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Adoption of Sustainable Business Models

An Explorative Study in the Context of Small and Local Farmers

Master's thesis in Management and Economics of Innovation & Supply Chain Management

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SUMMARY

Climate change is transforming the business environment and creates challenges for companies. These challenges, as well as political decisions related to sustainability, puts pressure on companies to change the way they are doing business. For companies to adapt to the changing business environment, new business models encompassing all three dimensions of sustainability, i.e., environment, society, and economy, must be applied. Such models are characterised as sustainable business models and several scholars have addressed how these could be designed. However, few are adapted to the context of small and local farmers. Thus, the aim of the thesis is to explore how a sustainable business model can be adapted to small and local farmers. Further, this thesis will identify factors that hinder and facilitate farmers' ability to adopt a sustainable business model, as well as what social value is created when adopting the business model. A case study including eleven in-depth interviews with small-scale farmers was conducted to collect data. The data was analysed by applying the theoretical framework. Additionally, the Triple Layered Business Model Canvas (TLBMC) was used to discuss how a sustainable business model can be adapted to small-scale farmers. The results provide four social values (Community engagement, Job opportunities, Environmental education, and Improved quality of life), five barriers (High initial costs, Lack of knowledge and skills, Low profitability, Lack of support from external actors, and Financial risk), and four drivers (Protecting the environment, External support, Collaboration networks, and Demand for sustainable products) which are considered prominent. Further, it was identified that several building blocks in the TLBMC are important for small-scale farmers to consider. In particular, the thesis suggests that it is important to consider the most efficient way to use time and generate revenues, to create circular systems on the farm, and to utilise the farm as a social platform. However, the main challenge for farmers is to be profitable while also being environmentally and socially sustainable.

Keywords: Sustainable Business Model, Circular Economy, Small-scale Farms, Barriers, Drivers, Social Value, Triple Layered Business Model Canvas

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1. Introduction

Climate change is causing new challenges for companies and thereby they face pressure to change the way they are currently doing business (Coppola et al., 2019). One source of pressure is customers' and clients' increasing demand for sustainable products and services. Other sources of pressure derive from various stakeholders e.g., employees, governments, society, and investors. A recent political decision driving businesses to change is Agenda 2030 which includes 17 Sustainable Development Goals (SDGs) (United Nations [UN], 2022). The SDGs target the three pillars of sustainability: environment, society, and economy. However, the SDGs are not only pressuring businesses, but they also provide them with opportunities for new ways of creating value (Schramade, 2017).

A way for businesses to create and capture value with focus on environmental sustainability is to apply the concept of circular economy. According to the Ellen MacArthur Foundation (2022), circular economy provides companies with tools to transform from linear to circular processes. In such circular processes waste is reduced, and resources are reused and recycled. Integrating these tools into companies' operations can enable them to increase resource efficiency, decrease costs, and create innovative offerings to their customers (Coppola et al., 2019).

In addition to environmental sustainability, companies must also focus on social and economic sustainability to create sustainable value (Evans et al., 2017). To enable companies to create, capture and deliver value, a business model can be used (Teece, 2010). A sustainable business model encompasses all three dimensions of sustainability, i.e., environmental, social, and economic, and prioritises all stakeholders' needs equally (Bocken et al., 2014). By adopting a sustainable business model, companies will therefore create value in all three dimensions of sustainability (Evans et al., 2017). Environmental value for example includes increasing biodiversity and lowering emissions, while social value consists of elements such as community development and society's well-being. Additionally, economic value can be created when focusing on profit and long-term viability. By developing a sustainable business model, companies can meet society's new demands and adapt to the changes in the business environment.

1.1 Background

Climate change impacts the world's food systems by causing extreme weather, putting food security at risk (The World Bank, 2022). Therefore, the farming industry is highly affected by the climate change and in need of adaptation. Further, society's new demands are putting additional pressure on the industry to change. By adopting sustainable business models and thereby sustainable farming practices, the farming industry can respond to the changes (The World Bank, 2022). To expedite the transition in the farming industry, the Swedish government has set out a goal that in 2030, 30 percent of the Swedish agricultural land should be exploited sustainably (Jordbruksverket, 2022). Furthermore, the Swedish food system needs to become more self-sufficient (Naturvårdsverket, 2022) since in 2017, 74 percent of all consumed vegetables in Sweden were imported (Jonasson, 2018). For Sweden to become more self-sufficient, an increased focus on small and local food production is important (Fermskog & Dahlin, 2022).

