weighted contribution average is unchanged as the output prices remains the same.

$$\text{Break} - \text{even in units} = \frac{\text{Fixed costs} + \text{desired profit}}{\text{Weighted contribution average}}$$

$$= \frac{750\,000 + 200\,000}{17} = 55\,882$$

$$\text{Break} - \text{even in units} = \frac{\text{Fixed costs} + \text{desired profit}}{\text{Weighted contribution average}}$$

$$= \frac{750\,000 + 350\,000}{17} = 64\,706$$

If desired profit is 200 000 NOK, production volume must be 55 882 units, which is equivalent to 89 % capacity utilization.

A profit of 350 000 NOK requires a production volume of 64 706 units. This is unattainable given the current conditions. The maximum production capacity is 62 500 units in the production facilities. A 350 000 NOK profit is achievable by changing one of the two other main components. Profit can increase either by raising output price per unit or by reducing fixed costs, which means reducing annual salary.

In the calculations, it is assumed that all produced items are sold. In reality, this is probably not the case, but it might not be too far from the truth. We know that experience have enabled Smågrønt to improve volume estimation based on pre-ordering from the customers. Business customers in the direct sales channels account for eighty percent of total sales, and intermediary outlets accounts for ten percent. This means that ninety percent of sales can be exactly calculated based on pre orderings. The remaining ten percent is the private customers purchasing items at the farm. The amount sold in this channel has larger variations and is not as certain as the other two, but this can be calculated based on experience. It is not possible to store the products due to perishability. In the calculations, it has been concluded that the minimal capacity utilization necessary to avoid deficit is 71 %. In order to achieve this, they need recurring customers ordering products on a fixed schedule.

Price:

I want to see how profit is affected through price changes.

First, we study how an increase in price by 3 NOK per unit in every sales channel will affect profitability.

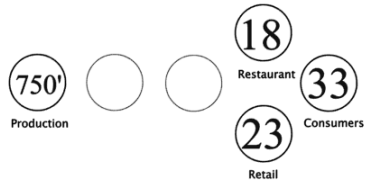

Figure 7: Illustrating selected output prices. (1)

Utilization 60 % =37 500 units			Utilization 80% = 50 000 units			Utilization 100% = 62 500 units		
18 NOK (80%)	=	540 000	18 NOK (80%)	=	720 000	18 NOK (80%)	=	900 000
23 NOK (10%)	=	86 250	23 NOK (10%)	=	115 000	23 NOK (10%)	=	143 750
33 NOK (10%)	=	123 750	33 NOK (10%)	=	165 000	33 NOK (10%)	=	206 250
Revenue		750 000	Revenue		1 000 000	Revenue		1 250 000
Fixed costs		-750 000	Fixed costs		-750 000	Fixed costs		-750 000
Profit		0	Profit		250 000	Profit		500 000

Based on this price adjustment the new break-even point is at 60 % capacity utilization. (Appendix 11.)

The new maximum profit achievable is 500 000 NOK.

Secondly, I want to see how a reduction in price by 1 NOK from the existing prices will affect the profitability.

Utilization 60 % =37 500 units			Utilization 80% = 50 000 units			Utilization 100% = 62 500 units		
14 NOK (80%)	=	420 000	14 NOK (80%)	=	560 000	14 NOK (80%)	=	700 000
19 NOK (10%)	=	71 250	19 NOK (10%)	=	95 000	19 NOK (10%)	=	118 750
29 NOK (10%)	=	108 750	29 NOK (10%)	=	145 000	29 NOK (10%)	=	181 250
Revenue		600 000	Revenue		800 000	Revenue		1 000 000
Fixed costs		-750 000	Fixed costs		-750 000	Fixed costs		-750 000
Profit		-150 000	Profit		50 000	Profit		250 000

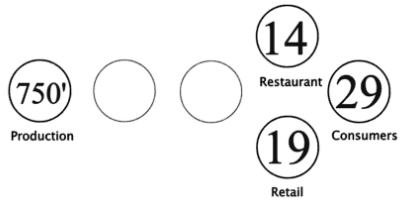

Figure 8: Illustrating selected output prices. (2)

By reducing the price on each item by 1 NOK, the new break-even point is at 46 875 units, which is equivalent to a 75 % capacity utilization. (Appendix 11.)

The reduction also reduces the maximum achievable profit to 250 000 NOK

Lastly, I want to study how profits is affected when price is decreased by 5 NOK

Utilization 60 % =37 500 units			Utilization 80% = 50 000 units			Utilization 100% = 62 500 units		
10 NOK (80%)	=	300 000	10 NOK (80%)	=	400 000	10 NOK (80%)	=	500 000
15 NOK (10%)	=	56 250	15 NOK (10%)	=	75 000	15 NOK (10%)	=	93 750
25 NOK (10%)	=	93 750	25 NOK (10%)	=	125 000	25 NOK (10%)	=	156 250
Revenue		450 000	Revenue		600 000	Revenue		750 000
Fixed costs		-750 000	Fixed costs		-750 000	Fixed costs		-750 000
Profit		-300 000	Profit		-150 000	Profit		0

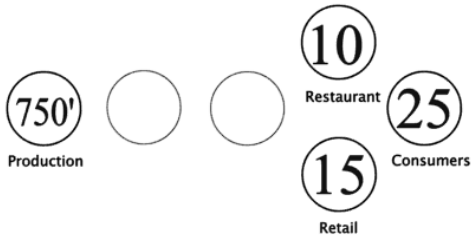

Figure 9: Illustrating selected output prices. (3)

The last calculation above show that the break-even price, all else equal, is -5 NOK per unit, providing a weighted contribution average of 12 NOK. At this price level, the break-even point is at full capacity utilization (100%) . In order to lower break-even point and increase profits, fixed costs must be reduced.

Price is perhaps the most vital component as the price level also determines volumes sold. As shown in the original volume calculations, the maximum profit attainable is 312 500 NOK. An increase of 3 NOK per unit reduces the break-even volume from 71 % to 60 %, and attainable profit increases by 60 % to 500 000 NOK. All else equal, this price increase could have a huge impact on profitability, but such a change will simultaneously reduce sales volumes if the customers are price sensitive. On the other hand, a price reduction of 1 NOK will raise break-even volume to 75 % and reduce attainable profit by 20 % to 250 000 NOK. As microgreens are a niche product, it can be assumed that the price elasticity of demand is high, but it might not be as elastic when prices are reduced as when they are increased. Microgreens are most commonly used by chefs. The customers purchasing the product today might purchase less or stop purchasing altogether with a 20 % increase in price from 15-18 NOK. If the price is reduced, the customers might not purchase more than they already do, and potential new customers resulting from a decrease in price is likely to be fewer than those lost due to an increase in price.

Fixed costs

As business is expanding, Smågrønt plans to hire additional workers.
I want to study what happens if this was increased to 2 full time positions.
Salary is set to 500 000 NOK annually per person.

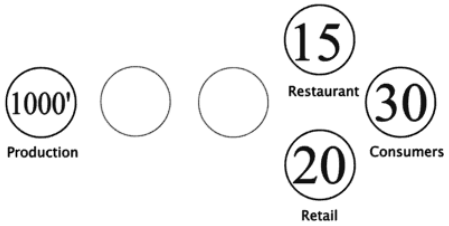

Figure 10: Illustrating new fixed costs

- Output prices set at original values.

Utilization 60 % =37 500 units			Utilization 80% = 50 000 units			Utilization 100% = 62 500 units		
15 NOK (80%)	=	450 000	15 NOK (80%)	=	600 000	15 NOK (80%)	=	750 000
20 NOK (10%)	=	75 000	20 NOK (10%)	=	100 000	20 NOK (10%)	=	125 000
30 NOK (10%)	=	112 500	30 NOK (10%)	=	150 000	30 NOK (10%)	=	187 500
Revenue		637 500	Revenue		850 000	Revenue		1 062 500
Fixed costs		-1 000 000	Fixed costs		-1 000 000	Fixed costs		-1 000 000
Profit		-362 500	Profit		-150 000	Profit		62 500

Moving from 1,5 to 2 full time employees will increase the fixed cost, which is greatly affecting the profitability.
In order to break even under these conditions, production volume must increase to 58 824 units, which is equivalent to 94 % capacity utilization.
There is no room for additional workers on top of this. In a start-up phase, business owners can refrain from paying salaries to themselves, but this is not possible once someone is employed from the outside.

The above calculations suggest that Smågrønt´s operations are fairly sensitive to changes in any of the main components; volume, fixed cost salaries, and price. The break-even analysis provides information suggesting that, based on the pre-determined conditions, a 71% capacity utilization is the minimum production volume required. Further, capacity constraints are demonstrated when the desired profit is set to 350 000 NOK. In order to achieve this profit, the company has to decrease salaries or raise the output price.

The minimum required price per unit is at a weighted contribution average 12 NOK. This price results in a break-even point at maximum capacity utilization. The remaining option in order to lower capacity and/or increase potential profit at this price level is to reduce fixed cost salaries, as there is no available capacity.

Even a small increase in fixed costs has large effects on profits, as break-even production volume increase from 71 % to 94 % by moving from 1,5 to 2 full-time employees.

The results suggest that operations are sensitive to small changes in any of the components, but on a short-term basis, the firm is able to maintain liquidity through corrections in one- or both of the other components.

5.5.2 Miljøgartneriet

Business Model

Key Partners

Tine Meierier
- The two are connected through a system where the nursery receives wastewater from the dairy that they use to heat the nursery and provide CO_2 as fertilizer for the plants

Key Activities

Production and maintenance

Key Resources

Production facilities
- Built to be energy efficient, sustainable and cost saving

Knowledge and experience

Value Propositions

Offers products of different quality and price, demanded by wholesalers to fit end-consumers' purchasing power and quality preferences

Customer Relationships

No interaction with end-consumers.
Direct contact with the intermediary wholesalers

Channels

Wholesalers

Customer Segments

Mass- market

Cost Structure

High fixed costs, low variable costs

Economies of scale: higher volumes means lower cost per unit produced

Revenue Streams

Transaction based revenue.
Prices are a result of negotiations between producer and wholesalers, but can also be influenced by demand and supply.

(Osterwalder & Pigneur, 2015)

Miljøgartneriet is a seventy-seven decare greenhouse nursery located in the peri-urban area of Nærbø, and is run by its two owners, Kåre Wiig and Hallstein Aase. Wiig has a long history with vegetable production and growing in greenhouses, and he is the outgoing owner of "Wiig gartneri", a family-owned nursery since 1937, which he is now gradually entrusting to his daughter. The nursery is one of the largest in Northern Europe and was opened in 2010. The facility is strategically located in the immediate vicinity of a dairy in order to achieve an energy venture. The facility holds production area, administration, and packing department, and all products are manually picked and controlled by employees. Locally produced food and sustainability are important objectives, which is why they use biological production. In 2015, Miljøgartneriet received an award for its innovative facilities and constant focus on new, exciting products (Miljøgartneriet AS, 2015). Their main product is their various kinds of tomatoes, but they also produce snack-paprika, chili and a small selection of flowers. The tomatoes vary in kind and quality. Some sorts are produced because they provide large volumes at a low cost, while others have distinct taste and quality meant to fulfill specific needs for the customers.

Type of urban farm

Miljøgartneriet is a large-scale greenhouse enterprise located in a peri-urban area. What was once a rural area is gradually being developed into suiting urban purposes (ch. 5.1.5). The nursery is a vertical farm operating in a controlled environment (ch. 5.1.1). The production is a combination of regular tomato growth techniques and the latest technology. Seeds are planted in rockwool, which is an inactive substrate where there are no biological processes influencing the growth in any way. By planting in rockwool, the plant roots have sufficient access to both oxygen and water. There is a constant flow of water running through the system, allowing the plants to absorb the amounts they need, touching upon hydroponic systems without being one. The facility´s heat source is wastewater from the nearby dairy. The water runs through pipes located in every plant row throughout the production area (Wiig & Hansen, 2019). This way, the facility is able to produce approximately four times as much produce as other nurseries with the same amount of carbon dioxide emissions (Miljøgartneriet AS, 2015). Miljøgartneriet have biological operations such as employing utility animals for vermin destruction. By doing this, they eliminate the need for chemical pesticides. The numbers of vermin are monitored by computer systems, and utility animals are inserted accordingly every week. The nursery is allowed to use approved chemicals in production if necessary, but the biological steps have made it unnecessary. The rockwool is used for one

season and is then disposed of and recycled for other purposes. If there is overproduction and they are unable to sell all their products, the surplus is provided to local farmers to be used as animal feed. Biological production is not the same as ecological production, though, due to strict regulations regarding food production in Norway, the difference between the production at Miljøgartneriet and ecological producers is the use of rockwool as base and that the fertilizer is not farmyard manure. This fact prohibits them from labeling their products (Wiig & Hansen, 2019). The nursery has seasonal workforce demands, and during the season peak there are approximately seventy-five employees. The workers are full-time employees, students, and seasonal workers from a number of different countries. In the months between late May to late August is usually the time when the work season is at its peak, requiring the entire workforce. The production season extends from planting in early January to mid-November. The first tomatoes are harvested in March. Part of the challenge with greenhouse nurseries with natural lights is the fact that it is weather dependent. The products are perishable, and if the weather is good for a few weeks, a lot of the produce will ripen fast, leading to an instant need for labor. Being that parts of the workforce is foreign, they cannot arrive instantly, thereby increasing the workload for the workers present (Wiig & Hansen, 2019).

Business model

Miljøgartneriet has a low- cost specialization business model. Their production is limited to a few products, with tomatoes being their main product. Their facilities are among the largest in Northern Europe, enabling economies of scale (ch. 5.3.1). Growing tomatoes in a greenhouse require lots of water. Miljøgartneriet uses both clean water and industrial wastewater in the production. The water runs through a closed system, and the water not absorbed by the plants is recycled through a cleansing process before it is put back into the system. This is an environmentally friendly and cost-saving alternative as expensive resources such as water and fertilizers are being re-used. The wastewater also contains CO_2, functioning as a nutrient for the vegetables. The wastewater treatment plant is an expensive investment, but by the amounts of water and fertilizer saved, the investment is earned within a year and continues to be a cost-saver in the years to follow (Wiig & Hansen, 2019). The processes are largely automated, apart from the manual labor required.

Supply Chain

Miljøgartneriet is a well-known actor in the Norwegian food market, they deliver their products throughout the country by the use of intermediaries through traditional food-supply chains. Their customers are store chains such as Coop and Rema 1000, and wholesalers like Bama, among others. None of their products are sold directly to the consumers.
Their large-scale operations provide easy market access, but their prices are constantly pressured by the large supermarket chains and wholesalers. Norwegian tomato-producers cooperate with each other, so the producers´ main competitor is imported products.

Figure 11: Miljøgartneriet´s supply chain from production to retail chains/wholesalers. Personal illustration.)

Costs and revenue

As they have a cost-based low-cost business model, they aim to reduce costs as much as possible in all parts of their operations. The largest costs are related to energy and salaries. These numbers are the same, regardless of volumes produced. Variable costs are low, so the cost per unit is reduced as production volumes increase, and the business has economies of scale. Revenue is based on product-sales to intermediary wholesalers and retail chains. Prices are list prices according to product characteristics. Products requiring more space and time to grow are priced differently than the volume intensive products as they have an altogether different quality. Prices vary according to amounts purchased. All the various prices are results of negotiations between Miljøgartneriet and their customers. The customers are large actors in the food industry in Norway and therefore have the ability to put pressure on output prices. Prices also vary according to supply and demand (Osterwalder & Pigneur, 2015)

5.5.3 Victoria Hotel

Business Model Canvas

Key Partners

Lokal Base
(or other potential consultants)

Mattilsynet

Key Activities

Production and maintenance:
- Seeding
- Harvest/collecting

Growing fruit and vegetables to be used in their own kitchen

Arrange Events

Key Resources

Value Propositions

Build a sustainable end solid brand through production and utilization of own food

Offer "as local as can be" food and a niche product produces for this exact purpose

Offer a psycosocial environment for the guests visiting

Hosting events in a multifunctional unique setting

Customer Relationships

Personal interaction with the customers.

Value the relationship for instant feedback

Channels

Self-supply

Customer Segments

Hotel guests

Restaurant guests

Event attendees

Cost Structure

Value-based cost structure, so the costs related to operations is not essential. The project is thought to have synergy effects in the hotels overall operations

Revenue Streams

Transaction based revenue.
Revenue through increased food prices, and more paying guests through popularity and branding.

(Osterwalder & Pigneur, 2015)

Victoria Hotel is an august hotel located in the inner city of Stavanger, established in 1900. The hotel has 107 rooms available for accommodation, facilities for receptions, events, and seminars. In addition to the hotel's kitchen, the establishment offers a popular steak restaurant and a bar containing the region's largest whiskey collection. The hotel chef is Kristine Aukland. She has been with the hotel for thirteen years, and is in charge of all food-related aspects, both of the hotel and the restaurant. Growing up she spent a lot of time at her grandparents´ farm, where her grandfather, a potato farmer, also had cows, milk production and honey-bees. Kristine has always had an interest in growing vegetables, and in her own garden, she grows carrots, herbs, berries and a few other sorts of vegetables.
Victoria Hotel is currently re-constructing parts of the hotel and in connection with this, a long time vision of growing herbs and a few vegetables to use in the kitchen is now becoming a reality, with the objective shifted to the creation of an entire hotel garden (Aukland, 2019).

