UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

The Swedish Food Industry in Light of the COVID-19 Pandemic.

Sustainability in the Primary Production and Processing Sectors in a Time of Uncertainty and Crisis.

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Abstract

The COVID-19 pandemic impacted the national crisis preparedness resulting in an increased interest for food self-sufficiency, while also disrupting the way business is conducted. Parallelly, the environmental crisis is advancing, increasing the need and interest for sustainable development. This combined created a window of opportunity for the food industry to develop in favor of sustainability. The purpose of this research is to envice how the Swedish primary food production and processing sectors have been affected by the pandemic from a sustainability point of view and if it has utilized this window of opportunity.

The literature review outlines Sweden's response to the COVID-19 pandemic together with research on how to sustainably recover. Through identification of research gaps in the field, a theoretical framework is developed with theories on sustainability, motivation, communication, digitalization. A qualitative research strategy, with an exploratory approach has been applied to capture the uniqueness of this situation.

The empirical analysis shows that the COVID-19 pandemic has impacted both sectors which is shown through common trends in terms of remote and digital work, increased internet commerce, and increased communication. Furthermore, all studied companies experienced continued and intensified work in the three sustainability pillars during the COVID-19 pandemic. The paper concludes that the COVID-19 pandemic has not had a negative effect on the Swedish primary food production and processing sectors, it has instead resulted in an increased interest for domestically and sustainably produced products.

Keywords: *COVID-19, Sweden, Primary food production, Primary food processing, Sustainability effects, Sustainable development*

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1. Introduction

The introduction covers background information including the COVID-19 crisis, environmental crisis, planetary boundaries, and agricultural connection. This is further developed into a problematization of the awareness regarding the window of opportunity provided by a time of crisis, which outlines the importance of this research.

1.1 Background

During the early spring of 2020 the world was hit by a serious crisis, namely the ongoing COVID-19[1] pandemic. This disrupted the global economy causing a global economic crisis (United Nations, n.d.c). The harmful impact on global economic growth was due to two main reasons (Mofijur et al., 2021). The first was that the initial stage of the pandemic caused severe confusion and uncertainty around the world, concerning the stability of the financial sector due to the exponential growth of the virus. The second reason was that many countries implemented strict regulations in order to monitor and control the spread of the virus. This forced companies to perform immediate changes, such as reduced traveling and increased remote work. As human movement and transport was drastically limited, it implied a decrease in economic activity that severely affected the globalized, modern life we live in.

Although, the COVID-19 crisis is not the only crisis that companies and society face. The ongoing environmental crisis is continuously threatening humanity and our planet, and actions to handle it are taken everywhere. These two crises are currently coinciding. One of the largest actions for the environmental crisis is the Paris Agreement from 2015 where focus lies on combating climate change. The Paris Agreement is built on 5-year cycles with increasingly ambitious goals (United Nations Climate Change, n.d.), and Sweden is one of the 196 parties that have adopted this. As 2020 marked the end of the first cycle, and the start of a new cycle, the environmental crisis was set out to be the main focus of the year. This showed particularly in Sweden as the Swedish Climate Action Plan was evaluated in January 2020 (Junker & Mattsson, 2020). However, COVID-19 spread across the globe, stole the spotlight from environmental issues, and became the main topic of discussion.

[1]Coronavirus disease (COVID-19) is a zoonotic disease caused by the SARS-CoV-2 virus which originates from Wuhan in December 2019 (World Health Organization, 2020).

There are some similarities between the COVID-19 crisis and the environmental crisis. For example, both crises are indirectly derived from human activity and considered to create negative externalities as the people whose actions contribute to the issues do not carry the full consequences (Frankel, 2020). It was further argued by Rosenbloom and Markard (2020) that the COVID-19 crisis and the environmental crisis overlap by both requiring immediate actions by society. As the COVID-19 pandemic posed a more tangible threat to society due to the rapid spread of the virus, it initiated more drastic reactions as countries went into lockdown which closed down modern economic life. From this, an interesting side effect was observed; greenhouse gas emissions and air pollution decreased rapidly, allowing our planet to breathe. According to the latest statistical data from the International Energy Agency (2021) the global energy-related CO_2 emissions fell by 5.8% in 2020. This represented the largest annual percentage decline since the Second World War (International Energy Agency, 2021). According to the Centre for Research on Energy and Clean Air (Myllyvirta, 2020) COVID-19 regulations have also had a significant impact on particulate matter[2] pollution and Sweden experienced a 28% reduction during April 2020.

Globescan and The Business of a Better World conducted a survey in May 2020 with corporate sustainability professionals from 102 different companies. The objective of the survey was to explain the first insights of the COVID-19 pandemic's impact on corporate sustainability. The results show that almost half of the participating companies believed that the COVID-19 crisis had a significant impact on their day to day sustainability efforts where sustainable supply chains, inclusive economic growth, and climate action were identified as the three most impacted areas (Globescan & The Business of a Better World, 2020). It is argued by Rosenbloom & Markard (2020) that the impacts caused by the COVID-19 pandemic can now be leveraged to gradually cancel or at least reduce activities that are hazardous to the environment. The economic recovery from this pandemic can lay ground for a more sustainable future, resulting in an important opportunity for companies all over the world (Rosenbloom & Markard 2020).

The world has experienced a rise in poverty and hunger during 2020 due to the loss of employment and income. The COVID-19 pandemic reversed the declining trend in global

[2] Particulate matter (PM) forms in the atmosphere when pollutants from vehicles, factories, building sites, and the burning of fossil fuels chemically react with each other (Mofijur et al., 2021)

poverty and instead caused the first increase in over two decades with an additional 71 million people going into extreme poverty during 2020 (United Nations, n.d.a). Agriculture is a key tool for ending extreme poverty and ensuring food security across the globe (The World Bank, 2020). It is part of the primary food production sector, and important for economic growth. In 2018 agriculture represented 4% of the global (The World Bank, 2020) and 1% of Sweden's gross domestic product (The Swedish Institute of International Affairs, n.d.). Growth within agriculture was two to four times more effective in raising incomes compared to other sectors (The World Bank, 2020). However, agriculture is threatened by climate change as the climate plays an essential biological role in the production of crops. Paradoxically, in 2019 the food production industry accounted for about one quarter of the global greenhouse gas emissions and 27% of the total food production emissions originated from crop production (Ritchie & Roser, 2019). The primary food processing sector connects agriculture to the global food system as it processes the crops to primary food products. This provides clear incentives for sustainable development within both primary food production and processing.

The planetary boundaries, presented by Rockström et al. in 2009, is a framework for how humanity can operate with respect to the Earth's natural systems. It includes nine boundaries that, when crossed, could implicate unacceptable environmental change. The nine boundaries are biosphere integrity, land system change, fresh water use, biochemical flows, climate change, novel entities, stratospheric ozone depletion, atmospheric aerosol loading, and ocean acidification. When this was first introduced biosphere integrity, biochemical flows, and climate change had already been exceeded, largely because of fossil fuels and industrialized agriculture (Rockström et al. 2009). Six years later, Steffen et al. (2015) revised and updated the planetary boundaries showing that land system change had exceeded the safe operating zone as well. The planetary boundaries can, and perhaps should, be a starting point for the recovery from the COVID-19 pandemic. Campbell et al. (2017) argued that agriculture was the major driver of four of five boundaries: biosphere integrity, land system change, fresh water use, and biochemical flows. Furthermore, it played a significant role in the remaining one: climate change. In addition, agriculture also affected the other planetary boundaries that were still in the safe operating zone (Campbell et al. 2017).

While agriculture is an important system for food supply all over the world, the industrialization of it has led to severe negative impacts on the climate. According to

Campbell et al. (2017), agriculture played a large role in the two planetary boundaries with the highest risk: biogeochemical flows (nitrogen and phosphorus) and biosphere integrity (genetic diversity). Nitrogen (N) and phosphorus (P) cycles have been drastically altered due to agricultural processes where fertilizer production and application is the main issue (Stockholm Resilience Center, n.d.). A significant proportion of the applied elements (N & P) are not taken up by the crops but instead end up in aquatic ecosystems. Biosphere integrity, more specifically genetic diversity, refers to the loss of biodiversity and increased extinctions. The main drivers of change within this area is the increasing need for food, water, and natural resources, all of which are connected to agriculture (Stockholm Resilience Center, n.d.).

1.2 Problem Analysis

In 2017 Sweden adopted the long term climate goal to have zero net emissions of greenhouse gases by 2045 and to achieve negative emissions thereafter (The Swedish Environmental Protection Agency & The Swedish Board of Agriculture, 2019). This goal was further specified into milestones for the non trading sector, where agriculture was responsible for 20% of the emissions in 2017. This milestone entailed that the emissions from the non trading sector needs to decrease by 63% by 2030 compared to 1990, and only 8% of the reduction can be achieved from complementary measures (The Swedish Environmental Protection Agency & The Swedish Board of Agriculture, 2019). In combination with this Sweden also decided on a food strategy in 2017 that involves targets of increased food production by 2030 (The Swedish Environmental Protection Agency & The Swedish Board of Agriculture, 2019).

The primary production, including agriculture, within the food industry has long been legally defined as environmentally hazardous in Sweden because of its negative effects on the environment (Christensen, 2012). This has been a subject of debate as it assimilated the primary production of food with other environmentally hazardous industries, such as oil refineries, chemicals, and hazardous waste. In 2017 the agriculture- and countryside-political spokesperson Magnus Oscarsson (KD) argued that the classification resulted in a negative tone towards agriculture with a focus on identifying problems with the primary production instead of providing support for improvement (LandLantbruk, 2017). Although goals were set up with regards to national self-sufficiency preparedness with agriculture in focus, the classification was not changed at the time.

This pandemic has resulted in an increased concern for national self-sufficiency within food production due to closed borders and disrupted food value chains. Sweden relies on markets within the European Union for agricultural workforce and with the fast decision to close borders, a realisation that the Swedish agriculture is not well equipped to handle business alone followed (Agricam, 2020). This was addressed by the Swedish Government, as they made the decision, in march 2020, to change the classification of the food industry to socially important (The Federation of Swedish Farmers, 2020). The change of classification provides additional support to the workers which allows the industry to continue their business in times of crises (The Swedish Civil Contingencies Agency, 2020). This was a well welcomed decision for agricultural companies in Sweden, as it provides a security for the industry as well as an acknowledgement of the importance of the Swedish agriculture (The Federation of Swedish Farmers, 2020). Furthermore, it opens up an opportunity to further develop the industry's position in Sweden in a way that is favorable to a sustainable future.