To create a sustainable food system, the number of small and local farmers adopting sustainable business models must increase. Numerous researchers have addressed the concept of sustainable business models, e.g., Joyce and Paquin (2016), Bocken et al. (2014), Daou et al. (2020), Antikainen and Valkokari (2016), and Wecht et al. (2021). However, these business models are rarely adapted to the context of small and local farmers. Furthermore, studies in this field seldom investigate what social value sustainable business models can create. By focusing on sustainable business models in the context of small and local farmers, this study could add unique insights to the research field.

1.2 Empirical Setting

This thesis is part of a project conducted by Business Region Göteborg (BRG), a company aiming to improve the prerequisites for sustainable businesses and create job opportunities within the region of Gothenburg. BRG currently manages a project called '*Circular business models within green industries*' (CAGN). The objective of the CAGN project is to strengthen small and medium sized companies' competitiveness, contribute to a low carbon economy, and to promote a sustainable urban development. Further, the project contributes to achieving the

goals of Gothenburg's environmental and climate critical program 2021-2030 and Agenda 2030. The project specifically focuses on SDG number twelve: '*Responsible consumption and production*'. If the project is successful, the availability of locally produced food in the city of Gothenburg will increase. Since the start of the project in 2021, the project group has conducted a pilot case where several small and local farmers sold vegetables to customers in central parts of Gothenburg. The pilot case examined different delivery and payment methods and evaluated the methods preferred by both farmers and customers. However, the business model used in the pilot case was not adequately developed or adapted to suit the farmers' needs. Therefore, a second pilot case will be conducted during 2022 with the purpose of developing a more suitable business model. This thesis will support BRG in their second pilot case.

1.3 Aim

The aim of the thesis is to explore how a sustainable business model can be adapted to small and local farmers. Hence, the thesis will provide additional insights to the concept of sustainable business models and what hinders and facilitates farmers to adopt such business models. The adoption of sustainable business models could further create social value for customers and the society.

1.4 Limitations

The scope of the thesis is limited to small and local farmers cultivating vegetables in Sweden. The criterion 'small' can be defined in several ways, but in this thesis, it refers to farms with less than 50 employees (Riksdagen, 2005). There is currently no unified definition for the criterion 'local' in Sweden (Ekofakta, 2022). However, it is commonly defined by the geographical proximity between the producer and consumer or by having few or no intermediaries. In this thesis, 'local' entails both geographical proximity and the use of few intermediaries. Hereafter, small and local farmers will be referred to as small-scale farmers. To address these limitations and to enable the results to be generalised, the thesis will compare the findings with results from similar projects in Sweden and other countries.

1.5 Purpose and Research Questions

A sustainable business model could create value not only for the farmers but also for the society. Therefore, it is necessary to investigate what types of social value can be created, which presents the foundation for the first research question:

What social value can be created by small-scale farmers using a sustainable business model?

Once an understanding of how social value can be created has been obtained, there is a need to identify what hinders and facilitates farmers to adopt a sustainable business model. Therefore, the second research question is as follows:

What are the barriers and drivers for small-scale farmers to adopt a sustainable business model?

Finally, to create a sustainable business model suitable for small-scale farmers, it is important to investigate what aspects need to be considered in the business model. This leads to the third research question:

Which aspects are important for small-scale farmers to consider in a sustainable business model?

2. Methodology

In this chapter the research methods are described. The first section presents the research design, followed by a description of the data collection. The data analysis is then presented, as well as discussions regarding the reliability and validity of the study. Lastly, ethical considerations are discussed.