Victoria Hotel is "Svanemerket"[1], which is a contributing factor to a constant focus on sustainability and environment in all aspects of operations. The garden must be planned according to the strict environmental regulations applied for the label and in cooperation with "Mattilsynet". Environmental actions being planned is the collection of rainwater to be used in production and, if approved, composting. The goal is not necessarily to have organic production, but a sustainable production coinciding with the existing activities (Aukland, 2019).

Type of urban farm

Victoria hotels kitchen garden will be a combination of rooftop-farming, rooftop greenhouse farming, and edible walls and landscaping. The garden will be located on a roof inside an atrium surrounded by hotel rooms on several floors on each side. It will not have a roof, only a few seals covered with flowers and plants sheltering parts of the garden (ch. 5.1.2, 5.1.3, 5.1.4). The garden is planned to be multifunctional by holding food production of various sorts, trees, a pond, seating areas for recreational purposes, long tables for weddings and other festive events. Aukland will be responsible for the daily operations of the garden, alongside

[1] A label used for environmentally friendly products. The business must undergo a certification process every other year in order to maintain the label. It concerns elements such as energy, ecology, economy, use of Norwegian raw materials, certified fish and meat, water usage, waste disposal and recycling. (Aukland, 2019)

the rest of the hotel and kitchen staff. The plan is to grow vegetables and herbs to use in the hotel's kitchens. Kristine has a vision to grow a large assortment of vegetables ranging from leafy greens and tomatoes to root vegetables. From the outset there are a lot of possibilities, the only condition is that the products produced requires low maintenance. In line with the original vision, the garden will have a rooftop-greenhouse adapted to year-round production in order to supply self-produced vegetables throughout the year. Outside the greenhouse, vegetables will be grown in soil on the floor of the roof. To further utilize the available area, food will be grown vertically on the surrounding walls, enabling large production volumes while leaving floor space available to be used for other purposes. These products will be grown in open-air, influenced by weather conditions and temperatures, thereby being seasonal products. In addition to this, fruit trees will also be planted in the garden. What products are to be grown at any given time will be determined by the menu planned for each season (Aukland, 2019). Victoria Hotel vision this investment to be beneficial. The current market trend is that consumers are more aware of what they eat and where the food originates. By producing their own healthy food products, they vision building a strong value brand. As part of this, Victoria Hotel wants to grow a special sort of potato with the purpose of making it "their" potato. Having it own niche product or gimmick is advantageous in relations to building a strong brand. The goal for Victoria Hotel is to make it "the place to be", and Aukland visions the garden to be a contribution to this (Aukland, 2019).

Business model

Victoria Hotels kitchen gardens main business model is diversification into agriculture (ch. 5.3.3). The hotel´s core activity is selling hotel nights with additional corresponding activities, where food services are one of the important activities. They offer food from two kitchens, and they have a focus on using local products in food production. The diversification is rooted in a desire to produce some of the food themselves. In order to do so on a significant scale requires space and determination in addition to knowledge of vegetable production. The project is initiated not only to as a means to produce vegetables, but it has a multifunctional purpose as it is intended to be used in recreational activities and social events as well. This, in turn, makes it possible to create their own niche in the market, intended to offer something unique to draw customers. This touches upon differentiation as they will be offering a trendy alternative, self-produced food, and also being the only producer of their own variety of a product. The hotel´s location provides ideal proximity to customers, and the offering of a

trendy product facilitates exploration of a market niche and a potential increase in profit (ch. 5.3.2).

Supply chain

Victoria hotel is traditionally at level 4 in the traditional food production chain (See fig.1). As described in chapter 5.4.1, by producing their own food they will achieve vertical integration of operations as they control an important part of the supply chain. The vertical integration is backward at they produce their own products, and also forward as they are their own sales channel. In the following, Victoria Hotel will utilize a combination of the traditional- and a short food supply chain. The new short supply chain will be parallel to the traditional supply chain as their own products will only function as a supplement to the purchased food products. The interaction between Victoria Hotel and its customers is a result of direct sales to guests in the restaurants or hotel guests attending the food facilities. Direct sales are carried out through personal interaction or through direct internet sales (ch. 5.4.2) (Aukland, 2019).

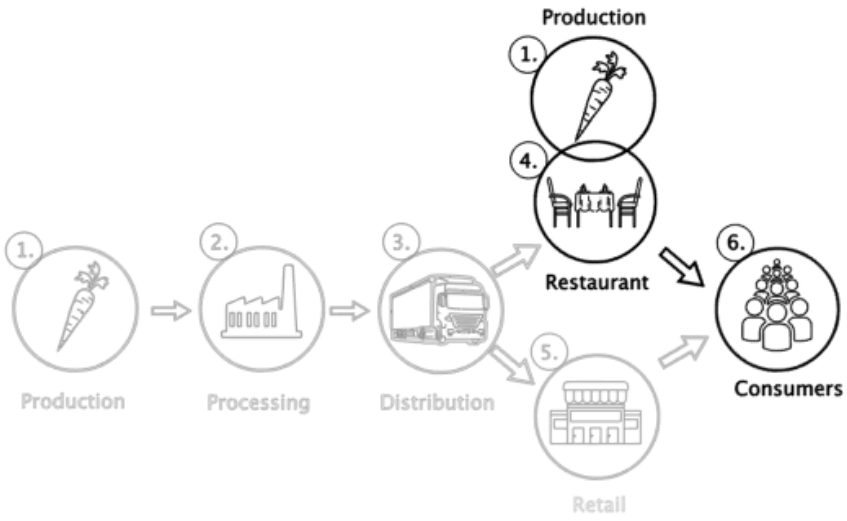

Figure 12: Victoria Hotels´ kitchen garden´s supply chain.

The production and restaurants are interconnected through vertical interaction and is self-supplying. (Personal illustration.)

Costs and revenue.

Victoria Hotel is an august hotel located in the inner city of Stavanger, established 1900. The hotel has 107 rooms available for accommodation, facilities for receptions, events and seminars. In addition to the hotel's kitchen, the establishment offers a popular steak restaurant and a bar containing the region's largest whiskey collection. The hotels chef is Kristine Aukland. She has been with the hotel for thirteen years, and is in charge of all food related aspects, both of the hotel and the restaurant. Growing up she spent a lot of time at her grandparents´ farm, where her grandfather, a potato farmer, also had cows, milk production and honey-bees. Kristine has always had an interest in growing vegetables, and in her own garden she grows carrots, herbs, berries and a few other sorts of vegetables.

Victoria Hotel is currently re-constructing parts of the hotel and in connection with this a long time vision of growing herbs and a few vegetables to use in the kitchen is now becoming a reality, with the objective shifted to the creation of an entire hotel garden (Aukland, 2019).

5.5.4 Stavanger Airport Sola

Business Model Canvas

Key Partners

Miljøgartneriet
- Knowledge and plants

Vekstmiljø
- Equipment

Vektek
- Electric technology

Key Activities

The airports key activity is aviation

The key activity in the tomato project will be production

Key Resources

Location

Economic stability

Value Propositions

Offer locally produced food (tomatoes) to on-site restaurants

- Show travelers one of the things the region is known for.
- "Fresh food with local history"

Customer Relationships

No interaction with end-consumers.

Direct contact with the restaurant as the customers

Channels

Direct sales channel

Customer Segments

The on-site restaurants are the projects customers.
Their customers – the end consumers - are the travelers.

Cost Structure

Value-based cost structure.
Operational costs for the project are low and mostly related to lighting and fertilizers. The project is thought to have synergy effects for the overall operations

Revenue Streams

Potential revenue is yet undetermined, but the project is not initiated for direct economic purposes.

(Osterwalder & Pigneur, 2015)

Stavanger airport Sola is the oldest Norwegian civil airport, established in 1937. It is an international airport with flights to more than fifty destinations domestically and abroad, serving more than four million travelers annually. The airport is currently under development, expanding and improving the facility in order to create efficient solutions, making it user-friendly and implement green- and environmental solutions. They also want to utilize available space for multifunctional purposes (Avinor, 2019). The airport has received a certification for its continuous work in reducing carbon dioxide emissions in their operations. In order to maintain the certification, they must document their procedures for managing carbon emissions, prove that their emissions are reduced every consecutive year and actively work to reduce its carbon footprint (Airport Carbon Accreditation, 2009). Avinor has an ISO14001 certification and is actively focused on sustainability, energy efficiency and continuous improvement of environmental operations (Avinor, 2017).

Type of urban farm

As part of the new development, Stavanger airport decided to build a fifty square meter indoor greenhouse in order to grow their own tomatoes. The greenhouse is a vertical farm in a controlled environment, and it received its first tomato plants February 2019, and is therefore a fairly new project (ch. 5.1.1). It is located in the center of a waiting area on the second floor, above the arrival hall for domestic flights, and is visible from the ground floor and the outside. The greenhouse is intended to have year-round production of piccolo- and beef tomatoes. The tomatoes are planted in rockwool,(Wiig & Hansen, 2019), and the facility is equipped with led-lights in order to account for the lack of natural sunlight, to be able to achieve year-round production. Automatic ventilation- and watering system reduce the level of maintenance required, and daily operations is performed by airport employees. Outside consultants have been used in connection with the planning and start-up of the project. As the project is in the start-up phase, the ripe tomatoes are being served to airport employees and customers, but when the production is well established and it is possible to have a steady volume, the produce is intended to supply the airports eateries (Erga, 2019). In addition to the tomatoes growing inside the indoor greenhouse, the airport has its own beehives, located alongside the runway producing honey, and apple trees soon producing apple juice (Sveen, 2018).

Business model and supply chain

Stavanger Airport´s greenhouse project´s business model is diversification into agriculture (ch. 5.3.3). The airport´s key activity is aviation, the tomato project is a small side project. The idea behind the project is a general emphasis on green development at the airport. They want to create multifunctional common areas around the airport, and through building a greenhouse with tomatoes they can obtain both, while simultaneously providing healthy food and show the travelers something the region is known for, namely tomato production (Erga, 2019). The greenhouse has a direct supply to its customers; the airport´s restaurants and eateries. There is no direct contact with the consumers, the travelers, except for the visible location at the airport.

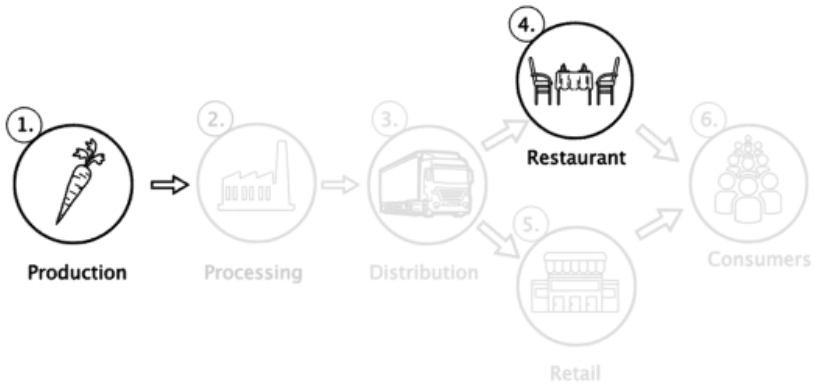

Figure 13: Stavanger airport greenhouse´s supply chain from production to its intended customers.

Costs and revenue:

The costs of building the greenhouse are calculated to 1,5 million NOK, and the project is funded with innovation capital earmarked for initiatives like this. Let´s assume investment costs to be sunk-costs in the following. Operational costs relating to the greenhouse are assumed to be low variable costs associated with lighting and fertilizers. There is not expected to be any other costs related to the project. No personnel is hired for maintenance activities, these are expected to be handled by existing airport employees. The system is almost fully automated, but manual harvest is necessary, requiring some working hours a month. Although output-prices and conditions are yet to be determined, it is established that the tomatoes produced in the greenhouse will be sold to the airport eateries either at market value or below, hence based on dynamic market conditions (Osterwalder & Pigneur, 2015). As all restaurants are located under the same roof, it is reasonable to assume that they will be offered the same purchase conditions, especially while taken into account the fact that the project is not initiated for profit purposes. It is not meant to generate direct revenue for the greenhouse, but if the revenue received from the on-site restaurants is enough to cover the operational costs related to the project plus depreciation of the fixed cost, typically spread over 20 years, the project will be able to operate itself without any additional means. The revenue created through the greenhouse will likely be earned through word of mouth and reputation, and customers´ willingness to pay for specialty products such as local food. The project is thought to be a gimmick capable of achieving synergy effects for the airport´s operations as a whole (Avinor, 2019) (Sveen, 2019).

5.5.5 Comparative analysis

The following chapter is an analysis comparing the study objects against one another. The data used in the analysis is what has been presented in the previous analysis chapters so the comparative analysis will therefore not include any references to prior information unless it is seen fit. Everything discussed in the following can be found previously in chapter five.

Business models:

This paper has discussed three business models in relation to urban farming; Low-cost specialization, differentiation, and diversification. They are all covered through the four study objects.

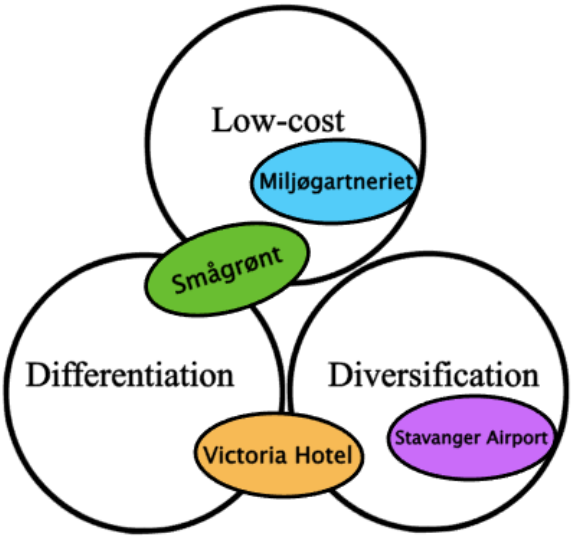

Figure 14 Illustration of the three business models of urban farming and where the study-objects is positioned in general and in relation to each other.

The *low-cost* approach is used by both Miljøgartneriet and Smågrønt. They are the two businesses producing the largest volumes. Smågrønt´s technique and product allow them to produce at a fast pace, increasing volume capacity, but the maximum unit output per week is still 1250 units. For this reason, we can claim Smågrønt´s operations to be touching upon economies of scale, but they are not capable of achieving this with today´s production facilities. Margins are instead increased by the fact that microgreens are a high-value product (ch. 5.3.1). Miljøgartneriet is part of a food supply network where all large-scale producers have their own customer base, in cooperation covering the supply of tomatoes throughout the country. They are not in direct competition with each other, their main competition is imported food products. For this reason, their customer base is somewhat fixed, making them

unable to respond quickly to potential new customers. As of today, Smågrønt is not utilizing full capacity, which makes them able to respond quickly to potential new customers, and because microgreens are fast growing, they are able to serve new customers products within a week. Microgreens are produced throughout the year while Miljøgartneriet is dependent on seasonal conditions. Their products can be harvested between March and November and the revenue earned during these nine months must cover total annual costs.

The *differentiation* business model is used by Smågrønt and the kitchen garden at Victoria hotel. They both claim to offer a niche product, still, they are different from one another. Smågrønt´s microgreens are a niche product not widely offered or well known in the public, but it is a product appreciated by many chefs and private individuals who take great interest in the food they consume. In the private markets, microgreens are especially popular in the vegan community as it is known for containing a high volume of nutrients. It is not a food product you eat to get full; it is an add-on product used to supplement dishes as a garnish to add extra taste and nutrients. Victoria hotel´s vegetable products are not going to be niche products; they are mainly traditional standardized vegetables that are to be used in everyday food production at the hotel. What makes it a niche is the fact that the products are grown on-site, adding to the concept of local food, justifying the niche aspect. In addition, they want to grow a special kind of potato, only accessible through the hotel kitchen. This creates a niche aspect of a traditional food product. The events planned for the kitchen garden also contributes to building a niche concept.

The *diversification* business model is used by Victoria Hotel and Stavanger Airport Sola. They are both diversifying into agriculture, but they vary from one another. Victoria Hotel´s reason for the diversification is the result of a desire to produce their own food to be used in the kitchens. They have a focus on local food and want to take it to the next level. Food offerings are a large part of the hotels everyday business, so diversification into agriculture is not far-fetched. With the airport´s main activity being aviation, food production is by all accounts distanced from the everyday operations. Nevertheless, food is being offered throughout the airport's facilities. The food offerors are individual restaurants separated from the airport's operations. Stavanger airport Sola has a focus on the environment and has bee-hives and apple trees at the airport area already. Bees and honey production are tested to monitor pollution from operations. This honey is sold through the airport's eateries. Tomato production can be seen as a continuation of this initiative.