Further, the decreased economic activity due to the COVID-19 pandemic initially had a positive impact on global greenhouse gas emissions. Sweden experienced an average decrease of 9.5% in greenhouse gas emissions during the first three quarters of 2020 compared to 2019, where the agriculture, forestry and fishing sectors accounted for 0.93% of that reduction (Statistics Sweden, 2020a, 2020b, 2021). The Emissions Gap Report (United Nations Environment Programme, 2020) confirmed that the short term reduction in emissions were due to the COVID-19 pandemic, although it also stated that it will not have any significant long term effects unless decarbonization was included in recovery plans.

In order for Sweden to reach both the food strategy and climate targets by 2030 a shift towards more efficient and sustainable production methods within agriculture is essential. The COVID-19 crisis has opened a window of opportunity for climate transition through the momentum and accelerated change it has brought with it (The Swedish Climate Policy Council, 2021). This window of opportunity needs to be utilized by the agriculture sector during the recovery process of COVID-19 to give Sweden a better chance of achieving both the food production and climate targets set for 2030. The problem is whether or not companies are aware of the opportunity to exploit the current situation to reach a more sustainable future.

2. Purpose

The purpose captures the need for this research, and is then summarized into the research question. Delimitations and limitations provide a foundation for the research, narrowing the scope to the Swedish primary food production and processing sectors.

As the interest for Swedish food industry continues to increase both in terms of sustainability and national crisis preparedness, this paper takes off in a time of two coinciding crises where Swedish primary food production and processing is highlighted. The COVID-19 pandemic has disrupted modern economic life causing chaos in many industries throughout the world. However, it also opened a window of opportunity for sustainable development. The purpose of this paper is to contribute with knowledge on how the Swedish primary food production and processing sectors have been affected by the pandemic and if it has utilized this window of opportunity.

This paper is intended to contribute with knowledge at an early stage to form a base for future research on this matter. The findings of this research are expected to be useful for primary food production and process companies, especially corporate management. Since the pandemic crisis and the environmental crisis affects everyone, this is also expected to be of interest for the society. This is a relevant subject due to the pressing matters of both crises, and a situation is created where it is possible for companies to choose in which direction they develop.

2.1 Research Questions

To fulfill the purpose of this paper, the following research questions (RQ) has been formulated:

RQ1: How has the COVID-19 pandemic affected the Swedish primary food production and processing sectors from a sustainability point of view?

RQ2: Is the window of opportunity, caused by the COVID-19 pandemic, utilized for sustainable development?

2.2 Delimitations and Limitations

This paper is delimited by focusing on the Swedish primary food production and processing sectors. More specifically the cultivation of soil by growing seeds and cereals as well as the grinding of cereals into food products. Most farms in Sweden are family owned businesses where the family members are responsible for the majority of the work. Although, this research is based on legal entities with a minimum of 10 employees, instead of sole proprietors, to capture the corporate effect of the COVID-19 pandemic.

Due to time and resource constraints, this research is limited to investigating the effects in a few companies, giving an indication for this part of the food industry. Therefore, this research is based on interviews with five companies within the primary food production and processing sectors in Sweden. The selected companies vary in size and represent different parts of a chain from seed through soil to finished primary food products. The number of interviewed companies is relatively low, however, the chosen companies either have a significant influence on the Swedish market, or have a special niche in the market making them representative for this part of the industry.

3. Literature Review & Theoretical Framework

This section is dedicated to previous research on the COVID-19 pandemic in relation to Sweden, and how to sustainably recover from the crisis. Sections 3.1 and 3.2 outline the literature review, which is then developed into a theoretical framework with sections 3.2-3.6 which explains concepts and theories used throughout the paper.

3.1 Sweden Through the COVID-19 Crisis

In the middle of 2020, Stockholm School of Economics published an extensive research on Sweden's actions during the COVID-19 pandemic, and why the Swedish approach differs from the rest of the world. The research brings up the many challenges that followed with the COVID-19 pandemic, and how to navigate through them. The research consists of 40 articles, written by more than 80 researchers, divided into eight themes (Stockholm School of Economics, 2020). Since the research covers several perspectives, only the articles with most relevance to this paper have been selected. Focus lies on business perspectives and sustainability, together with Sweden's choice of strategy to give understanding of Swedish business actions during this pandemic.

3.1.1 Sweden and the Virus

The article by Ellingsen and Roine (2020) explores Sweden's approach to the pandemic and discusses why Sweden chose a different strategy than its neighbors in Scandinavia. The authors explained two different strategies in the battle against a pandemic. The first is to contain the virus until it can be fought off with a vaccine or until it dies out. The other is to let the virus spread at a slow pace eventually reaching herd immunity. Sweden initially chose the first strategy, but as the Swedish Public Health Agency expressed pessimism towards the first strategy, Sweden switched to the other strategy. Ellingsen and Roine (2020) gave the hypothesis that trust and cooperation is a big part of Sweden's culture, which makes the population more willing to trust expert opinions, even if it involves short-term sacrifices.

The strategy of reaching herd immunity is difficult since it requires the population to keep the society and economy going, but be careful enough to not overburden the hospitals. Health authorities face the difficult challenge of promoting desirable behavior, while staying clear

and trustworthy (Ellingsen & Roine, 2020). The Swedish Government mainly announced recommendations for the population in order to reduce the pace at which the virus spreads. These recommendations are not equal to laws, but they are mostly accepted by the population thanks to a high trust in the government. In addition, restrictions regarding the number of people allowed in public gatherings were made (Ellingsen & Roine, 2020).

As the article was written in May 2020, the actions taken by the Swedish Government were quite few. In January 2021, a new temporary law was introduced, called the Pandemic Law. This law makes it possible for the Swedish Government to take additional actions and faster decisions with regards to the COVID-19 pandemic (Regeringskansliet, 2021). As of the time this study is made, Sweden has several restrictions and regulations, which are found in Appendix 3. In addition, everyone is recommended to work from home if possible, travel in a safe manner, and limit new close contacts (Public Health Agency of Sweden, 2021).

3.1.2 Climate Change Mitigation Post the Pandemic

The article by Junker and Mattson (2020) focuses on the relationship between the state and the market to reduce climate change when recovering from the COVID-19 pandemic. They highlighted that this pandemic has disrupted the work of dealing with climate change as all efforts were put into reducing the spread of COVID-19. The pandemic crisis has shown that traditional policy activities can be set aside in times of crisis, to make way for new policy activities for handling said crisis. The authors argued that collaboration between government and business are of the utmost importance to handle difficult problems such as pandemics and climate change. This is because policy practices affect market practices, making it necessary to intertwine the changes of both practices (Junker & Mattsson, 2020). With a connection to the Schumpeterian concept of *creative destruction* Junker and Mattsson (2020) claimed that the COVID-19 pandemic should be used to create new policies that are favourable to the climate in the post-pandemic world.

Creative destruction is the process of disrupting existing practices and systems in order to build something new, and hopefully, more sustainable (Junker & Mattson, 2020). The creative destruction is often radical, and aims to make way for some companies to grow and thrive, unfortunately often at the expense of an existing industry. The opposite is incremental change, which is smaller, step-by-step changes that gives everyone the chance to adapt, but

takes much more time. This pandemic forced radical changes, providing an opportunity to be creative and form new sustainable solutions for the 'new normal', as Junker and Mattsson (2020) touches upon.

3.1.3 Sustainability, COVID-19, and Staying Focused on the Longer Term

The article by Nyqvist et al. (2020) addresses the short-term effects of the COVID-19 pandemic on the Sustainable Development Goals (SDGs) and discusses the possible long-term effects. The article refers to the effects of the actions for preventing the spread of SARS-CoV-2, instead of the negative health effects of COVID-19 itself.

Negative effects on some of the Sustainable Development Goals (henceforth abbreviated SDGs) were observed in the short term, due to restrictions in social life and lockdowns of economies. It was observed that social inequalities increased since low-income groups are affected more by the economic consequences of the COVID-19 pandemic (Nyqvist et al., 2020). Furthermore, working from home created new forms of inequalities as people have different possibilities with technology, the internet and space to create a working home office. Nyqvist et al. (2020) further argued that the low-income and low-skilled workers were the most afflicted by this. However, remote work showed short-term positive effects on the environment which implies that long-term positive effects can be reached if companies adopt remote working in the post pandemic world (Nyqvist et al., 2020). On that note, working from home has mixed sustainability effects with possibilities of only being positive if companies choose to facilitate remote work for all employees as well as adopting it as a new business as usual when the COVID-19 pandemic crisis is over.

3.2 COVID-19 a Dashboard to Rebuild With Nature

That the COVID-19 pandemic is a result from human interference with the Earth systems is not surprising, according to Vidal et al. (2020). The relationship between nature and climate is complex, and there is evidence that zoonoses[3], such as COVID-19, emerge more often when humans interfere with nature and climate. Biodiversity loss, through for example deforestation and land use change, correlates with the emergence of zoonoses as it brings more non-human animals in closer contact with humans, risking the spread of viruses (Vidal et al., 2020). The Intergovernmental Platform on Biodiversity and Ecosystem Services

[3] *"Zoonoses are infectious diseases that jump from non-human animals to humans"* (Vidal et al. 2020, p. 4)

(IPBES) stated that *"The same human activities that drive climate change and biodiversity loss also drive pandemic risk through their impacts on our environment"* (IPBES, 2020, quoted in Vidal et. al, 2020 p. 6). It is further stated that the expansion and intensification of agriculture is one of those activities, since it creates the transitional landscapes where viruses spread more easily. In addition, the global food system plays a key role in the emergence of zoonoses as it stands for 23% of greenhouse gas emissions, and hence has the largest impact on climate change (Vidal et al., 2020).

This is connected to the planetary boundaries since agriculture is a significant driver of the two boundaries *climate change* and *land-use change*. As several of the planetary boundaries are already in the zone of uncertainty, the risk of them tipping over from only drastic changes to irreversible changes at some point is significant. Vidal et al. (2020) discussed COVID-19 as a sign of such a tipping point as this pandemic might result in irreversible socioeconomic changes in consumer behaviour and traveling habits. As Earth's different systems interact with each other, entering a different zone in one planetary boundary, can notably affect another. With that said, the global food system is intertwined with climate change and land system change, two of the planetary boundaries that humankind has driven into the zone of uncertainty with the same activities that drive pandemic risks. This suggests that the planetary boundaries can and should be used as a *"dashboard for recovery and navigation back to the global safe operating space"* (Vidal et al., 2020 p.12).