2.1 Research Design

To enable the authors to evaluate opinions and experiences, a qualitative research study was performed (Kothari, 2004). Data was collected through a case study based on interviews with small-scale farmers in Sweden (Bell et al., 2019). The case study enabled an in-depth examination of the farmers' situation. In parallel with the case study, a theoretical framework was developed (Bell et al., 2019). A thematic analysis was carried out using the theoretical framework and empirical data (Bell et al., 2019; Smith, 2015). The collection and analysis of data was an iterative process to allow the direction of the research to continuously develop as more data was collected (Kerssens-van Drongelen, 2001; Dubois & Gadde, 2002). Figure 2.1 below summarises the research design.

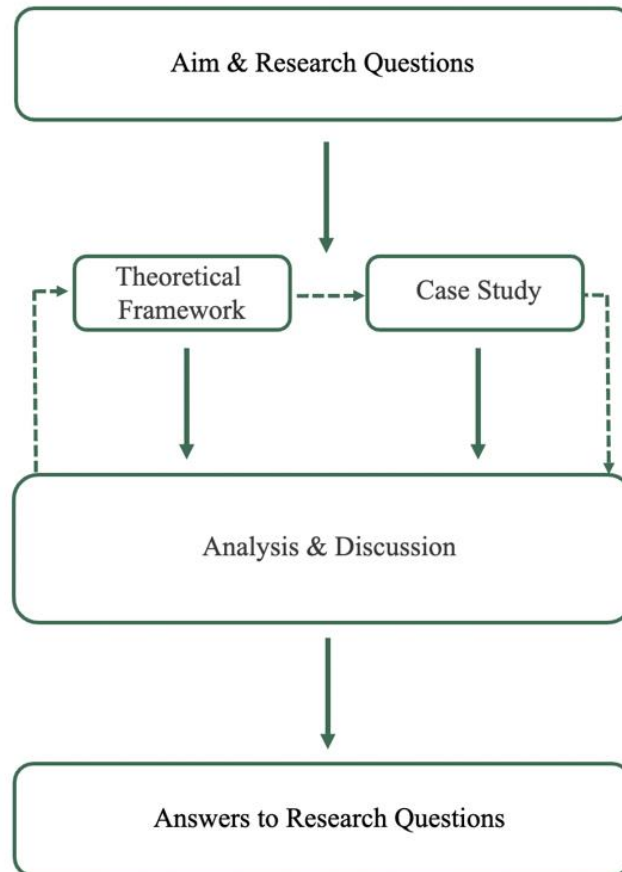


Figure 2.1. Representation of the research design. The dotted lines represent the iterative process of collecting and analysing data.

2.2 Data Collection

The empirical data was gathered by conducting semi-structured interviews with farmers. Additional data was also collected from the farmers' webpages and social media channels. A general interview template¹, constituting of several questions, was prepared. However, during the interviews, the farmers were allowed to elaborate on topics of specific interest, and the interviewers could ask additional questions. According to Bell et al. (2019) these are common practices for semi-structured interviews. In this sense, semi-structured interviews are flexible, but they also provide a certain level of structure which is necessary to enable comparison across cases. Further, according to Rowley (2012) semi-structured interviews provide the study with additional insights which might have been lost in more structured types of interviews.

¹ The interview template is shown in Appendix 1

The participating farmers were chosen based on the criteria that they are small and local. Although the thesis aims to explore farmers adoption of sustainable business models, it was not a criterion for the participating farmers in the case study to have sustainable business model. In total, eleven interviews were conducted, and the participating farms are presented in Table 2.1 below. After eleven interviews, saturation was achieved since no new insights were provided in the interview responses (Baker & Edwards, 2021). Saturation is not related to the number of cases in a study, but rather to the richness of the data (Fusch & Ness, 2015; Siggelkow, 2007). Therefore, fewer in-depth interviews were conducted to create a deep understanding of the farmers' situations (Smith, 2015). Furthermore, this thesis is limited to Swedish small-scale farmers which is a relatively small population. According to Fusch and Ness (2015), saturation can be reached with fewer interviews if the sample size is smaller. This further supports the authors' argument that saturation was reached after eleven interviews. In order to facilitate the communication and make the participants more comfortable, the interviewees were given the possibility to choose which language the interviews were conducted in. This resulted in nine interviews being held in Swedish and two interviews being held in English. Since the authors are fluent in both Swedish and English, the interview language did not affect the authors' understanding of the interviewees' answers. The average time for each interview was 45 minutes.