Cost- and revenue structure

In the previous, Smågrønt´s costs and revenues have been analyzed from various angles. This is not the case with the other three, but we can still compare them against one another. Starting with the low-cost businesses, the cost-structures in Miljøgartneriet and Smågrønt are similar, as their focus is on keeping costs as low as possible given the conditions they are situated in. Both farmers have automated their processes as much as possible in order to reduce labor costs, and they use the latest technology to help the daily operations. Through the utilization of rainwater and waste-water, they are able to save expensive costs such as water and fertilizers, hence contributing to sustainable production. Fixed costs are the largest cost for both of them, and as per unit cost is lowered by increased production volumes, economies of scale are facilitated for both firms, but only actually attainable for Miljøgartneriet as their production is large-scale, hence high volumes.
When it comes to revenues, unlike Smågrønt, Miljøgartneriet has a guarantee to sell everything they produce. The nursery has various sections allocated to the respective customers, and everything produced in the sector is purchased by the customers. This secures an income regardless of volumes, even though the income will vary accordingly. The drawback for Miljøgartneriet is that the wholesalers are powerful actors, and they utilize their power to put pressure on output prices. Nevertheless, there is no doubt about the fact that it is a profitable business. Wiig and his family have been in the industry for more than eighty years, and their success is in large parts due to skills and expertise. Their facilities are fully utilized to fit the production volumes produced today. If they want to increase their output volumes, they need to expand their facilities.

The cost and revenue structure at Victoria is altogether different from what we see in Smågrønt. As Smågrønt produces for sale, they have a cost-based structure where the costs and revenue are easily detectable and can be used to calculate all sorts of scenarios. This is not the case at Victoria Hotel. Here, the cost-structure is value-based, as the overall target is value-creation (Osterwalder & Pigneur, 2015). Victoria Hotel recognizes the costs as necessary for future brand building and development. At the same time, it is hard to identify exactly how the production of vegetables will affect total revenue.

The economic situation surrounding Victoria Hotel´s kitchen garden can in large parts be compared to Stavanger Airport Sola. The purpose of the greenhouse is not to reduce costs or achieve profits directly from tomato production. Similar to both Victoria and Sola is the fact

that the products are not necessities, they are side-projects developed for publicity purposes in order to achieve synergy effects for their respective businesses. They are supported by existing economic stability, and from the offset, there are no requirements of achieved profitability.

Figure 15: Illustrating where the four study objects is positioned in relation to product-specificity and physical location.

As we can see, Smågrønt and Victoria Hotel are the two most urban farms. They are both located in- and just outside the inner city center of Stavanger. Smågrønt´s product is a niche product while Victoria will be offering standardized products but as a niche concept. Miljøgartneriet is the most rural, and they produce standardized products. Stavanger airport is located in an urban environment but is a bit more rural than Smågrønt and Victoria Hotel. As in the case of Miljøgartneriet, Stavanger airport produce a standardized product. (Personal illustration, inspired by (Marsden, Banks, & Bristow, 2000))

Local food

Local food is a topic of interest for all the study-objects, but there is no common assumption of what they consider to be local. As discussed in chapter 3.2.3, there is no formal definition of short food supply chains or local food. As a producer, Smågrønt describes their activities as local food production and offerings. Microgreens need to be kept cool after being harvested and should not endure long transport. Because of this, they deliver their products in Stavanger and Sandnes. This is their maximum willingness to travel, hence are also the boundaries for their definition of local food supply. Aukland and Victoria Hotel is first and foremost a customer and has a wider limit. They define local food as the food produced in the region of Rogaland. Wiig and Miljøgartneriet as a national food provider have yet another definition. He suggests that food products are local as long as they are produced within the borders of the country. They all define local food as a measurement of physical distance, no-one mentions social distance as a contributing factor.

Supply chains

Miljøgartneriet is the only study object operating through a traditional supply chain (ch. 3.2.1). They are not in contact with the end consumer but sell their products directly to wholesalers and retail chains who handle further distribution. Their products are produced in order to be sold to personal consumers, not as an input in processing activities. Their tomatoes are distributed to retail outlets throughout the country, providing a wide market coverage. The reason why they are able to do this is the fact that they are large-scale producers.
Miljøgartneriet benefits from utilizing this channel as the intermediary handles the market coverage and logistics. If they were to handle the distribution themselves it would require a lot of work, so by the use of intermediaries, their products are distributed all over the country while they themselves can focus their efforts on their key activity, production.
It would not be possible for Smågrønt to utilize the same channel. First, production volume is too low, and microgreens are highly perishable, making it unsuitable for long transportation, hence their desire to develop the concept into a franchise to obtain larger market coverage. Secondly, their profit margins are dependent on the cost factors previously calculated in chapter 5.5.1. Additional intermediary involvement would increase costs or reduce revenue, and there would not be any profit left. Also, through the involvement of additional intermediaries, they would lose the benefit of personal interaction with their customers. As it is a niche product, it requires personal interaction in order to introduce the benefits and possibilities offered by the product. Smågrønt offers expertise as part of their niche as well,

and they benefit from the instant feedback they get through personal interaction with the customers. This would be lost if there were intermediaries involved. The same goes for its channel sales. Here, personal interaction is lost, but this channel only covers ten percent of sales, and it is seen as a way to reach a larger audience and create easy access to their product for private customers as the container only offers limited opening hours at irregular times, which makes the outlet stores a good alternative for these customers. Both Miljøgartneriet and Smågrønt have chosen the supply channels most suitable for their respective products and production volume.

Microgreens require more presentations than what tomatoes do, and mostly, even though consumers appreciate the transparency of short supply chains, they are still presented the producer when they purchase products from Miljøgartneriet. With a standardized product such as tomatoes, even though they come in different varieties, customers don't require a personal introduction or product presentation.

The greenhouse at the airport sells their produce directly to the on-site restaurants with no intermediaries involved. Two types of tomatoes are produced, they are standardized products which do not require information sharing. It is an offer created by the project to serve the eateries and is considered more as a service they can take advantage of as a result of a marketing gimmick. Adding intermediaries in this process would be an unnecessary complication. The same can be said for Victoria Hotel´s kitchen garden. It is a vertical integration where they will be supplying fruit and vegetables to be used in their own food production. As the restaurant is an integrated part of the business the entire chain from vegetable production to consumer plate is vertically integrated. This enables them to receive instant feedback from the end consumers. There are no grounds for this project to be executed in any other way. Products are being produced and harvested in the garden, processed in the kitchen and served to the customers directly in the restaurants. There is no room for intermediaries.

5.5.6 Final remarks

The reason why Smågrønt is able to be profitable is that they produce a niche product that can be offered to professional chefs. Their main customer base is restaurants, accountable for approximately eighty percent of sales. Without this customer segment, it seems unlikely they would be able to earn a profit, or even be able to stay in business as their customer base would be only twenty percent of what it is today, hence the volume component in the calculations would be reduced to nearly nothing. So far, they have been allowed to operate the markets by

themselves, but at some point, it is likely to assume there will be competitors offering the same product. Smågrønt claims that they are not worried as they are building a solid customer base and that their processes are effective and providing high margins. Even though they have a first-mover advantage, the potential competition will necessarily entail some changes in their current revenues. Another important aspect is that their niche product is dependent on good financial times, as such products will be struggling during an economic recession. It is a "luxury good" reserved for good times. Smågrønt value the personal relationships in short food supply chains as they provide instant feedback, and they are allowed to participate in their customers´ operations, all the while they are also dependent on this personal interaction in order to sell their products at all. As of today, their operations are profitable, but they are continuously working on expanding their concept, indicating that there is an underlying desire for increased profits.

Miljøgartneriet´s profit margins are high as a result of cost-efficiency, but continued efficiency is largely dependent on factors outside of their control. Their energy venture with the dairy, providing wastewater for heating- and fertilizing purposes, is decisive for future cost savings. If this venture at some point was to expire, the heating costs would increase drastically. This would additionally also affect fertilizer- and water costs. Miljøgartneriet is also dependent on their customers as they are few and large, hence difficult to replace. Due to the fact that the national market is pretty much covered, the process of replacing a lost customer would be slow. The output price of their products is determined by negotiations with the customers. In the event of a price change, it would only be minor.
These are the main components affecting Miljøgartneriet´s costs and revenues. In the event of a change in one of them, any compensation through change in one of the others will be a slow process, greatly affecting costs and profits.
By comparing Smågrønt and Miljøgartneriet, the economy in Miljøgartneriet appears to be the most stable in the long run. Smågrønt´s advantage, however, is the fact that they are small enough to have the ability to adapt to changing circumstances, thereby taking the steps necessary to ensure a proper profit. This advantage might potentially be lost if and when they employ additional personnel.

At Victoria Hotel, there is nothing directly tying the kitchen gardens production to revenue, but revenues are expected to gradually increase as a result of the project.
Costs are expected to be reduced as a result of vegetable production, but the size of the

reduction will depend on volumes produced. If the weather is bad, the reduction will be low, based solely on the vegetables produced outside the greenhouse. The kitchen garden might prove to be more time- and resource consuming than initially assumed, in turn potentially increasing overall costs associated with the project. If the new concept is not a hit, it will not attract new customers as they had envisioned, but it will likely not affect the existing customer base, hence, increasing neither revenues nor costs as there will be some cost-savings associated with the food production, regardless. Compared to Smågrønt, whose focus is to keep costs as low as possible, and where revenues are easily detectable, the kitchen garden has no requirements of return on capital, and the impact of a successful brand building is not easily calculated.

The greenhouse at Stavanger airport will likely be able to cover its expenses without additional means from the overall operations. However, this depends on the restaurants´ ability and willingness to purchase the products. If they are not able to sell to the on-site restaurants, the concept will change, requiring a shift in planned operations in order to serve travelers instead. Tomatoes are perishable and cannot be stored. A change in concept will increase costs as will require additional manpower, packaging, and costs related to sales. The greenhouse projects are dependent on easy sales to on-site restaurant customers in order to keep costs at a level it can be capable of covering itself.

Future findings: It would be interesting to see what has become of them in a few years. As they are currently in a process of expanding their business, it would be interesting to know whether an expansion of current production facilities is part of it, and if so, what the new volume capacity is and how this affects the other key components. At some point, they will probably find that the local market is saturated, so if a new case-study were to be conducted in a couple of years, the pace of expansion will probably have become slower.
Like Smågrønt, Victoria hotel is likely to benefit from first-mover advantage as a result of their initiative. So far, they have not heard about any other hotels initiating similar projects, providing them a unique opportunity to build a solid brand and attract new customers.
The timing of this paper means there is a lack of results or indications of results in two out of four study objects as they are about to be initiated or is barely started. If a similar study were to be conducted at a later stage, this information would be available and could provide a deeper understanding of revenue streams and profit basis for both the diversification businesses, but more importantly, for urban farming in the area as a whole. For this paper,

however, it proves to emphasize that urban farming initiatives are few but continuously growing.

6. Validation

Criticism of theory

This first part of the validation concerns a presentation of the other side of the general theories. Most of the literature available about the topics generally presents one side, focusing on the possibilities and benefits rather than presenting both. There is however criticism directed at various parts of the literature, some of which will be presented now.

Urban farming

Urban farming initiatives are intended to provide food produced locally in urban areas. It is thought to be able to supply city dwellers with affordable food, often specialty products or highly perishable products otherwise not widely attainable. Greening of under-utilized areas is intended to create opportunities for expanding food production to inner cities, re-attaching city dwellers with nature and the real value of food production. Still, urban farming face skepticism and criticism by scholars claiming that the initiatives are unable to provide affordable food because of the limited availability of space to utilize for food production purposes. Others point to the fact that urban farming initiatives should not be prioritized at the expense of better economic alternatives such as industrial expansion or housing projects (Valley & Wittman, 2018). Governmental funding of urban farming initiatives is critiqued as it is seen as a support of nostalgia and blasts from the past. Case studies performed by (Stolhandske & Evans, 2016) show that in most cases, the sale of urban farming produce is not financially viable on its own. Producers experience that they are unable to cover expensed through revenue of sales alone under today´s market conditions, and revenue is hard to generate in the off-season. Farmers often find it hard to earn a living wage for themselves. There have been several findings emphasizing the fact that most urban farming enterprises are dependent on diversification activities in order to be financially viable, and often the diversification is what generates most of the total revenue, upwards of eighty percent (Mincyte & Dobernig, 2016). Urban farming is also claimed to be a contribution to the gentrification of urban communities. The local residents are seldom the beneficiaries of urban investments. Commercial development contributes to increased prices for real estate and price levels in general, turning the areas too expensive for local residents, and thereby facilitating gentrification. In many cases, urban farming is reserved for elites (Mincyte & Dobernig, 2016). Even though urban farming is intended to provide local food at affordable prices, as a

result of limited available space and generally low-profit margins per unit produced, the prices are set at a high level, and the typical customer of urban farm produce is above-average income individuals with a higher educational background (Engelseth, 2016).

Short Food Supply Chains (SFSC)

Transparency in short food supply chains is emphasized by most authors of theory as it contributes to trust between buyer and supplier, and personal connections are facilitated. The proclaimed benefits of SFSC are reported in chapter 3.2 and 5.4, and they are many, but SFSC is also characterized by small quantities supplied from a number of individual actors, which creates increased resource consumption per product as opposed to traditional food chains (Galli & Brunori, 2013).

Accessibility is a challenge in SFSC. Many of the approaches listed in chapter 5.4 are dependent on seasonality, they are open only certain days and times, and the supply and assortment of products vary. For many producers, short food supply chains are the only possible outlet as they are too small to enter traditional food chains, or they offer niche products that would not be suitable in traditional channels. For producers with access to both channels, the choice of utilizing short supply chains is mainly for economic purposes as they facilitate higher profit margins per product than do those sold in traditional channels (Kawecka & Gębarowski, 2015).

There are disadvantages related to the removal of intermediaries as well. It contributes to higher business complexity and increased demand for labor. Business customers, such as food serving companies, must find ways to handle both traditional supply chains and an increasing amount of short supply chains. This requires time and resources spent by the customer in order to manage incoming supply. The removal of intermediaries will increase administrative costs for one- or both of customers and producers as they have to do the job previously performed by intermediaries. This emphasizes the fact that logistics efforts are higher in short food supply chains compared to traditional supply chains. In order for short food supply chains to be an efficient option, alternative ways of distribution must be developed to make the purchasing easier for customers (Galli & Brunori, 2013).

The following is a validation of other important aspects of the thesis.

Selection of Candidates

In the course of looking for local study objects for this thesis, the focus was on finding candidates who would fit into the different business models described in chapter 5.3 in order to study the business´ activities, the type of urban farm, and study their chosen supply chain. It turned out to be a time-consuming task with a lot of dead ends. The search for candidates started in the immediate proximity to the city center of Stavanger, expanding to surrounding towns and eventually including the entire region. One of the conditions for potential candidates was that they had to produce the food themselves and that their products were fruit or vegetables, excluding businesses including animal husbandry.
Several of the potential candidates were good examples of several of the short food supply chain outlets presented in chapter 5.4 but was excluded because their location was too rural, or they operated with imported goods; solely, or as a supplement to their own production. Also, some of the promising candidates had turned bankrupt, so little to no information was available. Finding study object proved to be a difficult task in part because urban farming is not widespread in Norway as of yet, even though there seems to be increasing awareness of the phenomenon. I was actively looking for diversity in potential candidates, and as a result of the search, I found four candidates willing to participate in the study. The sampling was not random, so sampling errors cannot be detected. The fact that there are few urban farms in the area or region as a whole may be influential for the findings, and also, the representativeness of the sample is not guaranteed as the answers received from the interviewees are colored by the object's personal opinions and prior knowledge. However, the results achieved through the personal interviews emphasize key-characteristics of the literature, hence, affirming the general literature presented throughout chapters 3 and 5.

Method

The studies were conducted through interviews. Both in-person and e-mail interviews depending on the time the interview object had available. In retrospect, the in-person interviews did provide a wider understanding of operations as they included a visual presentation of the locations, and the possibility to address questions directly related to impressions received. In-person, at location interviews was conducted at Miljøgartneriet, Smågrønt´s container and Victoria Hotel. As the businesses vary in all aspects of operations, it was considered meaningless to work out a standardized interview guide. The interviews were semi-structured with an individual interview-guide prepared for each study object in

order to capture the essence of the individual operations. For Smågrønt, two interviews were planned, but only one of them was executed in-person as they requested the follow-up interview to be done per e-mail due to a busy schedule. The same was the case with Stavanger airport. The drawback with this method turned out to be that the message sometimes is not perceived as conveyed, and that some important questions got lost in translation, or that the interview object was able to choose how to interpret the questions. For clarification purposes, it would have been ideal to conduct all interviews in-person, and also conduct follow-up interviews with all the objects after analyzing the results.