A preferred strategy for businesses is to use the planetary boundaries framework, and convert it into action. Vidal et al. (2020) presented some examples of such actions, for example to embrace regenerative practices and circular farming systems together with reducing food losses, reusing and recycling. They further deemed that the businesses need to be in symbiosis with the Earth systems. This means to find nature-based solutions and transform the food system, and a shift in business models from linear to circular is a crucial innovation to succeed with this (Vidal et al., 2020).

3.3 Sustainability Theory

The concept of sustainability has a multidisciplinary use and meaning. The main critique is the absence of a single definition which causes difficulties for implementation. A commonly used definition of sustainable development presented by the United Nations Brundtland

Commission is as follows: *"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."* (Brundtland Commission, 1987, part 1 chapter 2.1). In order to achieve sustainable development an integrated approach is needed which involves environmental protection and social equality together with economic growth (Brundtland Commission, 1987). The three pillars of sustainability are therefore environmental, social, and economic.

The United Nations Global Compact defines social sustainability as *"identifying and managing business impacts, both positive and negative, on people"* (United Nations Global Compact, n.d.). This concept incorporates justice, power, rights and needs of the individual by focusing on the employees, stakeholders and community (KTH Royal Institute of Technology, 2020b). The entire supply chain is important in this area, issues concerning working conditions, employee wellbeing, and job security are particularly relevant for this research. Economic sustainability can be defined as using the Earth's resources for economic gain without harming or consuming them entirely. It includes investing in research and development for sustainable and circular solutions. Overall this refers to achieving economic development without negative environmental and social impacts (KTH Royal Institute of Technology, 2020a).

Environmental sustainability refers to everything that is connected to the planet's ecosystems. Important concerns within this area are: biodiversity, climate systems, air quality, ecosystem services, land use and soil erosion (KTH Royal Institute of Technology, 2021). A challenge within the environmental area are negative externalities. Some waste products are not easy to measure and the cost is thereby not allocated to the source of the waste, which lets companies off the hook (Beattie, 2019). The planetary boundaries attempt to quantify these areas in order to estimate the remaining distance before threshold effects will be triggered (KTH Royal Institute of Technology, 2021).

Although the sustainability pillars have different focus points they also have a lot in common and overlap on certain aspects. Many companies have found that environmentally sustainable practices, such as managing waste, also have positive financial effects (Beattie, 2019). Overall sustainability incorporates the entire supply chain and provides a purpose for companies to strive for efficiency and sustainable development (Beattie, 2019). Since agriculture depends on the Earth's resources it is highly connected to environmental

sustainability. In this research focus is placed on how innovations, in favour of the environment, can benefit economic sustainability as well, through circular models.

3.3.1 Sustainable Development Goals

The 17 SDGs are the core of the 2030 Agenda for Sustainable Development which has been adopted by all member states in the United Nations 2015. The goals are set for a global partnership to address social, economic and environmental sustainability throughout the world (United Nations, n.d.h). Below follows brief explanations of the SDGs relevant for this research.

SDG 2 is Zero Hunger, with eight targets to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture. In addition to climate shocks and conflict, the COVID-19 pandemic added an additional threat to food systems especially for small-scale food producers (United Nations, n.d.b). By combining different targets this goal aims to double the agricultural production and income for smaller farmers. While at the same time ensuring sustainable food production systems by implementing resilient practices that maintain ecosystems, strengthen adaptation to climate change, and improve quality of soil and land (United Nations, n.d.b).

SDG 8 is Decent Work and Economic Growth, with 12 targets to promote sustainable economic growth and decent work for all. This SDG aims to increase economic productivity, improve resource efficiency, and ensure decent work for everyone, while simultaneously eliminating forced work (United Nations, n.d.c). In the last few years the global economy has been growing at a slower rate, when the COVID-19 pandemic hit the world experienced the worst economic crisis since the Great Depression. Many jobs were lost and tourism faced new and extreme challenges. Global real gross domestic product per capita is estimated to have declined by 5.3% in 2020 (United Nations, n.d.c).

SDG 12 is Responsible Consumption and Production. It consists of 11 targets for ensuring that consumption and production patterns are sustainable. This SDG is of importance as several crises are linked to unsustainable production and consumption behaviours (United Nations, n.d.d). The global economy relies on natural resources, but utilizes them in a way that is destructive to the planet, a shift in patterns is therefore necessary. Reducing waste and

increasing recycling are some of the key steps for sustainable production and consumption. The COVID-19 pandemic presents a window of opportunity to achieve this SDG by developing recovery plans and new policies that promote sustainable production and consumption (United Nations, n.d.d).

SDG 13 is Climate Action, meaning to *"take urgent action to combat climate change and its impacts"* (United Nations, n.d.e). It consists of five targets to mitigate climate change as well as building resilience to hazards and disasters caused by it. Climate change is a serious threat to everyone on this planet, where global warming is the most important issue to tackle. The Paris Agreement in 2015 states that global temperature rise needs to be kept below 2°C above pre-industrial levels, preferably to 1.5°C. The last decade (2010-2019) was the warmest decade ever recorded, and the amount of greenhouse gases in the atmosphere in 2019 had never been higher (United Nations, n.d.g). During the COVID-19 pandemic, a drop of about 6 % in greenhouse gas emissions was predicted due to lockdowns and reduced traveling. However, this setback was only temporary as emissions increased in 2020 (United Nations, n.d.e). A COVID-19 response is presented by the United Nations Secretary-General, with six specific actions for governments to take when recovering from this pandemic. These actions include (1) green transitioning, (2) green jobs, (3) green economy, (4) investing in sustainable solutions, (5) confronting climate risks, (6) cooperation between countries (United Nations, n.d.g).

SDG 17 is Partnerships for the Goals, meaning to cooperate across borders for sustainable development (United Nations, n.d.f). The goal consists of 19 targets, including knowledge sharing of science, technology and innovation, promoting environmentally beneficial technologies, as well as information and communication technologies, to developing countries. The COVID-19 pandemic highlighted the importance of global partnerships in the means of recovering from this crisis, while simultaneously addressing the environmental crisis (United Nations, n.d.f).

3.4 Maslow's Hierarchy of Needs

Maslow's Hierarchy of Needs was first presented by the psychologist Abraham H. Maslow in 1943 (Cherry, 2021). Since then this motivational theory has been widely used and recognized in many different disciplines. The theory is built on five needs presented in a

hierarchy, suggesting that individuals need to satisfy them in order. The five levels of Maslow's Hierarchy of Needs are: physiological, safety, love and belonging, esteem and self actualization (Cherry, 2021). Nevertheless, Maslow expressed that the order of the needs may vary depending on individual preferences and external factors (McLeod, 2020). The needs become more complex moving up the hierarchy and they can be sorted into two main categories. The four lower levels are categorized as deficiency needs and emerge from a lack of something while the top level is a growth need that stems from an ambition for individuals to grow personally (Cherry, 2021).

The first level of the hierarchy is physiological needs refers to biological requirements that are essential for human survival. Examples of requirements at this level are: food, water, air, warmth, and shelter. All other needs are secondary to these because without them the human body is not able to function (McLeod, 2020). The second level is safety needs that can be fulfilled by family or society and contribute to security, order and control (McLeod, 2020). Examples of safety needs include financial security in the form of employment, emotional security, and health and wellbeing. The third level is social needs involving feelings of love and belonging. Emotional relationships drive motivation at this level and the need can be satisfied by friendships, family, and romantic relationships. Involvement in groups or communities is important to avoid loneliness, these groups might be work related, religious or social (Cherry, 2021). The fourth level, esteem needs, is developed into two categories: esteem for oneself meaning personal worth in the form of achievements and independence and respect from others focusing on reputation, status, and prestige (McLeod, 2020). At this level it is increasingly important for individuals to feel appreciated by others and that their accomplishments are recognized. The fifth and final level of the hierarchy is self actualization. This level is classified as a self fulfillment need referring to the desire to achieve full potential and become the most that one can be (McLeod, 2020).

The expanded version of Maslow's Hierarchy of Needs theory includes three additional growth needs: cognitive, aesthetic, and transcendence. The cognitive level refers to knowledge and understanding with the need for information and predictability (McLeod, 2020). With knowledge comes confidence and certainty. Aesthetic is the appreciation for balance and beautiful things. Transcendence is the very top level where individuals are motivated by needs that go beyond the personal self (McLeod, 2020).

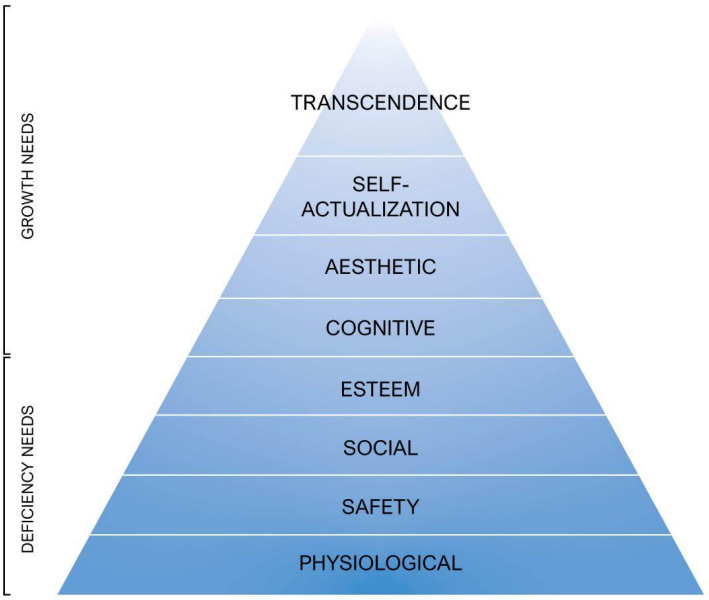

Figure 1. Own interpretation of Maslow's Expanded Hierarchy of Needs from Dr. McLeod (2020)

Although Maslow's motivational theory has been very influential it has also faced some criticism. The main criticism concerns the hierarchical order of the needs and the assumption that the lower levels need to be satisfied first. It has been shown that individuals living in poverty, not satisfying the physiological and safety needs, are still capable of reaching social needs in the form of love and belonging (McLeod, 2020).

3.5 Communication Theory

Strategic communication is fundamental during a crisis with the aim to establish trust, inspire confidence, and create stability (Zemke, 2020). According to Beehive's Business Continuity and Communication Roadmap, crisis management communication can be divided into four phases: ready, respond, recover, and restore (Zemke, 2020). The ready phase occurs before the crisis to lay the groundwork for the response. Response refers to the first action when the crisis hits which is to present clear, trustworthy and consistent messages to keep employees informed of the situation. Recovery begins when a sense of stability is felt by the company. This is where future opportunities should be assessed in combination with continued communication focusing on stability and motivation. The final phase is restoration which relates to growth and confidence where communication is used to restore focus on the mission and vision as well as provide explanations for any eventual changes.