Table 2.1. Presentation of the participating farms and their locations in Sweden.

Name of farm	Location in Sweden
Backa Köksträdgård	Göteborg
Lia Gård	Svenshögen
Lugnäsbergets Ekogrönt	Mariestad
Vegostan Urban Farming	Malmö
Johannas Stadsodlingar	Vallentuna
Timmervikens Skafferi	Kode
Landet Oss	Höör
Åshammar Trädgård	Grums
Odlingsbolaget Svalan	Göteborg
Gro och Grönt	Tjörn
Greeny Grow	Frillesås

An interview template containing the main themes of the interview was sent to the interviewee beforehand. This allowed the interviewee to prepare and ask for clarifications. In addition, the interview template was discussed with the supervisor from Chalmers before it was sent to the interviewees to prevent the questions from being leading or misinterpreted. During the

interviews, both authors were present, which allowed one person to lead the interview and ask the majority of the questions, while the other person took notes. Since permission was given by the interviewees, all interviews were recorded. Afterwards the interviews were transcribed to enable a deeper examination of the collected data and to facilitate the analysis of the data (Bell et al., 2019). The authors also discussed the content of the transcripts and in case of ambiguity, the interviewee was asked for clarification. As the farmers were located in different parts of Sweden, the interviews were conducted using digital tools such as Zoom or Microsoft Teams. This facilitated the interview process. Due to technical issues and requirements from a farmer, two of the interviews had to be held over the phone instead.

2.3 Data Analysis

According to Smith (2015), thematic analysis includes using a theoretical framework to create a foundation for the analysis of empirical data. To develop the theoretical framework, the authors searched for and selected literature by using the method narrative review. As explained by Onwuegbuzie and Frels (2016), literature covering a specific area was reviewed to identify patterns, concepts and trends which provided a broad overview of the topic. The literature was collected from different databases such as Google Scholar, Scopus, ScienceDirect and Chalmers' library homepage. To find relevant literature, specific keywords were used. These keywords were for example '*Circular business model*', '*Sustainable business model*', '*Barrier sustainable business model small-scale farming*', '*Driver sustainable business model*', and '*Social benefits circular agriculture*'. These words were used since they cover the concepts of relevance for the study. To ensure that relevant literature was reviewed, the selection of literature was based on reading abstracts from the results of the keyword search. Books, reports and articles were used and references in the literature were examined to find additional relevant literature. Literature recommended to the authors by the supervisor at Chalmers was also used. Based on this review of literature, three themes were identified: *social value*, *barriers* and *drivers*. These laid the foundation for the theoretical framework.

Coding and categorising the data into themes is a substantial part of thematic analysis (Bell et al., 2019; Smith, 2015). The coding of the data started after the first interview had been conducted to allow the direction of the research to be adjusted as more data was gathered (Kressens-van Drongelen, 2001). The three themes from the theoretical framework were used to code the collected data. These three themes were given different colours which were used to mark the parts in the transcripts where the topics were discussed. Three tables were also created, corresponding to each theme. By coding the data, different types of social values, barriers, and drivers were identified and put into the different tables. As more interviews were conducted, the new data was compared with the existing findings (Smith, 2015). This led to new types of social values, barriers, and drivers being added, and unrelated being discarded.

2.4 Reliability and Validity

Bell et al. (2019) explain that credibility and external reliability and validity are common criteria used for evaluating qualitative research. External reliability is related to a study's degree of replicability (Bell et al., 2019). To ensure the external reliability of the thesis, the methodology is thoroughly explained. This includes keywords and databases used in the search for literature, as well as the interview template, and criteria used for choosing participants. However, sustainability and circular economy are emerging research areas and the common knowledge regarding these areas is likely to change in the future. Therefore, it is difficult to ensure external reliability. Furthermore, Bell et al. (2019) argue that qualitative research is difficult to replicate since no standard practices exist.

External validity is to which extent findings of a study can be generalised (Bell et al., 2019). To ensure that several perspectives were disclosed and considered, and to increase the knowledge regarding a topic, data was collected from a number of interviews and compared with the theoretical framework. According to Lewis (2009), this is a way to increase the external validity. However, the scope of the thesis is narrow and include small and local farmers in Sweden. This makes it more difficult to ensure external validity since the findings potentially will not be applicable in other similar cases.