Study objects

As a study object, Smågrønt is a textbook example of urban farming in all aspects such as location, production facility, and technique, they fit perfectly into the theory of business models for urban farming and they utilize short food supply chains. The business is relatively young, and still growing. Their customer base is increasing, and their concept is still under development, and by all accounts, they have yet to reach their full potential.
Miljøgartneriet is a producer that would generally not fit the criteria´s of an urban farming enterprise. As we look at it, it is clearly a large-scale food producer in a traditional food supply chain, but the fact that it is located in a peri-urban area allows us to consider it as an urban enterprise according to the findings in chapter 5.1.5. What makes Miljøgartneriet interesting for this assignment is that it Kåre Wiig is an experienced producer with knowledge that could prove to be beneficial. In addition to this, he is also the consultant of the greenhouse project at Stavanger airport Sola, tying the two study objects together.
Wiig was able to provide insights into the traditional food supply, and he could confirm the information presented in chapter 3.2.1 regarding power structure in traditional food supply chains. Victoria Hotel proved to be a valuable contribution to the assignment. Even though the project has not started yet, it was able to provide a convincing angle of diversification into agriculture. The greenhouse at Stavanger airport has the same business model, and as in the case of Victoria Hotel, they too are not in full operations yet, but they have started.

Out of the four study objects, Smågrønt and Victoria Hotel are the objects best described as urban farming initiatives (See fig.14). I find my study objects to be interesting and good sources of information, all the while they are different from one another, each providing a different angle. What was interesting to find out about the projects was economics and

profitability. Two of the projects was not operational yet and could therefore not provide detail regarding the matter. The other two were reluctant to share this information and would only provide vague indications. As Miljøgartneriet´s revenues fall outside the area of interest, given that they utilize traditional channels, the topic of interest was focused at Smågrønt. They did not want to elaborate on their pricing mechanisms beyond that output prices vary according to product features as described in the analysis. Nevertheless, it is reasonable to assume that prices vary according to the sales channel. It is hard to calculate actual profitability lacking real information, so as a result, the cost and revenue analysis is based on actual sales price found in one of the retail stores and reasonable assumptions as an extension of this information. Even with made up numbers, the analysis was able to provide insights into the sensitivity of the operations.

7. Conclusion

Urban farming initiatives are not a necessity in Norway, as opposed to other developing countries, so the urban farming activities found here are mostly commercial initiatives. As discussed, profit margins tend to be low, and economies of scale are hard to achieve. To account for this, prices need to be set at a level high enough for the producers to earn a profit. In order to justify the prices, urban farmers need to produce a niche- or specialty product, as standardized products in urban farming initiatives never will be able to compete with the same products supplied through traditional food chains. For this, the profit margins are too low. Urban farmers must utilize short food supply chains with a minimum of intermediaries, as the products will be too expensive in a high-cost country like Norway if they were to go through traditional food chains.

When the economy is good, and by evading direct competition, Smågrønt absolutely has every condition required to be profitable. The analysis has shown that only minor changes in one of the components can affect the overall profitability, but as suggested, temporary measures can be taken to account for potential profit loss in the short run. If conditions stay the same and they can develop their concept further, there is nothing to suggest that profitability will change to anything but better.

Diversification is known to be the most profitable business model, suggesting that both Victoria Hotel´s kitchen garden and the greenhouse at Stavanger airport have good opportunities to achieve profitable synergy effects.

Given the right product and circumstances, and by utilizing the short food supply chain most preferable for the business, urban farming in southwestern Norway can be profitable as long as the Norwegian economy is good.

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9. Appendix

Appendix 1 Interview guide Smågrønt

Who are you, what is your story?

How did you learn about urban farming, and how did you start?

Urban farming has often been a result of hard times, wartimes etc, but today it seems more like a trend than a necessity?

Can you tell me about you products?

Can you tell me about your container facility and growing techniques?

What do you consider the benefits and limitations of urban farming, and your production, to be?

You sell most of your products to restaurants and some through Ostehuset and Coop Mega Madla, do you still sell products from the container?

How do you reach people who have never heard about you or the concept of urban farming before?

Who is running the business? How much time do you spend here?

What does your typical day look like?

I have read that a lot of UF depend on a lot of volunteer work in order to manage. Is this the case in your business?

Many new companies struggle in the beginning, building a reputation and getting customers. How was this for you?

Can this be your only source of income?

Is there any form of UF Community in the Region or in Norway?

What are your thoughts on sustainability, and sustainable food production?

At what stage of the startup were you in contact with mattilsynet?

What are your thoughts on competition?

In the long run, what do you think is the most profitable form of urban farming?

Business models: Low cost approach with specializing in one product, specialty niche products, diversified activities.

- Well, we are running on very low cost, and we basically offer one type of product called microgreens, which are plants in the early stages of growth. We have twenty different varieties, but they all apply to one category of plants.
- If you allow the microgreens to grow further they will grow into full sized plants or vegetables, and studies have shown that they contain up to fifty times more nutrient value than regular plants.
- They basically need seven days from they are planted to they have reached the right size and are delivered to the restaurants.

How did you learn about urban farming, and how did you start?

- I knew about indoor growing operations, and urban farming was an idea me and my wife had, living in the city. We like living here, and didn´t want to move outside of the city in order to grow vegetables, so I started reading about projects like this, growing in cities around the world, I called a lot of people and we travelled a lot and got to see what others were doing, so it was a late learning for me, starting with an idea of growing while living in the city. We just had to find the right way to do it. Norway has a more difficult climate to grow compared to other parts of the world, because you can only grow during the hot season, but it is very good for growing a lot of vegetables, especially this area of the country.
- I have been doing this for many years for myself, and I really enjoy the process of growing, and I have always been interested in knowing what you can achieve by using different techniques of growing. We started planning this Startup in Rogaland back in 2016. We tried to find a house where we could do this, but we met problems such as sun conditions and short growing seasons. Because the daylight is there only for a short time in the autumn and winter, growing conditions were not optimal. Our goal was to serve restaurants as our main customer, so we had to choose a different solution where we could serve all year round.
  We can sell something that is fresh and local, which is a benefit for restaurants.
-

Urban farming has often been a result of hard times, wartimes etc, but today it seems more like a trend than a necessity?

- People are aware of local products, they want to know where the food is coming from, what they put inside their bodies, which is a benefit for us as well. Short travelled food is getting very popular, and you can also get better quality from local food, which is a benefit also.
- On the other hand, we use the same growing methods today as were used hundreds of years ago, what has changed is the scale. We use bigger plots of land to grow more food (rural farming), and the problem with this type of commercial farming is that you grow crops at the same place over and over again, causing soil degradation, and fertilizer and pesticides are damaging for nutrients and microorganisms, resulting in food quality going down. The focus in the industry right now, in order to feed people in the future is to increase efficiency and quality in food production.

- In our production today we are able to produce 100 kilos of produce per week.

You sell most of your products to restaurants and some through Ostehuset and Coop Mega Madla, do you still sell products from the container?

- Yes, we still do that. There are many customers coming to our farm and picking the products they like, but it is not the big chunk of the market. Our biggest customers are the restaurants, because they buy a lot of products every week. We also have hotels and the stores. People are more aware today, and put a lot of focus in their food.

- Today we have about 20 restaurants, but the numbers are rapidly increasing. We have not actively marketed ourselves yet, so the customers we have today has been with us from the start or is a result of WOM. Some of the chefs contact us directly to check our prices and what we can offer. Our prices is competitive in the market.

How do you reach people who have never heard about you or the concept of urban farming before?

- That is something we are working on. It is quite easy in the local market because people talk to each other. We have a lot of customers from vegan media sides because vegans wants to supplement their nutrients and minerals with our products. Word of mouth is the best way to get recognized. We are working on expanding our business all over Norway, so this will be another type of marketing process. We are talking to someone about doing the marketing for us. Microgreens is still a relatively new product, so we need to build awareness.

How are the microgreens grown?

- They are planted and grown in a soil medium with their roots being in direct contact with nutrient water.

tasting different types of products This was an unexpected experience!!

- Yes! That is one of the advantages of microgreens. When people see small leaves on the plate, they don't expect them to taste much, but the microgreens really influence the taste of the different dishes. If you serve a fish dish, you can add mustard leafs and achieve the same taste as you would by using mustard. This way you can have the same taste but at the same time be aware of what you put in your mouth.
- We have about twenty different varieties, but we have tested closer to fifty in order to see how they taste, what conditions they require. If customers want something special we have not tried before we are willing to try it. A lot of plants taste great when they are fully grown, but are disgusting when they are small. Other plants needs to be harvested at a certain time in order to have the correct taste.

You talk about the potential, but what do you consider the limitations to be?

- In this kind of system, you can grow anything in a container, but it is a matter of space and volume. The difficult part as a startup is calculating the profit and how much time you must spend on the farm. Efficiency I small-scale farming is very important, it is basically what makes the profit.

How have you learned what you know today?

- Basically by myself. I have done a lot of tests with microgreens to find out what climate they like, how much water to use and what kind of soil they like, what kind of factors influence the growth. We can replace the plants every week, meaning we can sell a lot of volume every month. Our first goal was to make this profitable, that is important when running a business, now we have made bigger plans, meaning we needed bigger space. We have a project under development in a 500 kvm bomb shelter underground where we are doing hydroponics. It will take a while before we can utilize all the space and grow volumes. But yes, in small scale farming, the limitation is space.

Who is running the business? How much time do you spend here?

- It is me and my wife. I work full time, she has another job on the side.
- Right now we are developing, and in a process of finding new customers, so this takes a lot of time, but the time it takes to run and maintain the farm is about 5-6 hours a week. If I get enough customers to fill the container with produce *(now running at approximately 50% capacity)* It would probably require around 10 hours a week.

I have read that a lot of UF depend on a lot of volunteer work in order to manage.

- Yes. Outside farms for instance require a whole different maintenance, and it takes more time to grow.
  I have grown vegetables in my own garden, and it is very seasonal work. Some years you can get lots of produce, while other summers are terrible, so you hardly get anything.
- My farm is almost fully automated, meaning I can make everything ready on Monday, leave and come back on Friday and it will grow the same way. We do have holidays. The first year was very hard, there was a lot of manuals and a lot to learn, so I had to be here every day, but now it is quite easy. We plan our holidays around the restaurants. Between Christmas and January 10. Is a quiet time for the restaurants, so that is when we take our holiday as well. I have one friend that helps me out if we need it. We are also cooperating in a mushroom project.

Hydroponics

- Everything can grow in hydroponic systems, here also, it is just a matter of space. We have full climate control, so we can have year-round production without problem.
- We have little growing space, and grow a lot of plants on the limited space, and they require a lot of water. Some of the plants need more water than the others, so we decide which plants to put together on a shelf, and have automated watering-systems based on the need for each plant. The plants requiring the same watering conditions is put together. We have the possibility to control the temperature in different stages inside the container, so we can provide different micro-climate according to the need of the plants. Airflow is also an important aspect of growth.
- We use different color led lights in production. We need to find the right light in order for the plants photosynthesis to work. Light is only important when the plants are processing the nutrients from the soil. In the early stages of growth, what microgreens are, it only requires a minimal of light, if we were to grow the plants bigger they would require more light, and we would have to use different colors of light. Light is the only artificial thing used in our processes, the soil is organic, so is the seeds, and we use filtrated water, so everything except for the light is very natural. I did a lot of research about light before we started.

Containers.

- I built this container in Poland and brought it to Norway. I was contacted by someone in Poland wanting to do the same thing as us, so I was in Poland with them, helping them build theirs as we were building this (new, bigger) container for ourselves.
- One of the reasons we chose to have our production in a container instead of a warehouse is the fact that they are moveable. If this location for some reason does not work for us any longer we can just move it to another location easily without the risk of losing everything and start over. *(as in contrast to investments made in fixed locations.)*

What are your thoughts on competition?

- Well, competition is coming, but we have an edge over them, and we started before them. It is a learning process, it is not like you can just start growing immediately, you will have to learn how different plant behave, what kind of climate they like and a lot of other things to learn. The next step for us is to expand all over Norway, and we have been in touch with people willing to invest, so this is the next step for us.

Many new companies struggle in the beginning, building a reputation and getting customers. How was this for you?

- Honestly it was not that difficult. We provide a good quality product, so we are confident in presenting ourselves and the product to chefs, and they really like it, and they don't have other offerings quite like this, so it is a huge advantage for us. We spend a lot of time developing dishes with chefs as well. They tell us what their dishes are, and we find suggestions of which microgreens could fit.

Can this be your only source of income?

- Yes! I am already making a living out of it. We started generating a profit after half a year, so it was very quick.

UF Community.

- I have met a few people who are interested, but a lot of projects have failed. There is a movement trying to build an urban farming community, learning kids how to grow and where food comes from, but nothing large yet. Urban farming is not so big in Norway yet, but it is starting to get more popular.

- Every urban farm is different, and is has to be set up different because it has to be adapted to the conditions it is surrounded by.
  I believe this is one of the biggest challenges in urban farming, because every place is different, different climate, space, sun conditions. So every different urban farm must be adapted to the conditions where it is at. Everything is very individual.

Sustainability.

- Our main customers are the restaurants because we depend on recurring customers. We have to estimate how much to grow every week to supply enough and without unnecessary waste, because that is also generating costs. We use approximately ninety-five percent less water than rural farming. We collect rainwater in a tank, filter it and spread it throughout the system.
- A lot of food products today travels far, by boats or airplanes, and then in large trucks that drives all over, and this happens every day. This has a huge impact on the environment. We still deliver our products with regular cars, but right now we have no other alternative. Still, our product travels far shorter than other products.

What does your typical day look like?

- Right now we are talking to a lot of new potential new customers, and there are a lot of new projects going on, so we spend a lot of time in meetings right now, in addition to planning, planting, talking to customers and deliveries.
- How much time is spent working depends on the day. I prefer to work at night, so generally I don't start the day in the early morning. I do paperwork in the evenings, and maintaining the products at daytime, deliveries to restaurants around 10-11 am.
- We have automated the farm so that we are able to go away for a few days at a time, just set the lights, and the watering is automatic. It is a good way of life when you can do things the way it suits you. One of the reasons we started this project is that I wanted to start something I would not have to spend all my time on. This allows me to do other things as well.

- We brought our products to "Gladmat-festivalen" last year, and we were chosen to compete in the finals of "Det norske måltid", which is an annual price for the best or most interesting products in Norway. It was good exposure for us with a lot of media present and a lot of members of the food industry (*restaurants etc.)* . we did not win, but it was good for us to be there. We are allowed to use the nomination *(and a certification)* from "Det norske måltid", which is a good label when we talk to new potential customers.

At what stage of the startup were you in contact with mattilsynet?

- I approached them before I started, and they did not have any experience with this, they only had experience from traditional farms. I was the first urban farm to contact them to ask about requirements to run this facility. I explained our processes, and they came over for a control,

they were impressed. They asked about risks of contamination and such, but the climate control, water and seeds are approved, so nothing can go wrong.

- I buy the seeds, I do not produce any myself.

- There is a lot of satisfaction in eating what you have produced yourself, and I feel good about what we have managed to create.

- Working with plants is really relaxing, and it provides positive energy.

- As of now we don't have any educational activities to offer, our focus is to get it all running, but it is something to consider for the future.
  Our main income is from selling our produce.

In the long run, what do you think is the most profitable form of urban farming?

- This can be very profitable, especially if we run full capacity we can generate a lot of profits, but there are of course market limitations. We can produce a lot of products as long as the market is ready to take it. There is a larger density of people in bigger cities, but there is a great market in Stavanger with lots of restaurants, and there is a focus here on good food quality, so we are in a good place. We work with a lot of good chefs, and they give us insights into what they are looking for in a plant, so the research for us is easier here, we don't need to look for bigger markets, we get the essence of consumer preference and demand is here, and place containers all over the country based on that.

Can you describe how you became interested in starting a commercial urban farming business, and why you decided to grow microgreens instead of other alternatives?

How do you market yourself to potential new customers?
(visits them to present yourself and your products? Word of mouth? Other?)

Who is your customers?
(business customers, private, etc.)

How many business customers do you have (today)?

How much and how often do you sell to private customers directly from the container? (roughly)?

As of today, it is just the two of you doing all the work. At what customer level do you believe it would be necessary to hire additional workers and/or expand the business?

What possible benefits (for you) do you believe is achieved through personal interaction with your customers?

What kind of sales arrangements do you have with your business customers?
(individual sales/ subscription arrangements/ others)

- Do the customers have fixed orders, or another arrangement?
- Can you estimate how much of your income comes from the various sales channels (a percentage estimation of each is fine, I don´t need numbers)

How do you price your products? Please elaborate.
(Fixed price/Dynamic?)

Can you elaborate on the sales from Ostehuset and Coop Mega?
(Do they buy from you and resell/shares of the sales/provision?)

What is the purpose of selling through Coop And Ostehuset in addition to the business customers?
(Wider customer group/ account for uneven demand in private customers / others?)

Do you have any economies of scale?

What do you think is Smågrønt´s key resources?

Who is Smågrønt´s Key partners?
(Do you cooperate with other urban farmers)
(Who is your suppliers? (Seeds/nourishment etc.)

How are your operating costs divided between fixed and variable costs, and what is associated with the respective costs?