The Circular Model of Communication presented by Wilbur Schramm in 1954 (QSstudy, n.d.) is a way to conceptualize communication to ensure that the information is conveyed in a correct manner. The aim of the model is to demonstrate how communication works by explaining how meaning is transferred between individuals or corporations. A basic assumption in the model is that effective communication is a process that goes both ways where encoding and decoding are the two crucial factors (QSstudy, n.d.). The model is based on three elements: sender, receiver and message. The process is initiated when the sender encodes a message by transforming thought into content. The message is then transmitted through a channel or medium to reach the receiver where it is decoded and interpreted. The receiver then provides feedback to the sender to confirm that the message has been received and understood and avoid misinterpretation (QSstudy, n.d.).

3.6 Digitalization Theory

Digitalization in corporations is the process of using digital technologies to create value for the business and its users and customers (Ek & Ek, 2020). Digital technologies make it possible to conduct business from anywhere, and communicate with both internal and external partners. Furthermore it gives the opportunity of internet commerce, which gives the potential of new customers beyond the geographic location of the company. However, it can result in increased competition, as with all new markets a company enters. Sweden has a high internet use overall, which makes implementing internet commerce relevant as it easily draws new customers. Unfortunately, this opportunity is shown to not be utilized fully. However, statistics show that digitalization can contribute to improved productivity, changed business processes and an opportunity to reach new markets and business possibilities, when implemented successfully (Ek & Ek, 2020). A possible reason for not utilizing digitalization fully is that it requires businesses to make changes that disrupt their business as usual. This comes with a resistance to change, making it a slow process.

When the COVID-19 pandemic disrupted everyday life, it naturally disrupted business as usual as well, forcing corporations to an earlier and faster transition to digitalization (Sund, 2020). It has led to increased remote and digital work as people in Sweden are recommended to work from home if possible to reduce the spread of the virus. This put pressure on companies that had not yet implemented digitalization fully, and by that accelerated the implementation to provide employees with a safe way to continue working.

4. Methodology

This section outlines the research setting and the approach taken during this research by explaining the qualitative research strategy. Methods used for collecting and analyzing the data are explained and motivated. Ethical dilemmas considered throughout the process and the quality of the research are discussed.

4.1 Research Setting

This paper is in the form of exploratory research where the effects of COVID-19 are investigated from a sustainability point of view. As there are knowledge gaps in this subject, exploratory research is suitable to obtain as much information as possible. To interpret the information in a contributing way and illuminate the problem from all angles, creativity and brainstorming has been needed (Patel & Davidson, 2011).

The research involves all three pillars of sustainability: social, economic and environmental to capture the overall effect on sustainability. Firstly, the COVID-19 pandemic has a strong connection to social sustainability since it has affected human relations, well-being and working conditions. Secondly, the company focus of the research contributes to the economic sustainability aspect. Thirdly, the primary food production and processing sectors, with a focus on cultivation of crops, are deeply connected to the environment through the use of natural resources. Both primary food production and processing are selected with the intention of capturing several steps of the value chain, which gives depth to this research. Furthermore, many companies either operate with both production and processing, or have a close collaboration with the other, making it necessary to include both parts of the chain.

4.2 Research Design

The objective of this research is to investigate the COVID-19 pandemics effects at an early stage, since this research is conducted during the pandemic. A qualitative research strategy has been selected with the intention of shedding light on a relevant, ongoing matter. This strategy is suitable as it is usually connected to the generation of theory through an inductive view between theory and research (Bryman & Bell, 2011). The paper follows an inductive approach meaning that the outcome of the research is reached through generalizations of

observations (Bryman & Bell, 2011). By doing so, this paper is contributing to early knowledge on the impacts of the COVID-19 pandemic and the sustainability possibilities it can lead to.

At the early stages of a crisis, quantitative data on the effects of the crisis are hard to acquire since the full outcome is not yet seen. Therefore, qualitative interviews have been performed to show how Swedish primary food production and processing companies have been affected by the crisis. This provides an indication of how that in turn has affected this part of the industry from a sustainability point of view. This is further a method for capturing the uniqueness of the research setting. As the COVID-19 pandemic is ongoing, it provides a unique opportunity for studying the effects and attitudes at this point of the crisis. The qualitative interviews allow for experiences, thoughts and feelings to come forward.

4.3 Research Process

The process of this research was separated into four phases. To begin with, the problematization of the situation was identified. The scope of the research was delimited to the primary production and processing sectors in Sweden which led to the formulation of the research question. Secondly, a literature review was conducted where relevant literature in the field was studied and certain theories were selected and developed into a theoretical framework. After that, three general themes were identified based on the problem analysis and literature review: industry, changes, and sustainability. Thirdly, the empirical data was collected through qualitative interviews of five companies together with additional data collection from the companies websites. Finally, the data was developed into an empirical analysis and discussion through a thematic approach resulting in conclusions. The authors have worked together through the entire process, and notes during working hours have been kept in a journal.

4.3.1 Data Collection

The data collection is separated into primary data from interviews and secondary data from internet and database searches. The latter was collected before the interviews were conducted to identify gaps in the existing literature and is therefore presented first.

Secondary Data

A literature review has been carried out to create a foundation and understanding of the problem and further developed into a theoretical framework with concepts and theories related to the research problem. Because of the novelty of the COVID-19 crisis the available research is limited. The problematization of this research involves multiple different aspects, which leads to a complex problem. To address this, the paper combines several perspectives and theoretical concepts in order to provide a foundation for this paper and future research.

The literature review has been conducted using the University of Gothenburg library search tool "Supersök" and "Artikelsök" in combination with the online databases Emerald, EBSCO and Greenfile. The identified key words used when searching for relevant literature in the databases are: sustainability, COVID-19, agriculture, and change. Articles that are peer-reviewed have been prioritized. Due to the nature of the research problem search engines have also been used. This can be considered a more unconventional method, however it has been necessary to find the information needed. The chosen articles were read, discussed and compared resulting in a deeper understanding of the field and its research gaps, where possible contributions could be made. In addition to these articles the companies websites have been studied to gain company specific information.

Primary Data

Primary data was collected through qualitative interviews. The interviews align with the qualitative research strategy and focus on the interviewee's perspective with the aim of generating rich and detailed answers (Bryman & Bell, 2011). The conducted interviews were semi-structured, following an interview guide which includes selected topics and certain questions. This was done with the intention of ensuring some comparability between the answers. The interview guide (Appendix 1) assured that the questions would follow a reasonable order and were formulated to answer the research question without asking leading questions (Bryman & Bell, 2011). However, the order of the questions varied to some extent and additional questions and follow up questions were added if necessary, depending on the direction of the interview. The interview process is therefore considered flexible in nature as it acknowledges and reflects the interviewees responses (Bryman & Bell, 2011).

The interview objects are limited to people who work for food production and processing companies, all of which currently operate in Sweden. A total of 13 potential companies were initially contacted through a process of cold calling, to explore possible interest and to receive further contact information. Of those 13, five companies were able to take part in this research. Further communication with the five interview objects was then done via email where a meeting was set up. All interview objects hold a decision making position with an insight in several parts of the company. This is intended to capture changes in different parts of the company that can relate to the three pillars of sustainability: social, economic and environmental. Given the current situation with the COVID-19 pandemic the interviews were conducted using digital communication tools, including both Zoom and Microsoft Teams. Generally, digital tools limit body language and facial expressions compared to conducting interviews in person. However, both Zoom and Microsoft Teams include a video function which allows some visual elements to be incorporated in the interview. This provided additional information to the spoken words, such as: discomfort, confusion, and excitement.

The interviews were conducted in Swedish as it was identified to be the most natural language considering all companies have a presence in Sweden and it is the first language of both interviewees and interviewers. There are however certain problems associated with the translation of interview data. According to Xian (2008) the three main problems are: linguistic, sociocultural, and methodological (Xian, 2008, referenced in Bryman & Bell, 2011). Xian (2008) concludes that the translator's social background, personal experience and knowledge is involved in the process of translating the data. This was taken into consideration when deciding on the language of the interviews but was seen as a minor problem in this research as everyone involved is aware of the Swedish socio-historical context.

4.3.2 Data Analysis

After each interview some time was spent on discussing reflections and observations from the interview. The interviews were recorded, with permission from the interview objects, and later transcribed. Recording the interviews eliminates the need to make notes during the interviews which allowed the interviewers to be fully attentive (Bryman & Bell, 2011). The transcriptions were conducted in close proximity to the interviews to ease the process (Longhurst, 2003). The duration of each interview was about one hour which resulted in an

average transcription time of five hours. This time was required in order to reach the level of detail aimed however to save time the transcription was done individually.

A thematic analysis has been conducted to identify trends in the empirical data connected to the themes in a logical and structured manner (Saunders et al., 2015). The transcriptions were summarized to limit the text to relevant answers to the questions exclusively and later collectively analyzed, by both authors, and coded into the four identified themes. Once coded, the summarized transcriptions were revised to select and mark certain findings and quotes for the empirical analysis. To acquire a systematic framework for the analysis it is not unusual to alter the themes to include all relevant findings according to Saunders et al. (2015). The themes were therefore revised from: industry, changes, and sustainability to: effect on sectors, remote and digital work, communication, and sustainability work. This created a need for additional theories to be included in the theoretical framework. Maslows's Hierarchy of Needs, communication theory and digitalization theory were therefore added. The empirical analysis was then further developed in the discussion by drawing connections to the literature review and theory.

4.4 Research Quality

The quality of research is evaluated based on validity and reliability. The concepts differ slightly between quantitative research and qualitative research. Internal and external validity is translated to credibility and transferability (Bryman & Bell, 2011) which discusses the appropriateness of the method and accuracy of analysis of results. Reliability refers to how well a research can be replicated, for a qualitative research this is translated into dependability (Bryman & Bell, 2011).

Credibility of the research recognizes how valuable and believable the findings are (Korstjens & Moser, 2017) and can be achieved through several different methods. In this research, both method- and investigator triangulation has been incorporated to ensure credibility. Different data collection methods have been used to control the consistency of the findings. In addition to this, the discussion was conducted through collaborative interpretation of the empirical analysis. Moreover, the research has been carried out in accordance with ethical consideration. The credibility of the research could be enhanced further by respondent confirmation of the transcribed interviews. Transferability specifies how well the findings can

be generalized. This is generally a problem within qualitative research when studying a small sample. This has been addressed by carefully selecting the interview objects and including both the production and processing sectors. However, broadening the sample, and interviewing more people from the same company, could result in a deeper understanding of the situation, and a higher level of generalization.