Do you have agreements on fixed deliveries to regular customers so that you are secured a fixed business income, or do these vary from week to week? (or per order)

How would you describe the financial situation for Smågrønt today?
(Are you achieving financial surplus after paying your own wages?)

Is the way you are operating today the optimal solution for you? Or do you know any other ways of selling/distributing/operating that might potentially increase your business profit?

Can you vision a development of your business concept where you start selling containers ready for customers who wish to start hydroponic vegetable growing?

In a hypothetical scenario where you suddenly face five competitors offering the same products as you are currently offering, how do you vision this will affect you and your current situation? (if it will affect you at all.) How would you respond to this potential threat?

I got involved in urban farming because it was a part of my hobby and interest. I decided to grow microgreens because of the niche in the market as well as quick crop rotation, that allows me to grow them in high intensity at the very small footprint.

We do market ourselves through social media, and that was to the only part that we put the focus on. When we started we were the only company doing something like that in Norway, therefore we had a lot of publicity in media all over Norway. Also when we started I talked to a few chefs in the city and the word just speeded organically. Being a finalist at Det Norske Måltid was great exposure for us as well.

We have customers in the private area, restaurants, stores, and companies.

We sell almost every day from the container to private customers.

We're in the process of growing business, so I expect to hire people at some point to relief me from some duties. As for now, we're managing ourselves.

The personal interaction is very important for me. I get instant feedback from my customers about quality, tastes, uses, etc. That is the great value for us since we can react to their needs instantly.

Pricing the product has a lot to do with variables like seeds, transport, time to produce and others as well. Since it's a growing business and we're working on our Quality System Assurance and Franchise model. I'm not allowed to release information about that.

We do sell about 80% to business and 20% to private customers.

Sells in Coop and Ostehuset has been growing since we started delivering there, but it varies due to different seasons, holidays, etc.

The purpose of selling in Coop and Ostehuset is to allow more people to have access to our microgreens, and thanks to that increase our customers base and building awareness of high quality, local produce.

The scale of production is key for us. Every single container is able to produce about 1250 units/ week, and the costs of running are the same regardless of the amount produced. We do generate much better income in the bigger production scale.

Our key resources is know how, and unique growing system that is about 40% more efficient (in terms of space and time needed to produce our microgreens). That is also the answer to potential competitors. We've worked quite a lot on the efficiency of the production, and because of very high efficiency and relatively low costs of running we have a big margin to work on.

The economics in Smågrønt is quite good. We do generate a steady income after paying salary and running costs. We do notice about 50% growth in sales compared to the same period from 2018.

The goal with the business from the start was to build an example facility here in Stavanger and to base on that to develop a franchise model that can be applied to any city in Norway. Also, we have designed several tools that will increase efficiency in the long run and will reduce the manhour spent on the farm. That comes with automation, that we have partially applied already and will apply more

solutions in the course of the year.

I have some years of experience in hydroponic production so we could help to set up hydroponic grow as well.

We have several partners we're working with for exaple:
-Arve's Mat
-Ostehuset
-Maggis Munchies
-Midsummerhotsauce
-We have a project of communal gardens with Stavanger Kommune

Mvh
Kamil

Kan du fortelle litt om bakgrunnen din og virksomhetene dine?
- Du har flere virksomheter, er disse separate virksomheter? (Konsern?)

Hvilke dyrketeknikker benytter du i dine drivhus?
- Miljøgartneriet – egne metoder?)

Har du erfaring med eller tanker om hydroponi som dyrkningsmetode? Er det bærekraftig?
- Det hevdes at hydroponi har mulighet til å kunne erstatte tradisjonelle metoder som dyrking i jord, har du noen tanker om det?

Hvilke typer grønnsaker er det mulig/ikke mulig å dyrke i vårt klima?
- Finnes det noe register eller liknende man kan finne informasjon om dette?
- Ifølge mattilsynets nettsider finnes det en oversikt over grønnsaker man har patent/lisens på i Norge, men den virker veldig begrenset.

Hvilke salgskanaler benytter du for salg av dine produkter? Hvem er kundene dine?
(direkte salg, salg via mellomledd, hvem? Hvordan?)

Kan du si noe om hvordan inntektene dine er delt mellom disse kanalene?
(Korte supplychains, direkte markedsføring, personlig salg osv.)

Ser du for deg at det kunne vært gjort annerledes? Evt hva?

Bruker du noen form for merking av produktene dine?
(lokalprodusert/økologisk etc? Merkenavn/merkevare)

Hvor lang er sesongen din?
(Arbeidssesong/salgssesong, hva gjør du, hvordan gjøres det med arbeidskraft? Sesongarbeidere?)

Hvem er dine samarbeidspartnere?
(tine? Har du egne leverandører for gjødsel, frø, jord, osv?)

Storskalaproduksjon gir stordriftsfordeler, vil du si at dette er tilfellet for deg?
Hvordan er forholdet mellom faste og variable kostnader, og kan du si noe om hvordan dette fordeles?

Har du noen tanker om urban farming som konsept? Hvilke aktører mener du er nødvendig for at det skal kunne være bærekraftig?

Kan du fortelle litt om hvordan tomatprosjektet på sola flyplass ble til?

Hvilken dyrkningsmetode benyttes der?

Hva er din rolle i prosjektet?

Hvor mye ser du for deg at kan produseres der i løpet av en sesong?

M = Meg
K = Kåre Wiig
S = Simon Hansen (Produksjonsansvarlig Miljøgartneriet)

M: Sånn.. Jeg ser det er noen av disse spørsmålene vi kan hoppe over fordi vi har snakket om dem, men hva var det du kalte dyrkningsmediet dere bruker?
K: Steinull
M: Steinull?
K: Ja
M: Og det fungerte som..?
K: Dyrkningsmiddel
M: Og det holder på vannet på en annen måte enn jord?
S: Ja, det gjør det. Det er et inaktivt substrat, det er ingen biologiske prosesser involvert.
M: Men er det et middel som bruker mindre vann enn om du skulle produsert i vanlig jord?
S: Nei.
M: Nei, så det går like mye vann?
K: Ja, det går vann og spillvann som plantene ikke vil ha, det kjører vi ut i et rensesystem og renser vannet for bakterier og forskjellige ting før det kjøres tilbake igjen.
S: Det er et lukket system. Det vil si at det vannet som som ikke opptas av plantene resirkulerer vi. Vi bruker vannet kontinuerlig om og om igjen for å være miljøvennlige for det første, og det er synd å hive ut ressurser som er noe verdt, det vil si vann og gjødning.
M: Mhm. Men hvordan er det i forhold til kostnadsbesparelser, for det koster vel litt å ha et slikt renseanlegg? Det er vel en investering?
S. Et slikt renseanlegg er voldsomt dyrt. Men i forhold til gartneriets størrelse og hva gjødning koster er et slikt anlegg tjent inn igjen i løpet av et år.
M: Åja, såpass? Så det er kostnadsbesparende å gjøre det på den måten?
K: Ja, det er kostnadsbesparende. Og så kan du si at det sparer oss for ganske mye gjødsel, for vi driver ikke økologisk, men vi driver såkalt biologisk. Det vil si at vi bruker ikke kjemikalier i vår planteproduksjon, men vi bruker biologiske nyttedyr som spiser opp skadedyrene.
M: Ja, hvilken type dyr er dette?
S: Jo, det er skadedyrenes naturlige fiender. De blir innsatt i overtall kan du si, og årsaken til at biologisk bekjempelse kan fungere er at fienden jobber raskere enn skadedyrene. Altså nyttedyrene jobber raskere enn skadedyrene, og da er det ikke snakk om at de beveger seg raskere, men at de formerer seg raskere.
M: Mhm, men hvordan blir det.. altså, vil det si at de alltid har nok å spise på en måte, de angriper ikke plantene?
K: Nei, da dør de ut. Vi setter inn en gang i uken.
S: Vi har et monitorsystem hvor vi registrerer utviklingen av skadedyr, og ut i fra dette settes det inn nyttedyr, så innsetting av nyttedyr blir justert etter registreringene som blir gjort av skadedyr.
M: Dette høres jo spennende ut.
S: Ja, det høres gjerne fint og flott ut, og miljøvennlig, men hele "humlen" med systemet er at det ikke er forholdet én til én mellom én nytteorganiskme og én skadeorganisme, ville ikke systemet være holdbart.
M: Så da gjør disse dyrene bare jobben sin for så å dø ut uten å gjøre noen skade?
K: Ja.
S: Ja. Naturen går fortsatt sin gang selv om vi er i et glasshus.
M: Men er det snakk om insekter?
K: Ja, det er insekter som brukes.
S: Vi har for eksempel spinnmidd som kan gjøre ganske store skader i tomatplanter, og til den setter vi ut rovmidd.
M: Jeg har ikke hørt om noen av dem.
S: Nei det er kanskje ikke så rart.

M: men, som vi snakket om på rundturen vår, hydroponi, det hadde du (Kåre) ikke hørt om før?
K: Hydroponi? Hva er det Simon?
S: Hydroponi vil si at du dyrker uten substrat, du har røttene hengende i et vannsystem, det kan være fritt i rennende og resirkulerende vann. Du kan si at steinull tangerer hydroponi fordi i hydroponiske system har du planten samlet i en capsule, eller en klemme mens du har røttene hengende i vannsystemet. Det kan være vann som blir sprayet rett på røttene, eller rennende vann som løper innover røttene. I vårt tilfelle, istedenfor at planten sitter fast i en bakke eller klemme i et hydroponisk system står den fast i steinull.

(Kåre har forlatt rommet for å svare på en telefonsamtale)

M: så det er noe som fungerer godt for tomater?
S: Ja, men det er noe som fungerer godt i mange forskjellige kulturer.
M: men, har du noen tanker om hydroponi er noe som kan være bærekraftig? om det er noe som kan erstatte vanlige tradisjonelle dyrkningsmetoder? slik som på anlette her?
S: ja, det kan det godt, det er bare en stor investering involvert i hydroponiske systemer, og så vil det være noen kulturer hvor røttene skal ha en viss mengde luft rundt seg, og i noen hydroponiske systemer er det slett ikke nok luft omkring røttene. Tomatrøtter for eksempel, hvis de ikke har luft omkring seg, slik de har i steinull, vil de få problemer med rotsykdommer. Men jeg vil si at tomatplanter godt kan fungere i et hydroponisk system dersom vannet sprøytes på røttene istedenfor å være konstant nedsunket i det.
M: Så da er det altså individuelle forskjeller for hvilke hydroponiske systemer….
S: altså, det er nok like mange hydroponiske systemer som det er tradisjonelle systemer. Det er noen som dyrker tomater i steinull, det er noen som dyrker i kokos, ren desinfisert jord, ja det er mange forskjellige dyrkningssystemer som fungerer.
M: Så da mener du at det kan være en god ting om du skulle starte opp noe nytt, altså ikke at du skal gjøre om organisasjonen og begynne med hydroponi, men at du skulle startet opp helt på nytt, så kunne hydroponi vært et godt sted og startet?
S: Umiddelbart vil jeg nok si at jeg ville fortsatt som i dag.
M: Erfaringsmessig basert?
S: Erfaringsmessig må vi fortsette å dyrke i steinull, fordi det er en miljøvennlig produksjonsmetode fordi steinull er gjenvinnbart og kan resirkuleres til alt mulig, for eksempel asfalt, isoleringsmateriell i byggebransjen eller som ny steinull.
M: Åja! Hvor lenge varer en steinull?
S: ,Én sesong. det finnes også steinull som kan brukes i flere sesonger, men det er slik at dersom det er problemer i steinullen i en sesong, det kan være skadedyr, svampsykdom eller virus,om du gjenvinner den vil du ha samme problem til neste sesong.

M: Men de plantene som står i steinull nå, i en sesong, planter du ny plante i ny steinull hver sesong, eller kan du bruke planten på ny?
S: Det må plantes nye planter hver sesong, med mindre du bruker lys, da kan de vare lengre.
M: Åja, slik som på flyplassen? Det prosjektet som er startet opp der?
S: Ja, der, men også i andre lampekulturer. Der kan plantene stå i et helt år eller enda lengre.

M: Hvor lang er sesongen?
S: Sesongen starter i begynnelsen av januar og slutter i midten av november.
M: Er dette produksjonssesong?
S: Ja. Vi høster ikke fra begynnelsen av, men starter innhøsting i begynnelsen av mars for de første tomatene.
M: Hvordan fungerer det med arbeidskraft?
S: Det er manuelt arbeid.
M: Og dere hadde syttifem ansatte?
S: Ja, det er helt på toppen.
M: Bruker dere sesongarbeidere da, ut i fra mengde arbeid?

S: Vi har sesongarbeidere, og helårsansatte, og også noen studenter.
M: For dere trenger ikke like mange i arbeid gjennom hele året?
S: Nei
M: Når er det største behovet for arbeidskraft?
S: Det er nok fra slutten av mai til slutten av august. Da har vi alle syttifem i arbeid. Så nå nærmer det seg med hastige skritt. Det er en konstant utfordring fordi det arbeidet vi driver med er jo ikke coca cola flasker som skal plukkes, det er større svingninger i når vi har behov for mer folk. Vi har ansatte fra hele verden. De kommer fra alle verdenshjørner. Vi har en kar fra Kenya som kommer og jobber et år før han drar hjem og er hjemme i ett år.
M: Åja?
S: Det er ikke lett å få ham inn på kort varsel, for alt må planlegges med tanke på visum og flybilletter ol. Om vi har godt vær i fjorten dager står ikke jobben og venter på ham i en uke.
M: Det blir en utfordring da med spillvarer om dere ikke får plukket?
S: Vi får plukket, men det blir jo mye travlere for andre folk, så det er en konstant utfordring.
M: Så, vil dere si at produksjonen deres er væravhengig?
S: Ja, enormt.

(Kåre kommer tilbake i rommet)

K: Her på miljøgartneriet dyrker vi egentlig.., det er ikke noe kunstig lys, Vi har kunstig lys oppe på oppalingsavdelingen, men her dyrker vi fra.. vi planter inn planter fra januar februar og river de ut igjen i første halvdel av november kan du si. For eksempel på Wiig gartneri dyrker vi hele året, både tomat og agurk.
M: Der brukes kunstig lys?
K: ja, der har vi kunstig lys.

M: Du sa at at dere ikke har økologisk men biologisk produksjon?
K: Den er biologisk ja. Det vil si at vi har lov å bruke enkelte kjemiske plantevernmidler, men du kan si at på grunn av at vi benytter så mye nyttedyr tar vi knekken på dem også dersom vi bruker sprøytemidler, så de siste seks årene har vi ikke brukt noen plantevernmidler men vi kan bruke dem dersom det kommer ette eller annet, men det er helt spesielt, og plantevernmidlene må være godkjente.
M: Mhm.. Men produktene deres, kan dere merke dem med noe?
S: Dessverre ikke.
M: Ingenting? Dere merker ikke med lokalprodusert?
K: Det er derfor du kan si at jeg er en veldig Norsk-elsker fordi at på mye av de importerte tomatene og agurker benyttes det også biologiske nyttedyr, men du kan si at prosessen går så mye fortere fordi de har et helt annet klima enn her, det er mye varmere, derfor er de også nødt til å bruke en del strengere kjemiske midler enn vi er nødt til her det er en del kjøligere.
M: Mener du da for eksempel preserveringsmidler som brukes for at produktene skal klare seg i transporten til for eksempel Norge?
K: Ja..ja
S: Det er også noen som gir blaffen. Vi har selv tomater og andre grønnsaker, og de vil alltid eksistere, spørsmålet er bare hvem som skal produsere dem. I Skandinavia blir vi så glade for å se tomater om vinteren, og de importeres fra land som Marokko og andre land lengre borte, og der nede gir de blaffen. De bruker midler vi ikke har kunnet bruke i Europa på over 30 år.
M: Blir dette sjekket opp i landene det importeres fra?
S: Det blir sjekket opp, men man kan ikke sjekke hver eneste tomatparti som kommer inn til landet, så det er masse, ikke kun tomater, som kommer gjennom deres kontroller. Så har du andre aspekter av deres produksjon som er fullstendig håpløst, som arbeidskraft og miljø utover produksjonen.
M: Så de bærekraftige tiltakene som gjøres her..
S: mmm.. Du skal ikke lengre enn til Spania hvor du ser at de områdene som brukes til tomatproduksjon etter produksjonen er ferdig er bombet tilbake til steinalderen etterpå. Det er ingen ressurser igjen i området som kan brukes til noe annet.
M: Så det er på en måte en del av den bærekraftige produksjonen som er her, at ting skal vare i flere år, og at man ikke skal utnytte alle ressurser på en gang?

S: mm
M: Men nå, vi har jo fått disse NYT Norge merkene, kan dere merke deres produkter med dette?
K: Jaja. Vi bruker NYT Norge.

M:Vi snakket litt som storskala produksjon på vår rundtur. Vil du si at Storskala er noe du må ha for å kunne drive som du gjør? Eller å ha stordriftsfordeler?
K: Jaha. men du kan si når du snakker om storskalaproduksjon vil jeg si at alle gartneri, det vil si, det er mange gartneri som har cirka to tusen kvadratmeter. Her på miljøgartneriet har vi sytti tusen kvadratmeter, på Wiig er det seksti tusen kvadratmeter, så jeg vil si alt alt storskala er mer enn tusen kvadratmeter, ikke sant, men du skal ha en del mer om du skal mekanisere, effektivisere og rasjonalisere, da må du ha mer enn tusen kvadratmeter. Men for all del vil jeg ikke snakke ned de som har tusen kvadratmeter. Vi er en liten næring som samarbeider godt og skal samarbeide godt både store og små. Det er ikke hobby altså. Hobbydyrkere er de som driver opp til fem hundre eller tusen kvadratmeter, det ligger litt på en annen linje igjen.
M: Men hvem kan disse selge produktene sine til?
K: Da må de selge på gårdsbutikker og slike andre.
S: Noen kan også ha avtale med lokale sparbutikker eller liknende.
K: Ja, de kan stå på torget og slike plasser og selge direkte til forbruker.
M: Ja, dette er jo en del av oppgaven jeg skriver, dette her med korte forsyningskjeder i forhold til lange forsyningskjeder.
(Simon forlater rommet for å svare på en telefonsamtale.)
K: Ja, vi er jo kortreist mat, og jeg er veldig for kortreist mat. Det som Avinor gjør på Sola, det er jo kortreist. Men jeg vil si det slik at alt det som produseres i Norge er egentlig kortreist.
Det som ikke er kortreist er det som importeres. Det er importvarer.
M: Men det finnes jo mange forskjellige definisjoner av kortreist. Noen mener jo at kortreist skal være innenfor en radius av for eksempel førti kilometer, mens i USA for eksempel kan du måtte kjøre opptil fem timer, og det regnes fortsatt for kortreist, men her kaller vi gjerne Jæren-Stavanger for kortreist.
K: Førti kilometer får du ikke til. Du kan si det sånn at for eksempel, Nordland, Finnmark og Svalbard som vi sender en del tomater til, det er og kortreist, men får du inn import, importerte varer fra Spania, Italia, Sicilia, Marokko, det er ikke kortreist. I nord Norge klarer du aldri å dyrke tomater, du kan ikke det på grunn av at det er så mørkt og det er et annet klima. For å dyrke tomat må det være et miljø. Det er mange som har prøvd seg i nord Norge og Tromsø men de får det ikke til.
M: Det er vel også en helt annen sesong i slike områder.
K: Jaja, det går ikke.
M: Okei, så du mener altså at definisjonen på kortreist er dyrking innenfor landet.
K: Alt som dyrkes i Norge, ja.

M: Når du har en bransje som driver med noe er det kun en aktør eller et fåtall som kan være kostnadsledere, når du driver stort vil du dra fordel av fordelingen av de faste kostnadene.
K: Ja, du kan jo si det sånn at de tre største utgiftspostene hos oss er jo strøm, energi, lønninger.. og ja, det er de to største, men begge disse er like uansett om du har tusen kvadratmeter eller hundre tusen kvadratmeter. Det har vi de samme prisene. Alle, hele Norge, det er myndighetene som bestemmer hvordan vi skal lønne folk og slikt noe. Du kan lage det mer effektivt og dermed dra fordel av stordriftsfordelene, men de største utgiftsfaktorene.
M: Og de variable utgiftspostene hos dere blir da? Mengden som produseres?
K: Ja, du kan si det slik. Vi kommer jo lettere inn på markedet når vi driver med stordrift, men du kan si at bakdelen er at du presses fra kjedene på en helt annen måte. De presser prisene, og det skal være, ja, så det er en stor ulempe. De presser oss på pris.
M: men hvordan er det i forhold til utsalget du har på Wiik, der har du jo mulighet til å få andre priser enn du får fra Bama eller Coop.
K: Ja, men du kan si det slik at vi kan ikke legge oss veldig lavt når det gjelder grønnsaker, tomat og agurk og dette her. Da må vi legge oss på samme nivå som for eksempel coop. Kundene kan få ferskere varer på utsalget enkelte ganger, det kan de, men når det gjelder prisene kan vi ikke legge oss på en helt annen pris i butikken på Wiik enn på Mega eller Obs, for det går ikke. Da vil de skvise oss ut og vi mister avtaler. Det går ikke, men ferskheten blir på en annen måte. Og blomster. Folk kommer

til Wiig for å kjøpe blomster. De selger vi kun fra utsalget. De selger vi ikke til verken kjeder eller hagesenter. Ingenting. Der kan vi mer velge prisen.
M: En del av det jeg skriver om, nå driver jo du stort, men det er mange aktører som driver små gårdutsalg som selger det de produserer.
K: Ja, det de produserer selv.
M: Mhm. Om de hadde solgt til en stor kjede ville de fått en lavere pris, et tenkt eksempel er at du får fem kroner for et blomkål fra en kjede fordi det skal legges på penger i alle mellomlegg før forbrukeren kjøper i butikken. Om han hadde solgt direkte til meg uten å gå via en kjede ville han kunne ta en annen pris for blomkålet og få mer penger selv, og samtidig hadde jeg fått kjøpt et blomkål som er billigere enn jeg får kjøpt i butikken.
K: Det er riktig, ja, ja.
M: Kan du se dette ute på Wiik, at du kan ta en litt dyrere pris på produktene enn du får fra kjedene uten å vanne ut ditt eget konsept, at du ikke konkurrerer med deg selv, enn at du kan ta en annen pris for varene?
K: På varene jeg ikke har noen avtale med coop eller bama eller annen kjede, der kan jeg regulere litt, men de varene jeg har avtale på kan jeg ikke justere prisen. Da må jeg følge den prisen. Men disse kjedene, extra er kanskje billigere priset enn Mega, så det er alt ettersom, det varierer en del hva du tar. Har du mye av et produkt går prisen ned, har du overproduksjon går prisen ned.
M: Hva gjør du med overskuddsproduksjonen?
K: Ja, da tar Coop for eksempel og lager en kampanje som de selger ut til butikkene, så får …
(Kåre får en telefon, så intervjuet avbrytes noen minutter, I mellomtiden kommer Simon tilbake i lokalet.)
ja, hvor var vi, jo, de lager en kampanje.
M: Så du blir som regel kvitt produktene dine?
K: Ja, for det meste. Det hender jo at en del må gå til ku-mat. Det hender det, men det er veldig sjelden.
M: Hvem er det som får dem da, er det lokale bønder?
K: Ja, det er det.
M: Når du selger til Coop eller Bama, Bama har jo samarbeid med Gartnerhallen, selger du direkte til disse eller har du noen som formidler kontakten for deg?
K: På Miljøgartneriet er vi to eiere, jeg har sytti prosent, og en som heter Hallstein Aase eier tretti prosent, han steller med alt på Bama-Gartnerhallen, jeg har ingenting med det å gjøre, jeg har kontakten med Coop og Bunnpris og disse andre. Så jeg kan svare for det vi gjør med Coop, så om vi har overproduksjon lager de kampanje. Jeg går direkte til Coop i Stavanger eller Oslo.
M: Det du selger av vanlige produkter til Rema eller Bunnpris, har du direkte kontakt med disse?
K: Det går gjennom, eh.. når det gjelder Bunnpris har vi en grossist som heter Norfresh som selger til Bunnpris. Vi selger aldri direkte til Mega, Madla Handelslag, Obs Mariero eller Coop Klepp, de selger vi aldri til, vi selger gjennom Stavanger, eller da Coop. Når det gjelder Bama selger, tror jeg at han selger direkte til, han får avtaler med Bama gartneren, så er det gartnerhallen som lager avtaler med Bama.
Skal du snakke med noen av de store kjedene du?
M: Nei, du er den største aktøren jeg intervjuer. Du er min kontrast, om jeg kan si det på den måten. Oppgaven min handler om de små aktørene.. Vi kan jo gå videre til spørsmålene som omhandler den biten.
M: Urban farming som konsept handler om at du dyrker innenfor bygrenser, at du dyrker grønnsaker på hustak, i containere og liknende, dette begrenser jo hvilken skala produksjon du kan ha, samtidig er det mange som hevder at det er noe som må til for at grønnsaksdyrkning skal være bærekraftig for fremtiden og til å forsyne folk med mat. Men det handler jo da om veldig mange små aktører.
K: Da kan jeg si det på denne måten, hadde det bare vært små aktører, de små er gode for de store og de store er gode for de små, ikke sant. For det hadde ALDRI gått å bare hatt små produsenter. Hvordan skulle de servet alle folkene i Norge med bare små produsenter?
M: Nei?
K: Det hadde aldri, jeg vil si ALDRI gått an. ALDRI.

Det hadde aldri gått an. Det er jeg veldig klar på. Men du kan si det sånn, jeg har ingenting imot de små produsentene, absolutt ingenting, for de skal også ha sin visjon, selge tingene sine, både på torget, eget gårdsutsalg og liknende, og de skal ha et levebrød. Absolutt.
M: Noe av det jeg er kommet frem til, at de små produsentene, eller de som produserer nisjeprodukter produserer for de med kraftig lommebok.
K: Jajaja.. Det er sånn det er
M: Er det det du mener når du sier at de små er gode for de store og de store er gode for de små? At det er en mer kjøpekraftig gruppe som kjøper fra de små produsentene mens de store produsentenen skal serve alle grupper?
K: Njææ, ikke bare, altså du kan si det sånn at de som dyrker smått har sine nisjeplasser de selger sine produkter, og de kan kanskje, de kan prøve, de er nødt å ha litt mer for produktene sine for å overleve, de er det og det tror jeg er akseptert, men jeg personlig, altså, de som dyrker økologisk for eksempel. Det er vanskelig å få økonomi ut av økologisk dyrking fordi du kan si at forbrukere er ikke villige til å betale så mye som det egentlig koster å produsere økologisk. Og jeg vil si det så sterkt som at vi som produserer biologisk, som faktisk har lov å bruke enkelte sprøtemidler, vi driver nesten, hadde det ikke vært for at vi bruker mineralgjødsel og steinull kunne vi kalt det økologisk, fordi når du skal spise økologisk dyrkede produkter ser forbrukere produkter og tenker at de er sprøytet, vi har mange slike tanker i hodet. Norge er det strengeste landet i hele verden når det kommer til sprøyting av frukt og grønnsaker, så det er ikke mange midler vi kan bruke mot skadedyr. Derfor bruker vi nyttedyr.
S: Vi mener selvfølgelig det skal være plass til alle former for ideologier, biologisk produksjon, økologisk produksjon, biodynamisk produksjon, men vi kan med vår produksjonsmetode garantere en renhet av produktene våre som økologiske produsenter ikke kan. Økologisk produksjon er det husdyrgjødsel involvert, og det er, det gir et økt problem med bakterier på varene. Jeg vil ikke kunne si til forbrukere at de kan spise økologisk direkte fra pakken uten å vaske det først, men det kan jeg si om de produktene vi selv produserer.
M: Så det er et eget vepsebol med problemer i det du kaller sertifisert økologisk produksjon?
S: Ja, og når det kommer til selve den biologiske prosessen for plantens vedkommende, når vi er helt nede i planterøttene, planterøttene ser ikke forskjell på om næringen kommer fra mineralgjødsel eller raua på en høne. På det nivået er det så grundig oppløst at planten ikke ser forskjell. Du får ikke et annet gjødningsopptak som gir et sunnere resultat ved økologisk dyrking.
M: Men hva er det som gjør at vi som forbrukere tror at økologisk er veldig bra?
S: Det er fordi at med økologisk merkede varer er du garantert at det ikke er brukt kjemiske planteverneprodukter. I Danmark har vi Ø-merket for eksempel, som er en like sterk merkevare som Coca-cola. Er det et rødt merke på et produkt er det hundre prosent cosher for forbrukerne. De vet at dette produktet er i orden. Det er ikke helt det samme, men noenlunde det samme som svanemerket er i Skandinavia. änglamark er også en slik merkevare, Det er noe forbrukerne sier: “det har alltid vært godt, jeg hører de snakker om det”
M: Så det handler om en underforstått kvalitetsmerking som vi er klar over?
S: Presis!
K: og det er som jeg sier, jeg er for all del ikke motstander av økologisk dyrkede varer, jeg håper de kan få til en pris som de kan leve med, men det er vanskelig å få forbrukeren til å gi så mye mer for et økologisk dyrket produkt som de egentlig skulle hatt. Det er veldig vanskelig å få til en økonomisk god produkjson av økologiske varer.
M: Men også, hvis produktene dere har, biologiske, er bedre?
K: Jeg vil ikke si mye bedre enn økologisk, men de kan være presentert på en bedre måte, men vi får ikke lov til å presentere varene våre for.. ja, det er jo et samarbeid vi må ha med kjedene, jeg kan ikke komme nærmere inn på det.
M: Men du kan ihvertfall bruke NYT Norge merket, som er en merkevare nordmenn setter pris på. Flere og flere blir jo opptatt av at det skal være norsk, og ikke importert.
K: Det stemmer det.
M: Men tenker du som så at de små produsentene er ikke nok for å dekke behovet?
K: Nei, nei de klarer ikke det, de må ha supplement, det er klart det, men jeg ikke imot de små produsentene, men de er ikke i stand til å dekke behovet i markedet, for å kunne det er de nødt til å vokse. Det de driver med er nisje, og de er nisjeprodusenter på forskjellige arenaer.

M: Hvem er deres samarbeidspartnere? Du nevnte Tine som leverer vannet som brukes til varme rundt i anlegget.
S: Ja.
K: Her på Miljøgartneriet er det Tine, ja. Vi samarbeider og mottar vannkraft fra dem.
M: Hvem er ellers leverandørene deres?
K: Vi kjøper energi fra Lyse og Jæren e-verk. Kraften.
M: Har dere faste leverandører av frø og dyrkningsmidler eller tar dere vare på frø fra deres egen produksjon?
K: Vi kjøper fra LOG og Vekstmiljø. Vi produserer ikke frø selv, det kjøper vi fra Norengros eller LOG.
M:Så lurer jeg på, hvilke grønnsaker er det egentlig mulig å dyrke i Norge i klimaet vi har her?
K: Ikke de eksotiske produktene, men det er klart at det går an å dyrke de aller fleste typer frukt og grønnsaker i Norge hvis du har klima til det, inne i drivhus, og du må ha lys. Det er en del faktorer som må til for å få det til. Vi har mulighet til å dyrke det aller meste, men det å få økonomi i det, det er økonomien som teller. Vi får ikke økonomien til å strekke til i all produksjon ettersom det er så billig å importere. Dessuten er det ikke tollvern på disse produktene.
M: Så for å oppsummere det vi har snakket om mener du at vi egentlig har mulighet til å produsere det , aller meste, men det er økonomien som ikke strekker til og kundene er ikke villige til å betale den prisen det faktisk koster å produsere disse produktene?
K: Det kan stemme det ja.
M: Da er det bare igjen å spørre om prosjektet på flyplassen. Er det samme dyrkningsmetode som benyttes der, som det dere bruker her på miljøgartneriet?
K: Ja, det stemmer. De bruker steinull og LED-lys.
M: Hva er din rolle i dette prosjektet?
K: Nei, det er egentlig bare å passe på at det blir…, nei, det er i grunnen Simon som har kontroll på det prosjektet og selve kulturen.
S: Vi legger navnet vårt til prosjektet og det primære med prosjektet er at vi tilfører det våre verdier og ideologi som vi selv har. At vi er interessert i å produsere kortreist.
K: Kortreist ja. Mener du selve dyrkingen da, eller noe annet?
M: Jeg tenker på prosjektet som helhet.
K: Ja, da vi fikk spørsmål fra Avinor om å være med på dette prosjektet syntes vi det var interresant og kjekt, og at Avinor vil være med å tenke så mye grønt som de faktisk gjør, og på grønne produkter, syntes vi det var veldig kjekt, og en gimmic til å være med for oss kan du si, og til å hjelpe dem til å få kortreist mat på Sola.
M: Blir dere en slags konsulenter for dem i en oppstartsfase, skal dere være med videre, eller skal dere trekke dere ut?
K: Jajaja, nå er vi lovet ett år foreløpig, så får vi se. Vi må nok være med å bidra litt videre.
M: Men som vi snakket om tidligere med de små produsentene, hvilken kompetanse må slike aktører ha for å kunne komme inn på markedet og at ting skal være lønnsomt over tid?
K: Jo, de må jo være kreative. Men hva tenker du konkret?
M: Jeg har et annet intervjuobjekt som heter Smågrønt. De driver med produksjon av microgreens. Dette er et nisjeprodukt. For at slike nisjeprodusenter skal være bærekraftige over tid, hvilken kompetanse må de ha?
K: Nei, de trenger ingen direkte kompetanse, de må være kreative, de må kunne markedsføre sine produkter på en måte som gir forbrukerne lyst til å kjøpe varene deres. Jeg har absolutt ingenting… jeg ønsker dem hell og lykke, virkelig, det gjør jeg. Jeg har ikke noe i mot dem i det hele tatt.
S: De store prosjektene rundt container-dyrking og denslags springer ut fra prosjekter hvor det har vært en nødvendighet for det. om vi ser på en metropol som Hongkong, Beijing og Shanghai, Tokio, så er dette et spørsmål om overlevelse på grunn av luftforurensing. Hvis de skal kvitte seg med ti tusen lastebiler som hver dag kjører inn til bykjernen, hvor det bor ti millioner mennesker, må det andre metoder til.
M: Denne typen prosjekter er jo ofte et resultat av dårlige tider. Da er det mange som dyrker selv. Dette er jo også mye større i Danmark enn i Norge, ihvertfall i de største byene. Det er et større konsept der enn det er her. For noen er det en nødvendighet med dyrking i byene, men her i Norge ser

det foreløpig ut som disse aktørene er mer nisjebasert og at de er et resultat av en trend, for det er ikke et behov for dette i Norge på samme måte som i andre land per i dag, å dyrke sin egen mat.
K: Nei, men for all del, det er mange hobbydyrkere osm dyrker sin egen mat her i Norge og. De kommer til oss og kjøper grønnsaksplanter som de dyrker selv i sin egen hage go i plantekasser og alt mulig.
S: Det vi også har i Norge er gårdsbutikker, det eksisterer ikke i Danmark på samme nivå, men konseptet er det samme. Gårder i Danmark er blitt industrialisert til den grad at det eksisterer kun få og store melkebønder for eksempel, det er tre tomatbønder i hele Danmark.
M: Sier du det?
K: Og disse blir bare større og større.
S: De små aktørene er forsvunnet. Det ser vi ikke i samme grad i Norge. Konseptet med gårdsutsalg, at det er gårdsutsalg i hver eneste lille bygd ser du slett ikke i Danmark.
M: Nei, det er gjerne derfor urban farming er mer utbredt i for eksempel København, at det er bygårder hvor folk kan dyrke selv.
S: Presis! Og det kan godt være at de produserer sine varer selv, men fortsatt er det det jeg vil kalle nisjefarming.