The uniqueness of this paper, considering the COVID-19 pandemic, poses concerns for the replicability of the research. The research process has been provided in a transparent manner in the method section outlining the steps of the process. The explorative approach entails that the research continuously developed during the process. Dependability incorporates the time aspect of the research including stability and consistency (Korstjens & Moser, 2017). To establish dependability the progress of the research was consistently and thoroughly documented in a journal. This documentation includes decisions, internal research meetings, and reflective thoughts. Furthermore, the different versions showing the progress of the paper are accessible through the version history in Google Docs. Confirmability refers to neutrality ensuring that the findings are based on the empirical data instead of personal preferences (Korstjens & Moser, 2017). This was addressed through the use of investigator triangulation which ensured that the data was interpreted by both authors providing multiple perspectives. Auditing by peers to ensure that the procedures were followed could have been done to enhance the dependability and conformability.

4.5 Ethical Considerations

The paper is conducted with respect to the ethical principles presented by The Swedish Research Council (2017). The interviews were identified as most exposed to ethical dilemmas. The sound of the interviews was recorded to ease the transcription process. However, recording was only done after being approved from the interviewee in order to retain integrity. The transcriptions are deleted after the final submission of this paper. The confidentiality requirements are fulfilled by excluding personal data, such as names and positions. This is because this research takes a business perspective, and the interviewees have been selected to represent the companies. Therefore, the names of the companies are presented which have been approved by all companies. Selected company information and a short description of their business is presented in Appendix 2. This is intended to give the reader additional information to enhance the usefulness of the findings of this research.

5. Empirical Analysis

This section begins with an explanation of the sectors and continues with a table of company information. Thereafter common trends observed from the interviews are presented, including specific examples from the companies. The primary data is analyzed in the following themes: effects on sectors, remote and digital work, communication, and sustainability work.

Primary food production refers to agricultural activities resulting in raw materials including cultivation, harvesting, and storing of crops (Commission for Environmental Cooperation, 2021). Companies who produce seeds for cultivation or cultivate the seeds into crops are placed in this category. Primary food processing refers to the processing of raw materials into food products. This involves grinding and milling of crops into flour and grains and packaging into products that are ready for distribution. Figure 2 clarifies the primary food production and processing sectors. The interviewed companies have been placed to present their position in the sectors based on their business activities. Table 1 presents a summary of company information, more detailed information is included in Appendix 2.

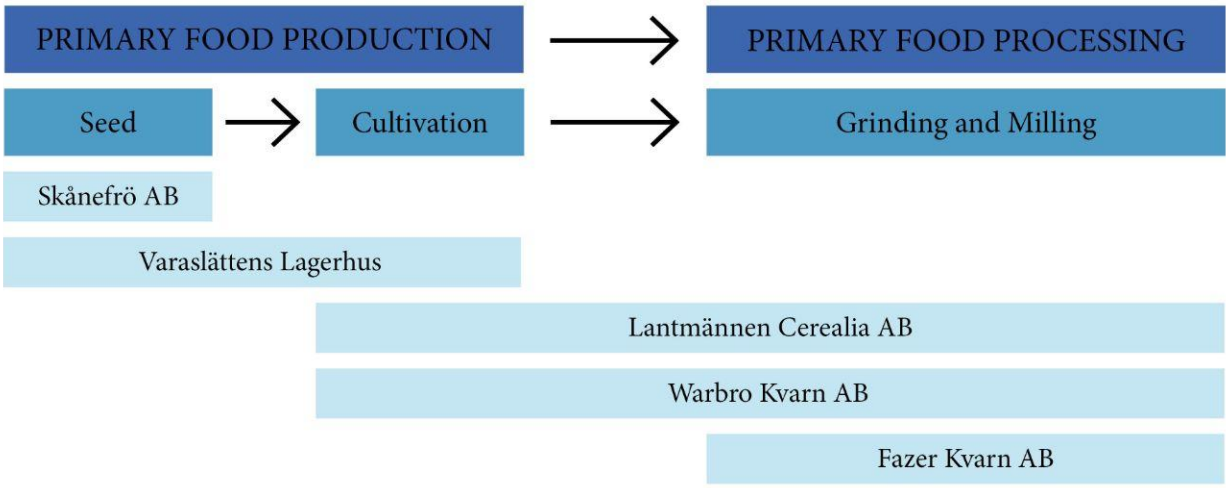

Figure 2. Overview of sectors with interviewed companies, own creation based on empirics.

Table 1: Summary of Company Information[4].

Company	Organizational structure	Approx. Revenue (MSEK)	Number of Employees	Customers	Main Product
Skånefrö AB	Share company	230	36	B2C & B2B	Seed
Varaslättens Lagerhus	Economic Association	927	35	B2B	Seed & Cereals
Lantmännen Cerealia AB	Share company part of Lantmännen	2.200	500	B2C, B2B & B2G	Cereals
Warbro Kvarn AB	Share company	9.5	10	B2C & B2B	Cereals
Fazer Kvarn AB	Share company part of Fazer	350-400	70-75	B2C & B2B	Cereals

5.1 Effects on Sectors

The COVID-19 pandemic has had an overall strengthening effect on the food industry during 2020. The realization and importance of a stable, sustainable and self-sufficient food production has increased. The degree of self-sufficiency has become more important and actualized by both politics and consumers in the media.

The food production sector has not experienced a major change in demand, although a small increase has been observed. Agriculture has not been negatively affected and farmers grow crops as usual. Instead a positive trend has been observed in the form of an increased concern for self-sufficiency resulting in a change of industry classification from environmentally hazardous to socially important. The recognition by the government in a time of uncertainty has been happily received by all interviewed companies. This is expressed by, for example, Varaslättens Lagerhus (interview, 7 May 2021) as *"In our opinion, it is healthy to have that view of agriculture […] So it is very valuable to see it in that way"*. However, the change in classification has not resulted in any specific actions or tangible effects yet, but there is hope for further utilization in the future.

The food processing sector has experienced a major change in demand in terms of volume. The change has occurred between the two market strategies; business to business (B2B) and

[4] Source: Interviews with companies

business to consumer (B2C). One of the first measures implemented during the COVID-19 pandemic was strict regulations within the restaurant and hotel industry. In order to ensure distance between people, measures were taken that drastically restricted the number of customers allowed in an area, resulting in a big drop in sales for restaurants, conference facilities, hotels and bakeries. This created a chain reaction resulting in decreased sales within the B2B channel for food processing companies supplying restaurants and bakeries.

The restrictions within the restaurant industry created the opposite effect in the B2C business area. When the population stopped going to restaurants an increased trend of consumption in grocery stores was observed instead. This was particularly noticeable during the hoarding waves in March 2020. During this period the demand for flour, oats and pasta heavily increased, for example Lantmännen Cerealia AB experienced an increase in sales of 100%. An increase of this magnitude puts enormous pressure on production and supply chain resulting in a situation with the need to produce more to catch up and rebuild stocks.

These two effects in combination resulted in a need to redirect and prioritize the production from large packaging to consumer packaging. This is observed to have been problematic for smaller companies as it requires the right equipment, quick adaptation, and logistics. For example only 20% of Warbro Kvarn ABs production is in consumer packaged goods which made it difficult to meet the increased demand in this area.

5.1.1 Internet Commerce

Another interesting effect in the food industry is that there is an increased interest in internet commerce. This trend is mainly observed through regular grocery stores. This has not caused dramatic shifts in customer patterns for the food production and processing companies since they are unaffected by how the product reaches the end consumer. However, it has positively affected the attitudes and interest in both buying and selling food through webshops.

The implementation of a webshop for selling directly to consumers creates a more tangible effect on customer patterns, which has been observed by two companies. Warbro Kvarn AB had been planning on creating a webshop prior to the COVID-19 pandemic but had not quite gotten around to it. A big part of Warbro Kvarn AB is to allow visits to their mill for educational purposes and potential customers. However, during this pandemic this had to be

limited due to regulations and safety reasons. Since Warbro Kvarn AB is a smaller and very niched company, these visits are an important part of their marketing to reach customers. They have had to allow fewer visits, and scheduling them after office-hours, to minimize the point of contact. This has created an increased need for an additional channel to reach the customers. The development of their webshop was therefore accelerated and launched during this pandemic. The results from the webshop are beyond their expectations.

Skånefrö AB launched their webshop prior to this pandemic, and have experienced a positive trend during this pandemic. Their webshop sales have increased, mostly because consumers tend to their homes and gardens more. They expressed that the webshop had its breakthrough this year, and that the COVID-19 pandemic is the reason. Agricultural products have also sold more through their webshop with customers all over the country.

5.2 Remote and Digital Work

All interviewed companies have adjusted to government regulations in different ways. A general trend observed is that office work, such as administration and management, has been relocated to home work, while production work continues. To ensure employee safety in production, measures such as keeping distance, using masks and taking separate breaks have been implemented. Further observations include mixed feelings regarding remote work. On the one hand, working from home increases efficiency since one is not disturbed in the workplace. On the other hand, one misses the office and colleagues, which decreases motivation. Varaslättens Lagerhus expresses a feeling of loneliness without the same participation at work.

It has been observed that the interviewed companies have reduced traveling across borders and within Sweden by using digital tools for meetings with both external parties and internal colleagues. The thoughts about this are mostly positive, and the companies find that digital meetings work well for both management decisions and procurements. However, physical gatherings to address social topics are said to not be ideal when done with digital tools. This digitalization is said to have been on the table for several years, but with a hesitation to implement it fully. When they have now been forced into it, it was instead implemented quickly. They find that the digital tools are a helpful element that will mostly be kept in the post pandemic world too. Although digital meetings will continue it has been expressed that

the new business as usual will not be exclusively digital: *"... many meetings work excellent with digital tools [...] so that will probably stick around. We will come back to physical meetings too, because they are needed sometimes and are very important."* (Varaslättens Lagerhus, interview, 7 May 2021).

Because of travel and distance regulations, Skånefrö AB made the decision early on that their salesmen would no longer travel to meet customers. Instead, they would contact their customers through digital meetings. This was a big adjustment for them as it had been business as usual for several years. Nevertheless, the effect and attitude towards it has been positive since less traveling saves time and energy. While the increased efficiency is positive among the salesmen, there are some concerns that the customers disbenefit from not meeting in person. Another interesting aspect is that remote work has opened up new career opportunities. Fazer Kvarn AB raised the thought that geographic locations play a lesser role in recruitment, as one can work with and through digital tools. This widens the range of employment opportunities as well as the knowledge and creativity in the company.