M: Skal vi se, da ser det faktisk ut som jeg har fått svar på alle spørsmålene mine.
S: Det var bra.
K: Okei, men da er det greit. Da får du ha lykke til med oppgaven din.
M: Tusen takk, Det var veldig kjekt å snakke med dere.
S: Det var hyggelig å kunne hjelpe til.

Fortell litt om deg selv. Hvem er du, stilling, hvor lenge har du jobbet her osv.?

Hva er bakgrunnen for ønsket om å dyrke egne grønnsaker?
+ formålet? (tilby lokalproduset mat/ redusere kostnader/ omdømmebygging?)

Hvilke grønnsaker ønsker du å dyrke?

Hvordan skal disse dyrkes? (Drivhus i jord/hydroponi osv?)

Hvilke mengder planlegger du å dyrke? (hvor stort drivhus?)

Vil denne produksjonen være et supplement til nåværende grønnsakskjøp, eller ser du for deg å være selvforsynt med disse grønnsakstypene?

Hvem er kundene?
(Restaurant og hotellgjester?)

Er denne satsingen en del av et grønt/bærekraftig løft for bedriften, eller er det en enkeltstående operasjon?

Hvem skal være ansvarlig for den daglige driften av dyrkingen?
(Flere ansatte? Eksisterende ansatte? Utenforstående?)

Hvilke oppgaver skal de utføre?

Hvem vil være partnere i dette prosjektet?
(leverandør av materialer/ tjenester eller liknende/ andre restauranter?)

Hvordan ser kostnadsstrukturen ut?
- Hvem/hvilken avdeling skal finansiere det? Vil det bli en del av det tradisjonelle regnskapet eller skilles det ut for seg selv?
- Hvordan fordeles kostnadene mellom faste og variable kostnader?
- På hvilken måte vil dette generere inntekter for dere?
  (økte måltidspriser/goodwill/omdømme)

Når starter matproduksjonen opp?

Starter dere fullt fra begynnelse eller har dere framtidsutsikter og mål for prosjektet?

K: Kristine Aukland
S: Siren (meg)

S: Kan du begynne med å fortelle litt om deg selv?
K: Jeg er kjøkkensjef her på hotellet. Jeg styrer alt som har med mat å gjøre, og har vært her i nesten tretten år, så det begynner å bli en stund. Ja, det er vel min rolle her.
S: Hva er det som gjør at du ønsker å dyrke grønnsaker selv?
K: I utgangspunktet er det for å utnytte den plassen vi har oppe på taket.
S: Er det et flatt tak dere har?
K: Det er flatt ja, men det er ikke helt på taket på øverste platå, men det er en åpen plass i tredje etasje. Utgangspunktet var egentlig bare å plante litt urter, små cherry-tomater og litt neper for å implementere i menyen slik at det blir mer enn bare kortreist, at vi på en måte får vårt helt egne produkt, så har dette utviklet seg til å bli en hage, derfor har jeg vært i kontakt med «Lokal Base» på Sola.
S: Er det en bedrift?
K: Det er en bedrift som driver med, det de i utgangspunktet driver med er hage og næring, og forskning på det. Veldig spennende det de holder på med. Det som i utgangspunktet bare skulle være en grønnsaks og urtehage er nå blitt til hotellets hage som også skal åpnes opp for gjestene.
S: Åja, så spennende!
K: Ja, så nå prøver vi å finne ut hva vi skal ha og hvilket bruksområde vi skal ha det til. Det som i utgangspunktet bare skulle være for meg og kjøkkenet er plutselig blitt et så stort prosjekt at vi ser for oss det kan være et område vi kan bruke til bryllup og små eventer, at det skal bli en hel hage.
S: Skal det være åpent tak?
K: Ja, helt åpent ... se her, skal du få se bilder fra «Lokal Base», det er jo egentlig ikke dette de driver med, men de har rigget et lokale slik at de kan ha bryllup og andre eventer, altså inne i drivhuset deres, sammen med masse planter og vekster. Kjempefint. Her vokser plantene over som et slags tak.
S: Bruker du dem som en slags form for konsulenter i deres prosjekt?
K: Jeg har tatt dem inn fordi jeg syntes de hadde fine blomster i en bryllupsevent jeg var på, så kom jeg i snakk med dem om denne hagen, for det som er viktig for oss her på hotellet er å ha en hage som steller seg selv, og vi vil det skal være med å bidra til et godt miljø for blomster, bier og insekter, og skape et psykososialt miljø for gjestene.
S: Tenker du at dette blir et slags rekreasjonsområde når dere ikke har eventer?
K: Ja, så det skal være, vi vil det skal skape en illusjon av havutsikt på den ene siden av hotellet, og hageutsikt for de hotellrommene som befinner seg på innsiden, slik at de kan få noe fint å se ut på, ikke bare en grå bakgård.
S: Hvor stort område er dette?
K: Jeg kan vise deg etterpå hvis du vil?
S: Ja takk, det hadde vært supert.
K: noe av det vi også tenker på er å bruke regnet til å forsyne blomstene og plantene. På «Åpen Base» driver de også med kompost, det synes vi også virker spennende, mulighetene for å bruke matavfallet vårt som gjødsel til våre egne planter, men her er det hensyn å tas, og vi må jobbe med hvordan dette skal gjøres på en måte som godkjennes av mattilsynet, for per i dag synes ikke de det er like bra, så det må vi se på.
Planen er å ha grønnsaker, urter, epletrær...
S: Hvilke grønnsaker tenker du da? De du vanligvis forsyner kjøkkenet ditt med?
K: Vi greier nok ikke å forsyne vårt eget kjøkken med dette, men det vil være en måte å supplere kjøkkenet, og da tenker vi epletrær og.. det er jo slik at ikke alt trenger å vokse på bakkeplan, så vi tenker å benytte veggene slik at det også kan gro planter oppover.
S: Vertikal dyrking. Så spennende. Men grønnsakene du planlegger, tenker du da hovedsakelig salater å denne typen grønnsaker kontra rotgrønnsaker.
K: Rotgrønnsaker skal vi også kunne klare, det kommer an på den endelige planløsningen. Vi holder fremdeles på å planlegge hvordan det skal se ut, for nå er hovedfokuset til hotellet andre etasje, der

holder de på å totalrenovere. Kom, så kan vi gå opp, så kan du få se hvordan det ser ut og danne deg ditt eget inntrykk.
S: åja, supert.
....
.... (Kristine gir en omvisning av byggeplassen og hvordan den nye utformingen vil bli før vi går videre opp på «taket», som kan beskrives som et atrium med hotellrom opp langs alle vegger. Hun viser hvor hun ser for seg at det kan komme til å se ut.)

S: Her har du jo kjempegod plass, og om du får dyrket opp langs veggene vil du kunne produsere et relativt stort volum.
K: Ja. Det er så mange ting som kan dyrkes oppover, som ikke må være på bakken, så vi leter etter de beste løsningene.
S: Så her skal det være helt åpent i taket?
K: Planen vår er at dette skal kunne brukes hele året, og da ser vi for oss at det skal komme noen segl over enkelte steder som gjør dette mulig.
Vi må også se på hvilke planter, grønnsaker og trær vi vil ha inn her, og planlegge etter det.
Vi skal prøve, i områdene hvor vi ønsker å ha langbord, å plante et tak som kan gro over.
S: Når ser du for deg at dette skal være ferdig?
K: Hehe.. ja, det var det. Nå planlegger vi fremdeles, og det er så stort fokus på å ferdigstille arbeidet i andre etasje... men vi er i gang, og det er her vi har inn «Lokal Base» som kan fortelle meg hvilke vekster som kan overleve. Det er mange prosesser for å få ting gjennom, og vi må tegne, jeg har tegnet noen dukketegninger av hva jeg ser for meg. Jeg har ikke noe bestemt tidsaspekt, men vi er i gang.
S: Det var veldig kjekt å se hvordan det ser ut, det gir mange flere muligheter enn jeg hadde forestilt meg på forhånd.
K: Ja, vi har mye potensiale.
*Viser tegning av hvor hun har sett for seg plassering av drivhus, sittegrupper og langbord, og hvor hun ser for seg å ha en dam, trær og ulike grønnsaker.
Vi ønsker å skape en plass med en koselig atmosfære, men vi er ikke helt landet på hvordan vi vil gjøre det.
S: Så dette gikk altså fra..
K: Å være en liten drøm jeg hadde om en liten grønnsakshage hvor kokkene kunne dyrke grønnsaker til maten, til å bli en multifunksjonell hage.
S: en flerbrukshage både for ansatte og gjester.
K: Ja, vi ønsker at alle skal kunne dra nytte av den, og vi tenker jo at dette skal bli det beste Stavanger har å by på, det er det som er blitt det nye utgangspunktet.
S: Regner du omdømmebygging som en del av dette?
K: Absolutt! Vi kan selge inn hagen.
S: og egenproduserte produkter.. Men er du opptatt av dette med bruk av lokal mat?
K: Ja, veldig. Det meste av maten vi har i Stavanger er jo lokal, sånn sett, altså grønnsaker og slik er veldig lokalt for oss som bor i Stavanger.
S: Hva mener du er definisjonen på lokal mat for deg? Hvor langt bort skal du før det ikke er lokalt lengre?
K: ja, altså, Jæren er lokalt for oss, og der dyrkes det utrolig god mat, så geografisk sett så vil det være det. Så har vi også oster som lages her, «Stavanger Ysteri» det er også ei vi benytter oss av. Idsøe er jo også lokale, men de er blitt så store nå og driver egentlig med salg i hele landet.
Hvis jeg får mat fra Oslo er ikke det lokalt for meg.
S: Definerer du lokalt ut fra region da?
K: Ja, mat produsert i regionen. Rogaland.
Jeg handler en del hos Garman Vervik, og de er lokale. Jeg står fritt til å velge selv hvor jeg bestiller mat, og jeg bestiller da mye heller mat fra Vervik enn fra Bama, for Bama synes jeg er for stort.
Bedriften vår er svanemerket, så vi har mye vi må forholde oss til der også.
S: Åja, er det mange kriterier dere må forholde dere til for å beholde denne svanemerkingen?
K: Ja, det er kjempestrengt.
S: Det er vel også mange hensyn å ta i forhold til mattilsynet i denne prosessen, også med byggingen som foregår? Er det strengt å ha dem på besøk?

K: Ja, men jeg ser mer på dem som nytte, som et bra verktøy for oss å ha. Dersom du driver på en god måte er de et veldig godt verktøy. Om du driver litt mer på kanten er de slitsomme å ha med å gjør fordi de irettesetter deg, men for oss tenker vi at vi har invitert dem med inn i denne prosessen, at de kan komme med innspill underveis om de har forslag, om vi kanskje kunne gjort ting på en annen måte.

S: Du skal altså ha drivhus der oppe, og du skal ha åpen himmel, og dermed benytte ulike dyrkingsteknikker.
K: ja, det er det vi tenker.
S: Hvilken teknikk ser du for deg å bruke i drivhuset?
K: Foreløpig er jeg ikke kommet dit enda, for å være helt ærlig, med hvordan vi best skal gjøre det. Det som er det viktigste er at vi ønsker, istedenfor å kjøpe dyre urter og grønnsaker og garnityr, heller skal kunne lage dette selv, og vi ønsker å profilere oss i forhold til hva vi har i vår egen hage. Det er en lang prosess for å planlegge det og finne ut hva som fungerer best for oss, og finne vårt eget nisjeprodukt. Det er det vi håper å få til, og det er der «Lokal Base» kommer inn, for de er så sinnsykt flinke på disse tingene.
S: Det er jo også spennende så lenge dere har mulighet til å prøve og feile underveis, at du kan bytte ut det du egentlig har sett for deg dersom det ikke fungerer.
K: Ja, vi kommer nok til å måtte prøve å feile litt, men målet er jo at dette skal bli kjempebra, og at det skal bli den store «snakkisen».
S: Er prosjektet fremdeles hemmelig?
K: Ja! Vi går ikke ut med noe som helst enda.

K: Den opprinnelige tanken med byggingen var at de bare skulle legge et tak over, så var det han som eier hotellet som lurte på om det var noen som hadde noen forslag til hva det ellers kunne brukes til. Da kastet jeg meg på, så det er oss to som har blitt veldig giret på dette. Det kommer til å bli så bra.
S: Da har du den backingen du trenger for å få gjennomslag.
K: Virkelig. Nå vil alle være med. Det blir et så kult prosjekt.

S: Du sier at det du ønsker er at dette skal være et supplement til det dere har i dag, men ser du for deg at det kan være kostnadsbesparende for dere å produsere mat selv?
K: Absolutt!
S: Hvem er det som blir dette prosjektets «kunder»?
K: Det blir gjestene på hotellet, og gjestene i restauranten, og at hotellets gjester kan bruke det til rekreasjon i tillegg til at vi kan arrangere eventer som bryllup utenom.

S: Er denne satsingen en del av et grønt bærekraftig løft for bedriften, eller er det en enkeltstående operasjon?
K: Vi tenker jo at det skal være bærekraftig, det er det som er hensikten og tanken, og det er det vi ønsker å profilere, det bærekraftige.
S: Det at dere er et svanemerket hotell er vel gjerne et bevis på at det er et fokus på bærekraft og miljø fra før her på hotellet.
K: Det er det absolutt. Vi er under ganske strenge vilkår allerede. Det er mye å sette seg inn i og en stor læringsprosess.
S: Hva innebærer denne svanemerkingen?
K: Det er en sertifisering som skjer annen hvert år. Vi må holde en bestemt standard som går på absolutt alle elementer av driften som bruk av energi, økologisk, økonomi, bare benytte norske råvarer, ikke lov til å bruke materialer fra utrydningstruede arter, all fisk og kjøtt skal være sertifisert, det går på strøm og varme, forbruk av vann, avfallshåndtering, sortering. Ja, alt egentlig.
S: Betyr det at dere må planlegge oppvarming og strømforbruk i hagen på en miljømessig måte?
K: Det gjør det, vårt hovedfokus skal alltid være på det, derfor ønsker vi en hage som i stor grad klarer seg selv, og vi vil benytte oppsamlet regnvann for å spare bruken av vårt eget vann i produksjonen.

Jeg ønsker å bruke farget glass i inngangspartiet til hagen for å lage lys og atmosfære i hagen. På denne måten kan vi spare energi og penger på å kjøpe inn egne effekter til dette bruk i hagen, og la sollyset som treffer glasset utenfra reflekteres via glasset og ut i hagen.

S: Hvem kommer til å være ansvarlig for den daglige driften av hagen?
K: Med tanke på grønnsaker og vedlikehold vil det være meg, men jeg tenker jo at hagen skal ha minst mulig vedlikehold og klare seg mest mulig selv, ellers blir det en kombinasjon av os alle, for det er mange som ønsker å være en del av dette prosjektet, og som ønsker å bidra.
S: Så da trenger du ikke ansette ny arbeidskraft for å få til dette?
K: Nei, det er meningen at vi skal klare å løse dette selv.