5.3 Communication

Less interactions in the office, due to the relocation of work, has caused an increased need for communication. Information is lost due to limited mouth-to-mouth communication which makes it difficult for management to control operations and recognize feelings and well-being among employees. On one hand, Warbro Kvarn AB indicates that there have been some disputes related to fear and uncertainty concerning this pandemic. On the other hand, Skånefrö AB shares that people are more attentive by listening more and taking care of each other.

Additional methods have been introduced by management which increase the degree of detail and frequency of communication. These methods are implemented to create transparent and honest information flows that build trust and develop team spirit. Practical examples of this work includes surveys, individual meetings, weekly letters, information updates, and monthly videos. The surveys aim to answer how employees experience the situation, their feelings and well-being. Individual meetings in the form of phone calls or digital meetings is another way for management to check up on their employees. Weekly letters were introduced to explain the inventory and delivery status at that time as well as new recommendations and their

impact on operations. Emphasis has been placed on health and safety due to the nature of the crisis. Updates after board meetings ensure that information and decisions are communicated in a clear manner. Monthly videos present objectives and results to direct the mind towards positive thoughts. Feelings of importance and involvement are identified as specifically meaningful during the COVID-19 pandemic, this type of feedback is therefore significant.

Lantmännen Cerealia AB introduced crisis support during the COVID-19 pandemic to ensure that employees feel their support during this crisis. It is emphasized that people react differently to change and that one size does not fit all. In combination with increased communication channels they also introduced inspirational lectures, exercise themes and challenges to motivate employees. Furthermore, they experience that people work together to come up with common solutions for the enforced short term objectives of prioritizing health and continued work. As the goal becomes more clear it is easier to cooperate, and organizational departments play a less important role when steering towards the same goal.

5.4 Sustainability Work

The interviewed companies work with sustainability to different degrees. A common trend for all the companies is that their sustainability work has continued or even intensified during the COVID-19 pandemic. Another trend observed is that investments in sustainability projects are still on the table, for example on achieving a fossil free supply chain, innovations for sustainable solutions and resistant seeds to decrease the need for chemicals. To achieve these projects, several of the companies have received funding from Klimatklivet[5] together with close collaboration with Vinnova[6]. It has been expressed that several innovative solutions would not have been possible without these collaborations. None of the companies experienced that focus had to be drawn from sustainability in favor of dealing with the crisis. Instead, they could continue their paths alongside this pandemic. This empirical analysis is therefore focused on their continued sustainability work to highlight the importance of sustainability in these sectors.

[5] Klimatklivet is financial support funded by the government, for investments that reduce greenhouse gases (The Swedish Environmental Protection Agency, n.d.)
[6] Vinnova is Sweden's innovation authority (Vinnova, 2021).

5.4.1 Social

All interviewed companies work with ensuring equality and good social behaviour among employees, which is expressed to come naturally through company values. This work has not been hindered by the COVID-19 pandemic. For example, Lantmännen Cerealia AB implemented a cultural change program three years ago, based on their values to create a joint culture. They work with practical development tools to achieve a sustainable behavioural pattern. They further express that this is a continuous process that has been intensified during this pandemic.

Health and well-being has gained an increased consciousness and importance overall. The companies all express that this has always been of importance in the workplace, but has become even more important during this pandemic, which is shown through the increased need for communication and caring. On that note, a consumer trend is that healthy food products have increased in popularity and a greater interest in sustainable solutions have been observed. It has been conveyed that not only the quality and taste is important for consumers but also what's behind the products.

Furthermore, all interviewed companies express concern and respect for their employees by avoiding layoffs to the greatest possible extent. The responsibility as an employer has become even greater during this pandemic to ensure that employees feel safe at work. With that said, the companies also make sure to fulfill demands on work environment safety, regardless of crises.

5.4.2 Economic

The companies all work with economic sustainability in different ways, but common observations are that they aim to make the soil more productive while simultaneously sustaining it for future use. For example, Lantmännen Cerealia AB invests in research on how to get more resistant seeds and more productive soils to extract as much as possible from the harvests. Their sustainability work is well integrated in their business strategy, to take action through the entire process from soil to table.

Another take is Warbro Kvarn AB that has a niche in cultural crops and old fashioned techniques for grinding and milling, which naturally become their way of sustainability as it

is the same practices that has been done for centuries. This unconventional farming comes with the disadvantage of not getting as big harvests as with conventional farming, and the advantage of cultural crops grown in prosperous soil. They state that they *"...try to think of sustainability so that the grounds can suffice for many generations to come…"* (Warbro Kvarn AB, interview, 6 May 2021).

Some observations of circular solutions have been seen as well, Skånefrö AB explains: *"We return what we have taken from the soil in the way that the residue from what we produce, or what emerges when we rinse, is returned to the soil in the form of biochar"* (Skånefrö AB, interview, 27 April 2021). This is considered to be climate positive as their production is climate neutral to begin with, the biochar allows for more carbon dioxide to be kept in the soil. The excess biochar is sold for soil improvement and used as heating in neighbouring municipalities. This started off as a landfill problem for Skånefrö AB, where they had to pay to get rid of the waste products. Instead they invested in an innovative solution that is beneficial both financially and environmentally. A minor setback has been experienced in this area due to the COVID-19 pandemic, as the biochar pans are imported from Germany. The travel restrictions have hindered the renovation of their larger pan, making it hard to produce and distribute their biochar as planned.

Likewise, Varaslättens Lagerhus express that they drive a very clear and conscious work to achieve a circular economy and become fossil free. For example by replacing their oil pan to a biofuel pan that generates energy from burning their own waste products. The biofuel is then used for example for drying cereals. Moreover, they have changed the policy regarding company cars where the goal is to only have hybrid or electric cars. This is expressed to be in favor of both the environment and their economy.

An example of an innovation that supports circular economy is Fazer Kvarn AB who has invested in a research project that found a solution on how to extract the natural sweetener xylitol from oat shells. This is in the starting phase right now and the process will become part of their regular oat production. Instead of importing xylitol made from other raw materials, they are now able to use the oat shells, which would normally be considered waste products, to make the xylitol as a way to increase both economical and environmental sustainability in their production.

5.4.3 Environmental

It has been observed that all interviewed companies have an ambition to take advantage of any residual products produced through their operations. This is shown through Skånefrö ABs biochar and both Fazer Kvarn AB and Varaslättens Lagerhus who burn residual products to produce bioenergy creating a circular process. Warbro Kvarn AB tackles this by refining their residual products further into animal feed which they either use themselves or sell to other farms. By using everything in different stages it eventually ends up as manure and circles back to the Earth.

Lantmännen Cerealia AB works with a cultivation program with specific actions to reduce their climate footprint and foster biodiversity, which can be seen as a guide for their farmers to increase sustainability. They further look at exporting this program to other countries to aid other markets in transitioning to more sustainable agriculture. Warbro Kvarn AB expressed that biodiversity has been a driving force in their company building. Their methods of cultivation strengthen biodiversity. First of all they specialize in cereals that are near eradication, to maintain and increase that diversity. In addition to this they also grow crops organically which allows more weeds to grow compared to commercial cultivation.

Fazer Kvarn AB explains that one of their sustainability goals is to reduce food waste including exchange losses in the mill's production process, but also providing packaging that efficiently preserves the products. Fazer Kvar AB is against straw shortening agents due to its environmental impact. However, by using straw shortening techniques it is possible to fertilize more resulting in larger harvests which are typically connected to bigger profits.

5.5 Summary of Empirical Analysis

The primary data from the interviews are summarized in table 2 consisting of the most important findings with regards to the four themes. The theme *Sustainability Work* is directly divided into the three pillars of sustainability.

Table 2: Summary of Empirical Analysis

Theme	**Findings**
Effects on sectors	Socially important industry. Increased demand in B2C. Decreased demand in B2B. Increased implementation of internet commerce.
Remote and Digital Work	Office work relocated to home, while production work continues. Reduced travel across borders. Increased use of digital tools. Increased efficiency but decreased motivation.
Communication	Increased need for communication. Additional methods for communication (surveys, individual meetings, weekly letters, monthly videos and information updates). Implemented crisis support.
Social Sustainability Work	Continued and intensified. Increased importance of health and well-being. Consumer trend that healthy food products are more popular. Avoiding layoffs.
Economic Sustainability Work	Continued and intensified. Investments are still on the table. Circular solutions (biochar, biofuel and xylitol). Research in making the soil more productive.
Environmental Sustainability Work	Continued and intensified. Take advantage of residual products and reduce waste. Biodiversity (old techniques and culture crops). Cultivation program for lowering climate footprint.

6. Discussion

The discussion is based on primary data from the empirical analysis together with secondary data from the literature review and theoretical framework. The findings are structured in the same themes as the empirical analysis and discussed from both present and future perspectives.

6.1 Effects on Sectors

The COVID-19 pandemic put in motion an overall realization of the importance of a self-sufficient food production. The change of classification was an important practical sign of this. To have a classification of environmentally hazardousness gives a negative stamp on the sectors as it highlights the environmental issues. However, from a sustainability point of view it is important to address them and regulate to some extent to reduce the environmental impact. In accordance with what Junker and Mattsson (2020) wrote about policies, the environmentally hazardous classification was set aside during the COVID-19 crisis. Instead, focus was placed on the importance of self-sufficiency, which has been brought up by this pandemic.

Although the change in classification has not yet resulted in any changes in market practices, the empirics show a hopeful future. It is a step forward towards further cooperation between the government and the agricultural businesses, which according to Junker and Mattsson (2020) is necessary in times of crisis. Through increased status, support and appreciation the companies are given possibilities to develop. The interviewed companies are currently working with sustainability investment support organizations in order to develop sustainable solutions in accordance with SDG 2 (United Nations, n.d.b). Additional support from the government will therefore most likely contribute to further sustainable development. This is a sign of Sweden utilizing this window of opportunity to achieve both the food strategy and climate targets set out for 2030.

The findings in the primary food processing sector show a significant shift in demand between B2C and B2B. When the spread of COVID-19 was declared a pandemic the need for self-sufficiency escalated as the population started to hoard essential base products. This put a

lot of pressure on the primary food processing sector since they produce many of these products, including flour and oats. Companies with production that is evenly divided between B2C and B2B were able to meet the sudden increase in demand more efficiently while companies with unevenness in the different areas had a hard time to redirect their production. Companies that operate in different business areas therefore handle uncertain situations, such as the COVID-19 crisis, better since they thereby diversify their risk.

6.1.1 Internet Commerce

The COVID-19 pandemic has accelerated the use of digitalization when reaching customers in both B2C and B2B. The overall increased use of digital solutions has shown the advantages of creating value for the business, its users and customers. Warbro Kvarn ABs implementation of a new webshop confirms the digitalization theory (Ek & Ek, 2020) as it provides a new business possibility that allows them to reach new markets. Since they produce niched products this provides a valuable opportunity for them to reach customers in other geographical areas. This is contradictory to the threat for small-scale food producers due to the COVID-19 pandemic with regards to SDG 2 (United Nations, n.d.b). Warbro Kvarn ABs customer reach is extended allowing them to supply their sustainable products to more people which is positive from a sustainable point of view. Since they operate in a niched market, this could amount to less imports as the domestically produced products are available to more people in Sweden. However, transports are still required to reach customers which can be considered unsustainable depending on how this is managed.

Internet commerce has long been an established sales channel in several product categories. It has quite recently been introduced to the food industry and the COVID-19 pandemic gave it a boost. This pandemic has transformed the way we live including the way we acquire food products. Priorities have shifted to place health as the main concern since the consequences are more severe, in this situation that entails avoiding crowds and therefore grocery stores. As the empirical analysis shows, Warbro Kvarn AB was on an incremental implementation path prior to this pandemic. The radical behavioural change in combination with increased digitalization has eased the implementation of their webshop. Thus a sign of taking advantage of the COVID-19 crisis as a creative destruction (Junker & Mattsson, 2020).

6.2 Remote and Digital Work

The effects of remote work and digital work have been both positive and negative. The positive side contributes to economic sustainability as it saves time and energy because of excluded traveling and less interruptions at work. This generates better financial results for the companies through increased efficiency as well as positive environmental effects. However, it is at the expense of employee well-being. When working from home, the social needs in Maslow's Hierarchy of Needs (Cherry, 2021) is disturbed because social connections are restricted. Increased feeling of loneliness makes it more important for the companies to ensure that employees feel good as well as providing mental security. A negative spiral is set in motion when social needs are not satisfied as it also has indirect implications on the next levels; esteem and cognitive needs. The physical separation from colleagues risks decreasing the perceived appreciation for personal achievements at work. Furthermore, curiosity and eagerness to learn could also be decreased. All of this combined results in a lowered motivation to perform, and a decrease in social sustainability.

Nevertheless, we believe that this is worsened with the pandemic crisis since involvement in other social groups or communities is constrained as well. This implies that the decrease in social sustainability will not be as extensive when the pandemic is overcome, since individuals will once again be able to meet their social need for belonging and thereby esteem and cognitive needs as well. The empirics show that as the negative social effects decrease, remote and digital administrative work will continue, without being forced by safety regulations, to maintain the positive effects. This could lead to long term positive effects on the environment according to Nyqvist et al. (2020).

Regarding the remote work for salesmen in particular, the effects of remote and digital work are mixed. While the excluded travel time increases efficiency and reduces costs, the potential customers lose the service of meeting in person which risks diminishing sales. Thus, it might come off as a zero sum game. However, this is still hard to tell as a decrease in sales can have other explanations than the remote and digital work considering the COVID-19 crisis. Whether or not this will become a new business as usual for salesmen depends on customers' willingness to close deals through digital meetings in the post-pandemic world.

Another observed effect of remote work is the possibility for new career opportunities and transfer of information. Geographical location is no longer a hurdle to the same extent regarding recruitment of personnel. Companies will have a wider range of individuals to select from potentially leading to increased diversity, creativity and variety of perspectives. We believe that this is a step forward towards SDG 8 (United Nations, n.d.c), since these new career opportunities provide decent work, without sacrificing social aspects such as family and friends, generating a positive effect on social sustainability. The use of digital tools also allows specialists within certain areas to contribute with their expertise in more than one location, creating a bigger impact. The transfer of research and knowledge between companies, regions and even countries will be simplified as digitalization has been accelerated.

This aligns with *cooperation between countries*, which is one of the six specific actions presented by the United Nations as a COVID-19 response for SDG 13 (United Nations, n.d.g). As the environmental crisis is a worldwide problem, it calls for international collaboration. This is the intention of SDG 17 since it aims to create a partnership between countries to share and promote environmentally beneficial technologies and innovations (United Nations, n.d.f). Digital technologies is a powerful tool to develop and share knowledge and innovations across borders. When this pandemic accelerated the implementation of digitalization, it facilitated the goal of a united front against the environmental threat and towards sustainable development.

6.3 Communication

It is clear from the empirics that the need for clear and consistent information has increased during this crisis, to keep everyone up to date with restrictions and regulations as they could rapidly change. This is a way to create stability, in an otherwise unstable and changing environment which corresponds to the response phase (Zemke, 2020). Information builds confidence and provides certainty which has been essential during the uncertain times of this pandemic. Strategic information should include providing the same information to all employees at the same time to address feelings of importance and involvement. The empirics demonstrate the importance of this, which aligns with social sustainability to ensure equality and the includance of everyone.

During this crisis the communication has been done digitally. This allows efficient information flows, however it limits the senses which risks that implicit information gets lost. It is more difficult to encode and decode a message when tone of voice, body language and facial expressions are removed which could result in misinterpretations or loss of information. As communication is a two way street the loss of physical interactions requires more effort from both the communicator (encoder) and the receiver (decoder). The use of video chats can ease this, since it includes the visual aspect. However, varying internet connection can disrupt the communication, which once again puts the information at risk of being lost on the way, the key is therefore to be patient and explicit. Furthermore, feedback and repetition through for example information spreads after meetings helps to ensure that the information is correctly understood by the receiver in accordance with the Circular Model of Communication (QSstudy, n.d.).

When the mouth-to-mouth communication is limited, it becomes difficult for management to control operations and ensure employee well-being. Thus, it can lead to negative effects on social sustainability. Instead, the empirics show that this has led to additional methods for keeping control, managing the company and making sure the employees are well. Because, with less control comes the need for more trust in the employees and more continuous communication to capture as much of the daily mouth-to-mouth communication as possible. Individual meetings and weekly letters are practices that have been adopted during this time. These practices increase the level of knowledge and information, satisfying the cognitive needs (Cherry, 2021), which fulfills the cognitive components of trust. Similarly, in uncertain times, employees have a greater need for trust in management and a sense of security to rely on. This has been addressed by management through the use of surveys, together with opening up for feedback and questions aligning with the Circular Model of Communication (QSstudy, n.d.). The way the companies have taken care of the communication issues reduces the risk of negative effects on social sustainability. We further believe that this type of transparency and feedback loop is of the utmost importance to build a strong and honest relation at the workplace. In addition, this has positive effects on social sustainability as it is inclusive and makes way for good working conditions.

6.4 Sustainability Work

Sustainability work is observed to be a fundamental part of the companies' business model. Agriculture and the cultivation of crops is dependent on the Earth's natural resources which explains why environmental sustainability is heavily present within economic sustainability as well. All interviewed companies have sustainability objectives but with different areas of focus. The differences are connected to the size of the company rather than which sector they operate in. For example, social sustainability is observed to have a greater focus in larger companies and we believe the reason is that they manage a larger workforce which amounts to more human relations. Smaller companies, especially companies operating in niche markets, have a narrow focus on sustainability depending on their niche. This is observed through Warbro Kvarn AB who specialize in cultural crops. It entails a focus on increasing biodiversity, which is promising since Vidal et al. (2020) expressed biodiversity loss as an issue for agriculture.

The sustainability strategies have a long term perspective which explains why they have not been altered during this pandemic. Instead, they have been intensified and sustainability investments have continued. Although the COVID-19 pandemic has changed the way business is conducted, it has not had a significant negative impact on the sectors. Instead an increased interest for both sustainability and the food production and processing sectors was seen during this pandemic. That combination has resulted in more sustainability work within the sectors. Since the empirics do not show a major change in sustainability work, but instead an intensification, the discussion is based on the companies' continued sustainability work.

6.4.1 Social

Since larger companies have a greater workforce it results in a greater need for sustainable behavioral pattern tools. A reason for this is because the more people a company employs, the harder it becomes to see everyone. In smaller companies it is easier since they usually meet on a daily basis, which we believe lessens the need to actively work with social sustainability. However, because of remote and digital work this has been limited, resulting in different and more active ways of communication even in smaller companies. We therefore believe that this pandemic has intensified this type of social sustainability work, but more as a natural way of doing business rather than active work.

Job security is particularly important during a time of crisis. It is a way to fulfill Maslow's second level of needs, namely safety needs (McLeod, 2020). Financial security in the form of employment creates order, control, and security which are desirable attributes in uncertain times. Although loss of employment has been a big problem during this pandemic it has not been shown for the interviewed companies. This is a positive observation as it connects to SDG 8 to ensure decent work (United Nations, n.d.c).

The need for health and well-being is another part of Maslow's (McLeod, 2020) safety needs that has gained increased importance during this pandemic. This is particularly significant as COVID-19 is a threat to human health. The view on health has changed and it is no longer taken for granted. Health and safety regulations might become more extensive even when the pandemic is over, to ensure employee safety and avoid similar situations in the future.

6.4.2 Economic

Economic sustainability work naturally connects with environmental sustainability in this particular part of the industry as it depends on Earth’s natural resources. It is therefore logical for the companies to have an environmentally sustainable business model to achieve economic sustainability, which the empirics show. What has been observed however is that the actions for achieving this differs. Circular solutions were observed in three companies, as a way to use residuals to create new products to sell or use as soil improvement, or to produce their own energy. This is the only aspect within this area where a setback has been observed due to this pandemic since trade across borders have been compromised which caused delays. Although this was expressed to only be minor, it is an interesting example of a problematic situation when cooperating across borders in times of crises.

Another track is investing in research, science and technology for creating resistant seeds to secure the harvest from for example weather and insect infestations. That way the company reduces the risk of unprofitable harvests. Both circular solutions and research is important work for achieving SDG 12, to reduce waste and recycle material (United Nations, n.d.d), and thereby take responsibility throughout the chain. Furthermore, it also aligns with the work towards SDG 8 (United Nations, n.d.c), as these solutions save, and even earn, the companies money, it encourages economic growth. Moreover, it gives more financial means to put into research for new innovative solutions that benefit the environment.

Since these solutions have all been in favor of their economy, it implies that the solutions are based on financial incentives. Companies are generally financially driven, which makes it necessary for environmentally beneficial solutions to be in favor of the company economy as well. For a company to implement an environmentally beneficial solution, it requires that it is more economically sustainable than a non-environmentally beneficial solution. Therefore, cooperation between governments and companies, in accordance with Junker & Mattson (2020), is very important. We believe that without cooperation the sustainability work will face more hurdles, as the united front is lost. To achieve sustainable development it is necessary for the government to continue to aid businesses with financial means to invest in sustainable solutions. This is supported by the empirics, which has shown dependence on organisations and fundings such as Vinnova and Klimatklivet. In addition, support in other forms is shown to be appreciated, such as classifying the industry as socially important. Furthermore, we believe that it is highly relevant for the sectors to continue working towards circular models to strengthen the companies' economies while benefiting the environment.