S: Det er jo slik i Norge hvis du skal dyrke noe selv at sesongen ikke er så lang, ser du for deg at det blir sesongproduksjon av mat i hagen?
K: Ja, mye blir nok det, for vi har kalde vintre her, men jeg ser for meg at vi skal kunne ha produksjon gjennom hele året i drivhuset.
S: Tenker du da at du skal dyrke i deler av hagen hele året, og resten er sesong?
K: Det hadde vært ideelt.
S: Da må du også ha kunstig lys.
K: Mhm, men det er jo ingenting som hadde vært bedre enn å fått til det slik at vi kan ha egne produkter gjennom hele året.
S: Planlegger du da kjøp fra uke til uke basert på hvordan det ser ut i hagen i og med at utendørsproduksjon, og også drivhus med naturlig lys blir påvirket av værforholdene?
K: Jeg tenker nok at vi skal plante og dyrke ut i fra den menyen vi lager for de ulike årstidene, og at vi skal kunne forsyne oss ut i fra dette med det vi har. Vi kan jo ikke styre været, men jeg tror mye kan være gjort gjennom god planlegging og etterhvert også erfaring med prøving og feiling. Vi tenker at vi skal bruke produktene til alle hotellets måltider fra frokost til middag, og om vi klarer å forsyne oss selv skal bli spennende å se.
S: Dersom det er lite planter en periode, er det vanskelig å bestille dette på kort varsel.
K: Nei, vi får varer levert stort sett hver dag, så det er ikke noe problem.

S: Hvor stort areal det er snakk om der oppe?
K: Det vet jeg ikke.
S: Ikke en antakelse en gang?
K: Nei, jeg har virkelig ikke peiling. Men vi har et veldig stort område å dyrke på, og i tillegg vil vi ha frukttrær slik at vi kan forsyne gjestene med egendyrkede epler og plommer, men alt er til syvende og sist opp til topplederne å bestemme.

S: Så da er det slik at du blir ansvarlig for den daglige driften med hjelp fra andre ansatte, og «Lokal Base» som eksterne konsulenter i en startfase?
K: Det er ikke helt bestemt at det er «Lokal Base» som blir innleid til prosjektet, men det er de vi har snakket med til nå. Tanken er at de skal hjelpe oss med å finne ut hva som er levedyktig her, og hva vi kan få til med minimalt vedlikehold.
S: er tanken din at du skal plante selv, eller vil du ha andre til å gjøre dette for deg?
K: Jeg tenker vi vil ha fagpersonell til å ta seg av denne delen av jobben, og at det etterpå blir opp til oss å vedlikeholde, så vil arbeidsoppgavene det medbringer avhenge av hvilke planter vi til enhver tid har der oppe.

S: Hvilke samarbeidspartnere har dere tilknyttet dette prosjektet?
K: Foreløpig er det «Lokal Base» som er med, og eventuelt en annen konsulentbedrift dersom ledelsen heller vil gå for et annet alternativ. De er veldig interessert og allerede engasjert i hagen vår, så jeg håper jeg får lov å bruke dem.
I tillegg samarbeider vi med mattilsynet om oppbyggingen av hagen. De vil være en del av aktørene som er på banen både underveis og etterpå.

S: Med tanke på økologisk dyrking, kan dette i mange tilfeller være vanskelig å få til, spesielt med tanke på det økonomiske aspektet. Det er et strengt reglement, og kriteriene for økologisk dyrking kan føre med seg egne problemer. Har du sett for deg om det er økologisk dyrking du ønsker å holde på med.
K: Forsåvidt, ja. De holder på å forske på økologisk jord ute på «Lokal Base», så om det er det vi ender opp med å bruke er jeg usikker på. Det skal bli spennende å se hva det ender opp med til slutt, om det er mulig å få til økologisk eller ikke.
Svanemerkingen er veldig veldig streng, og den kan i stor grad sammenlignes med økologiske prosesser, for det er jo fryktelig dyrt det også. For oss er det strenge regler for hva vi kan og ikke kan bruke. Maskinene vi benytter må være svanemerkede, det nytter ikke bare å ha svanemerket papir, så det er en dyr prosess, og hvordan det vil påvirke dette prosjektet, det vet jeg ikke, men det vil bli et bærekraftig prosjekt på lik linje med alt annet på hotellet.

S: Hvis vi ser bort fra selve byggeprosessen og alt som må til for å sette hagen i stand, hvordan skal driften av hagen finansieres?
K: Godt spørsmål. Det som kjøpes inn av jord og frø og annet vi trenger regner jeg med skal finansieres av drift. Det vil ikke gå inn i matbudsjettet, foreløpig ihvertfall, noe som er bra for meg.
S: Ser du for deg at det vil være kostnadsbesparende for dere å ha et slikt prosjekt hvor du produserer deler av maten selv?
K: Ja, det gjør jeg.
S: Og på hvilken måte ser du for deg at det kan være inntektsskapende for dere?
K: Hagen selv mener du?
S: Ja, hagen, maten og alt det medfører.
K: Jo, altså det er mer og mer pop, det er trendy å holde på med dette, og jeg tenker at folk i dag er ekstremt miljøbevisste, meg selv inkludert, hvis jeg kan få noe på tallerken som er produsert i eget hus er det ingenting som er bedre enn det, og det er folk mer opptatt av i dag enn de noen gang har vært, så sånn sett tror jeg vi vil kunne skape noe som er så spesielt at folk har lyst å være her rett og slett på grunn av det. Det tror jeg vil bli en god merkevare for hotellet.
S: Vil dette kunne føre til at dere må eller kan øke prisene på maten dere serverer?
K: Prisene vil økes her automatisk på grunn av at hotellet vil få en ny standard, og det at vi dyrker vår egen mat vil helt klart kunne bidra til økte matpriser, absolutt.
S: Det vil altså kunne vise seg å bli lønnsomt for dere med denne hagen?
K: Ja, på mange måter.

S: Du nevnte tidligere at du ikke er helt sikker på når prosjektet er oppe og går, men har du en tidshorisont, at du har startet innen fem år, for eksempel.
K: Åja, det har det, absolutt. Jeg har ikke lyst å vente ett år engang. Jeg prøver å få lederne til å dra ut til «Lokal Base» og se om de kan få litt inspirasjon og snakke litt med snakke med dem. De har mye kunnskaper og er inspirerende å jobbe med, så jeg håper de kan dra ut og bli smittet av den samme entusiasmen. Jeg tror vi er i gang i løpet av dette året. Det håper jeg virkelig.
S: Så på denne tiden neste år er det kanskje mulig å spise grønnsaker fra egen hage her på hotellet?
K: Ja, det er ihvertfall meningen, så jeg håper vi er godt i gang innen det. Jeg vil ha hull i veggen og starte med en gang, men det er økonomiske hensyn som må tas, og de må bli ferdig med byggingen av kjøkkenet i andre etasje først, så kan vi sette i gang.
Om ikke hele hagen står klar med en gang er det også mulig å sette i stand drivhuset og begynne å produsere mat, og utvikle hagen og resten av konseptet etter det, vi må bare komme i gang. Vi har kikket på forskjellige løsninger som gir oss muligheter til å produsere store volum på de flatene vi har tilgjengelig.
Hvorvidt vi kjører i gang fullt med en gang eller om vi tar litt og litt er jo også avhengig av økonomi. Jeg har ikke fått priser fra «Lokal Base» siden det ikke er bestemt at det er dem vi skal bruke, og da holder de selvsagt kortene litt tettere til brystet, det er litt hemmelighold om hva de faktisk har å tilby, men av det jeg har sett er det helt unikt, det er ingen andre som har det. Om jeg får det som jeg vil og det er de vi bruker ser jeg for meg at vi kjører «all-in» fra starten, men her er det selvsagt også et spørsmål om økonomi.

I utgangspunktet skulle jo dette bare være min lille grønnsakhage, men det er jo blitt så mye mer enn det, det blir til den hagen vi alle har lyst på og alle vil ha et eierforhold til så det er utrolig smittsomt.
S: Det viser jo også litt hvordan trenden er i dag med at det er in å skulle dyrke maten sin selv, og det kan jo være en læringsprosess for alle.
K: Absolutt, og vi har så mange forskjellig aktører og personer innom her, og det er utrolig hvordan slike ting kan påvirke andre.
Jeg håper jo også at vi er førstemann til å gjøre noe som dette, at det ikke er noen andre som holder på å bygge det samme som oss.

S: Det virker som du er opptatt av miljøaspektet rundt det hele, hva er dine tanker rundt næringsrik mat og lokalproduksjon. Mener du at disse hører sammen på noen måte?
K: Jeg tenker vel ikke at maten nødvendigvis er mer næringsrik om den er lokalprodusert, men du kan styre produksjonen mer, og du kan være sikrere på bruken av kjemikalier og dermed også føle deg trygg på det du stapper i munnen. Spesielt for oss som har mulighet til å gjøre dette selv. Vi ønsker å ha fokus på trygg mat, og at måten vi produserer maten er den rette. Ferskvarer mister helt klart noe på veien i transport, så sånn sett er jo også det en fordel med lokalprodusert mat.

K: Det å dyrke noe selv er veldig stas, og det gir oss en tilfredsstillelse og mestringsfølelse. Du får et helt annet fokus på det du spiser når du ser hvor maten kommer fra, og hvordan prosessen er underveis. Vi kunne jo godt tenke oss å dyrke en spesiell type småpotet som kunne være vår egen potet som vi kunne dyrke og servere til gjestene våre, så det blir spennende å se hva vi lander på. Det å ha en egen nisje eller gimmick er også gunstig i forhold til merkevarebygging. Vi kommer til å ha et veldig flott hotell når det står ferdig, og om det til slutt blir sånn som vi ser for oss håper vi det vi være den plassen folk har lyst til å være, og jeg håper at hagen bare vil være med å heve det hele.

S: Kan du noe om grønnsaksdyrking i utgangspunktet?
K: Ja, jeg dyrker jo grønnsaker hjemme i hagen, og jeg kommer forsåvidt fra gård. Eller, min mor kommer fra gård, og jeg er så godt som oppvokst der selv. Min morfar var potetbonde og drev med honning, så ingenting hadde vært kulere enn å kunne ha en bikube her i hagen også og kunne produsere honning. Men ja, han var birøkter og hadde kyr, melk, poteter, mark og slike ting, så det er jo dette jeg kommer fra, så jeg har jo lyst å bli fryktelig god til dette selv. Hjemme i hagen har jeg masse forskjellige urter, og ja, litt bær, gulrøtter, sukkererter og andre snacks-ting jeg synes det er kjekt å drive med sammen med ungene for å vise dem hvordan ting virker.

S: Hvordan har dere tenkt å markedsføre dette når dere er ferdige?
K: Nei, det blir spennende å se. Vi må vel vente å se hva vi får først og hva vi kan få til å skape. Dersom vi klarer å skape det jeg ser for meg sammen med «Lokal Base», hvis jeg får viljen min og det er de vi bruker, blir det ihvertfall storslagent. Jeg kan tenke meg at vi inviterer til et kundearrangement med media tilstede i hagen, det er nok en slik profil vi kommer til å lande på. Nå håper jeg bare at vi foreløpig er de første og eneste med tilsvarende prosjekt slik at vi kan dra fordeler av det, for det er jo et fryktelig trendy konsept som vi håper vil tiltrekke mange gjester og kunder til hotellet.

Hva er bakgrunnen for satsingen på egen tomatproduksjon?

Kan du si noe om den generelle grønne satsingen på flyplassen?

Hvordan blir prosjektet driftet?

- Hvem/hvilken avdeling er ansvarlig for daglig drift og stell av veksthuset, og hva går dette ansvaret ut på?

(Er det ansatt personell til dette, eller brukes allerede eksisterende personell? Etc.)

- Hvordan finansieres veksthuset?

(Har det egen finansiering utenfor flyplassens tradisjonelle regnskap og budsjett?)

- Hvilke kostnader er knyttet til prosjektet?

(Faste og variable kostnader)

- Hvem genererer prosjektet inntekter for?

Hvem er kundene i dag, og hvordan fungerer denne ordningen i praksis?
(Er det planlagt andre/flere kunder etterhvert?)

Produseres det nok tomater til å dekke dagens behov?
Evt, produseres det for mye? Hva skjer i så fall med overskuddsproduksjonen?

Prosjektet er nylig oppstartet, kan du si noe om framtidsutsiktene/planene?

Hvem er prosjektets samarbeidspartnere?
(Konsulenter/leverandører/bemanning osv.)

Ved å kjøpe tomater dyrket på flyplassen vil restaurantkundene oppnå en kort supply chain for tomatene som brukes i deres egen produksjon. Hvordan påvirker dette prisen de betaler for dem kontra prisen de tidligere har betalt sine tradisjonelle leverandører?

Hvilken verdi ser dere for dere at egenproduserte grønnsaker har for restaurantene som kjøper produktene?
(Opplevd kvalitet av ferske, egenproduserte grønnsaker/ kostnadsreduksjon/ prisøkning på produsert mat/ goodwill eller liknende.)

Har veksthuset i dag potensiale til å kunne utvide produksjon til andre typer grønnsaker?

Hva er bakgrunnen for satsingen på egen tomatproduksjon? Vi vil vise matfylket Rogaland hvor 90% av all norsk tomat blir produsert. Vi vil også vise flerfunksjonalitet, at det er mulig å bruke publikumsområdet til flere forskjellige ting.

Kan du si noe om den generelle grønne satsingen på flyplassen?

Hvordan blir prosjektet driftet?Miljøgartneriet bidrar med planter og kompetanse samt vedlikehold av plantene. Egne Avinor folk bidrar også med stell og vedlikehold. Vanning, belysning og ventilasjon er automatisk.

- Hvem/hvilken avdeling er ansvarlig for daglig drift og stell av veksthuset, og hva går dette ansvaret ut på? Se svar over.

(Er det ansatt personell til dette, eller brukes allerede eksisterende personell? Etc.)

- Hvordan finansieres veksthuset?Innovasjonsmidler fra Avinor pluss……

(Har det egen finansiering utenfor flyplassens tradisjonelle regnskap og budsjett?)

- Hvilke kostnader er knyttet til prosjektet? Antatt totalkostnad på drivhuset 1,5 millioner. Lite driftskostnader, litt til lys og gjødsling.

(Faste og variable kostnader)

- Hvem genererer prosjektet inntekter for? Foreløpig ukjent. Vi trenger lenger driftstid.

Hvem er kundene i dag, og hvordan fungerer denne ordningen i praksis? Restauranter på lufthavnen skal bruke tomaten. Vi er i innkjøringsmodus og dette blir først til høsten. Nå er tomaten møtemat og snacks til kunder og ansatte.
(Er det planlagt andre/flere kunder etterhvert?)

Produseres det nok tomater til å dekke dagens behov? Foreløpig ukjent.
Evt, produseres det for mye? Hva skjer i så fall med overskuddsproduksjonen? Foreløpig ukjent

Prosjektet er nylig oppstartet, kan du si noe om framtidsutsiktene/planene? Har hatt nok med å starte prosjektet.

Hvem er prosjektets samarbeidspartnere?
Avinor ansatte samt våre prosjektrådgivere. I tillegg har vi samarbeidet med Vektek og Vekstmiljø.

Ved å kjøpe tomater dyrket på flyplassen vil restaurantkundene oppnå en kort supply chain for tomatene som brukes i deres egen produksjon. Hvordan påvirker dette prisen de betaler for dem kontra prisen de tidligere har betalt sine tradisjonelle leverandører? Prisen vil være på eller rett under markedspris.

Hvilken verdi ser dere for dere at egenproduserte grønnsaker har for restaurantene som kjøper produktene?
(Opplevd kvalitet av ferske, egenproduserte grønnsaker/ kostnadsreduksjon/ prisøkning på produsert mat/ goodwill eller liknende.)
Det vil være kortreiste produkter som viser litt av Rogalands matfat. I tillegg til ferske produkter så vil historien henge fint sammen med Rogalands matmanifest.

Har veksthuset i dag potensiale til å kunne utvide produksjon til andre typer grønnsaker?Drivhuset er designet for tomat. Vi ønsker ikke å blande inn andre kulturer.

Mvh

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CALCULATIONS
EXCEL

	Price	% Sales	Weighted contribution average
Restaurant	15	80 %	12
Retail	20	10 %	2
Container	30	10 %	3
		100 %	17

Break-even in units = Fixed costs / Weighted contribution average %

= 750 000 / 17 = 44 118

Max. Capacity	62500									
		80 %	10 %	10 %					Units	%
Break even with 18, 23, 33 NOK=		18	23	33	Weighted average	=	750 000	=	37500	60 %
		14,4	2,3	3,3	20		20			
		80 %	10 %	10 %						
Break even with 14, 19, 29 NOK=		14	19	29	Weighted average	=	750 000	=	46875	75 %
		11,2	1,9	2,9	16		16			
		80 %	10 %	10 %						
Break even with 10, 15, 25 NOK=		10	15	25	Weighted average	=	750 000	=	62500	100 %
		8	1,5	2,5	12		12			

	80 %	10 %	10 %						
Break even fixed costs 1000000	15	20	30	Weighted average	=	1000000	=	58824	94 %
	12	2	3	17		17			