6.4.3 Environmental

Most of the actions that the interviewed companies take regarding environmental sustainability concerns their production, which is natural as it is where the climate footprint occurs. Since the COVID-19 pandemic did not entail severe negative effects on the sectors, and the empirics show that the productions could continue more or less as usual, their work with environmental sustainability has not been compromised. On the contrary, it too could continue and even be intensified. In this discussion we therefore look at the actions the companies take today, and what impact it could have further on.

It is essential for the companies to produce their products without depleting the natural resources as it is the basis of their operations. A consistent trend is that all interviewed companies want to take advantage of residual products from their production or processing. This is consistent with the sectors' overall appreciation of the Earth's resources. It also contributes to SDG 12 by reducing waste (United Nations, n.d.d) to achieve sustainable production. This further leads to sustainable consumption by providing packaging which limits food waste. Furthermore, a sustainable production can gain the company more customers thanks to the consumer trend of healthy products and a peaked interest in knowing

what is behind the products. We believe that, together with the financial incentives mentioned above, solutions for reducing waste and recycling will multiply as businesses see the many advantages of them.

Reduced climate footprints and increased biodiversity is another consistent trend that has been observed. Using residual products to generate energy does not only reduce waste, it also limits the use of fossil fuels, which is an important step towards SDG 13 as global warming is driven by fossil fuels (United Nations, n.d.d). Skånefrö AB has managed to make their production climate positive through the use of biochar. Warbro Kvarn AB operates with respect to the Earth's natural systems by using methods of cultivation that strengthens biodiversity. Their organic farming methods directly contribute to increased biodiversity which reduces the progression of genetic diversity in the planetary boundary biosphere integrity (Rockström et al. 2009). This is a good sign as Campell et al. (2017) stressed that agriculture is a major contributor to exceeding this boundary.

Straw shortening is a technique to achieve larger harvests through extensive fertilizer use. However, the straw shortening agent itself is a hormone with unclear side effects and increased fertilization leads to more emissions. Fertilizer production and application is a central issue in the high risk planetary boundary biogeochemical flows (Stockholm Resilience Center, n.d.). Fazer Kvarn AB expressed that they are against straw shortening in wheat due to its environmental impact even though it is a strategic technique for them to increase their harvest and thereby profits. This shows that the environmental considerations are prioritized. Although this is contradictory to the financial incentives, we believe that this is mainly due to Sweden's previous regulations against it, which still leaves a mark on the technique. Moreover, the choice of prioritizing environmental consideration also aligns with social sustainability, to provide healthy products without risk of chemicals.

Having practices that are in favor of the planetary boundaries increases the possibility of using them as a dashboard to recover from the COVID-19 pandemic (Vidal et al., 2020). Even though these sectors in particular do not have the need for recovery, we believe the knowledge and practices should be shared with other companies in Sweden as well as in other countries in accordance with SDG 17 (United Nations, n.d.f). This is indeed a window of opportunity to make the recovery from this pandemic in favor of the environment.

7. Conclusions

The final section draws conclusions based on the main findings of the research discussed in the previous section. The conclusions are presented in the four themes, and ends with an answer to the research question. The section then closes with contributions and suggestions for future research.

The purpose of this research is to contribute with knowledge on how the Swedish primary food production and processing sectors have been affected by the pandemic and if it has utilized the window of opportunity for sustainable development. The objective of the paper is to answer the research questions (RQ):

> RQ1: How has the COVID-19 pandemic affected the Swedish primary food production and processing sectors from a sustainability point of view?
>
> RQ2: Is the window of opportunity, caused by the COVID-19 pandemic, utilized for sustainable development?

At first glance the impacts on the sectors are few and moderate, however a closer examination identifies four consistent themes: effects on sectors, remote and digital work, communication and sustainability.

Effects on the Sectors: The sectors have gained an overall increased interest from both society and government due to increased awareness of the importance of sustainability and self-sufficiency, caused by the COVID-19 pandemic. The shift in demand from B2B to B2C has resulted in a greater focus to sell directly to the consumer which has been evident in increased internet commerce. The sustainability effects of this are however unclear.

Remote and Digital Work: The increased remote and digital work forced by this pandemic will most likely continue in the future, since the positive effects will eventually outweigh the negative. Moreover, it entails the possibility of long-term sustainability effects in all three pillars as it makes way for new career opportunities, reduces the need for traveling and increases efficiency.

Communication: Communication provides a solution to many of the downsides of digital and remote work, while at the same time contributing to social sustainability by building a transparent, honest and inclusive relation which has been particularly necessary during this pandemic.

Sustainability Work: The main finding is that sustainability work has continued and even intensified during the pandemic. This is mainly because of a greater interest in sustainability and in the food industry. The COVID-19 pandemic has increased the need for health and well-being, which has led to social sustainability work becoming a more natural element of business rather than active work. Regarding economic sustainability, further investments in circular solutions encourage economic growth but depend on external financial support to be conducted. This has not been significantly affected by this pandemic. Environmental sustainability is shown to be a natural part of the interviewed companies strategies as the production in these sectors depend on natural resources. Luckily the production has been able to continue, during this pandemic, which explains why the environmental sustainability work has not been very affected.

To answer RQ1, the COVID-19 pandemic has not affected the Swedish primary food production and processing sectors negatively, on the contrary it has resulted in an upswing for the sectors regarding demand. This pandemic further put these sectors in focus as it has led to increased interest for domestically and sustainably produced primary food products. To answer RQ2, this interest has been addressed by intensified sustainability work by companies in these sectors. Thus utilizing the window of opportunity for sustainable development.

7.1 Contributions and Future Research

This research contributes to understanding the aftermath of the COVID-19 pandemic in the Swedish primary food production and processing sectors in light of sustainability. The research is useful for management who seek to understand how this past year changed and affected their operations in order to strategically plan for the future. The paper provides early insights, and shows the importance of this window of opportunity. It also highlights that sustainability work within these sectors does not fall short in times of crisis and uncertainty.

This research is conducted during the pandemic, prior to the full realization of outcomes, which leaves room for further research. We suggest expanding the research to include additional companies and even consider covering more areas of the food industry such as livestock, manufacturing and distribution. This would provide a more thorough understanding of the COVID-19 pandemic impact on the industry as a whole.

The utilization of the window of opportunity for sustainable development should be further investigated when the COVID-19 pandemic is over, as it would show what is included in the recovery plans and what effects that will generate on sustainable development.

An interesting finding that came to light during this research is the new career opportunities that follow from remote and digital work. This could possibly transform the entire labour market as geographical location is now less of a limitation when applying for work which could allow for further cooperation between companies and countries who require similar resources. This requires further research and could be applied to other industries.

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9. Appendix

Appendix 1: Interview Guide

Vi läser ekonomprogrammet på Handelshögskolan vid Göteborgs universitet och skriver nu vår kandidatuppsats inom Corporate Sustainability. Den här intervjun är en del av vår studie om vilka förändringar som skett i jordbruksindustrin till följd av Corona-pandemin. Vi kommer titta på vilka eventuella effekter på hållbarhet som förändringarna genererar.

Är det okej att vi spelar in intervjun?
Vi har inte tänkt inkludera ditt namn men är det okej att vi inkluderar företagsnamnet i rapporten?
Har du några frågor innan vi börjar?

KORT OM FÖRETAGET
Berätta lite kort om CompanyX och era produkter?
Hur ser eran organisationsstruktur ut?
Vilka länder arbetar ni inom, både när det kommer till produktion och försäljning?

INDUSTRI
Kan du beskriva eran industri och er strategiska position på marknaden?
Säljer/arbetar ni inom B2B, B2C och/eller B2G?
Hur upplever ni att er bransch har påverkats av pandemin?
Har ni sett någon specifik förändring i efterfrågan av era produkter under pandemin?

FÖRÄNDRINGAR
Vilka förändringar har CompanyX genomfört under covid-19 pandemin?
Hur har ni kommunicerat förändringarna till er personal och hur togs det emot?
Har dessa förändringar implementerats som ett nytt bestående arbetssätt inom företaget eller ser ni dem som endast temporära?

Har eran beslutsprocess förändrats till en följd av behovet för snabba beslut under pandemin?
Har ni genomgått liknande förändringsarbete till följd av en kris tidigare?
Hade ni en krisplan för externa kriser innan covid-19 pandemin?

HÅLLBARHET
Hur arbetar ni med social hållbarhet?
    Hur skulle du beskriva CompanyX affärskultur?
Hur arbetar ni med ekonomisk hållbarhet?
Hur arbetar ni med ekologisk (miljö) hållbarhet?
Hur har arbetet inom hållbarhet sett ut under pandemin?

Appendix 2: Company Information

Skånefrö AB was founded in 1928 and is based in Österlen, Skåne. Their main area is agriculture for which they produce grass and cereal seeds. In addition, they produce seeds for green spaces across the country, heating for neighbouring municipalities, and biochar.

Varaslättens Lagerhus is an economic association, founded in 1930 and owned by 1.950 members. They operate in Västra Götaland, where they trade with cereals that their members produce. Additionally, they sell equipment and other input products for agricultural activities.

Lantmännen Cerealia AB is a large company that focuses on cereal based products, with Kungsörnen, AXA and Nordmills as their leading brands in primary food processing. In addition, they also have secondary food processing. They are part of Lantmännen, an agricultural cooperative owned by 19.000 Swedish farmers.

Warbro Kvarn AB is a small milling company located in Södermanland. They produce eight cereal products that range from cultural cereals to modern wheat. In 2016, they expanded to malting. They started off as a family business, but have steadily grown and are now 50% family owned and 50% external owned.

Fazer Kvarn AB is part of Fazer groups business area Fazer Lifestyle Foods. They focus on producing cereal based products from locally grown cereals under the brand Frebaco Kvarn. The mill is located in Lidköping.

Appendix 3: Swedens Restrictions

As of the time this study is made, Sweden has the following restrictions (Krisinformation.se, 2021):

- Public and private gatherings are limited to eight people
- Shops, gyms and sports facilities need to ensure that every visitor have 10 square meters, with a maximum of 500 people
- Restaurants close at 8:30 pm, and no more than four people are allowed at the same table.
- All non necessary trips to Sweden from countries outside the EU are banned.