Another common way to ensure the credibility of a research is triangulation (Bell et al., 2019). In this study, triangulation has been used in the collection and analysis of data. In triangulation two sources of data or more are compared to ensure that the data is credible (Griffee, 2005). When reviewing the literature, only information found in at least two different sources were included in the theoretical framework. When analysing the empirical data, the interview responses were compared and only answers received from at least two interviewees were used. According to Griffee (2005), this strengthens the credibility of the data when conducting a study with multiple participants. The analysing process could have been influenced by the authors' biases since it might have been possible to categorise the data in different ways. However, as an inherent trait of qualitative research, the researchers' judgment is required in the analysis process (Bell et al., 2019).

2.5 Ethical Considerations

When conducting qualitative research, ethical issues must be considered. Bell et al., (2019) mention four principles to take into consideration: avoidance of harm, informed consent, privacy, and preventing deception. These principles are issues that can arise in a study based on interviews. When this study was conducted, all participants were informed of the purpose of the data collection and the thesis beforehand, as well as how the results would be used. The interviewees were also ensured that they could terminate the interview at any point and that they could choose to be anonymous. Further, to avoid disclosing critical information, summaries of the interviews were sent to the interviewees afterwards, where the interviewees could notify if any of the collected information could not be made public.

3. Theoretical Framework

This chapter is divided into three sections. Firstly, the concept of circular economy is explained followed by a description of how a sustainable business model can be designed. Lastly, companies' adoption of a sustainable business model is discussed.

3.1 Circular Economy

To create an economy that benefits everyone while staying within the limits of our planet, the Ellen MacArthur Foundation (2022) has developed the system of circular economy. Circular economy is based on three principles: elimination of waste and pollution, circulation of materials and products, and regeneration of nature. It is a reaction to the linear processes dominating the economy today, where materials are extracted from the earth to create products which eventually will be discarded as waste (Ellen MacArthur Foundation, 2022). To achieve circular economy, systems must be redesigned, and different stakeholders must collaborate (Bocken et al., 2018). If done correctly, it can create a positive impact on both the environment and the society. However, according to Donner et al. (2020), there are challenges of implementing a circular economy, mainly that the change needs to be at a system level, and that it requires all actors in the value chain to be involved. In the agriculture sector many measures can be taken to make the industry more circular.

Applying circular economy to the agriculture sector implicates having minimum emissions of harmful waste while maximising resource efficiency (Vrolijk et al., 2020). According to Dagevos and Lauwere (2021), this could for example include preserving soil, closing nutrient cycles, lowering the emission of greenhouse gases, using sustainable energy, and working to maintain the biodiversity. However, the authors also mention that it is difficult for farmers to apply all practices at once. Creating a circular agriculture is a process and it is challenging for a farm to be truly circular while also being profitable (Dagevos & Lauwere, 2021). Therefore, it is necessary to have a business model which balances both aspects.

3.2 Sustainable Business Models

The aim of a business model is to define how the firm will create, deliver and capture value (Teece, 2010). The business model is a conceptual model which makes assumptions about the customers, revenues and cost, user behaviour, and competitors. One of the most used tools for analysing and designing a business model is the *Business Model Canvas* created by Osterwalder and Pigneur (2010). The model is shown in Figure 3.1 and consists of nine building blocks which break down the business into smaller parts and makes it more understandable. The first building block is *Customer segments* which describes the customers the firm aims to serve. To be able to better satisfy each customer, they can be divided into different segments based on their characteristics and needs. The building block *Value proposition* presents how the company aims to solve the customers' needs while *Channels* describes how the firm delivers their value proposition to its customers. *Customer relationships* entails how the firm creates relationships with its customers and how these are maintained. In the block *Revenue streams*, the company identifies what each customer segment is willing to pay and how revenue will be generated from the customers. *Key resources* define what assets the firm requires to be able to create and deliver value to the customers, while the block *Key activities* describes the most vital activities needed. The system of partners, alliances and suppliers which creates the foundation of the business and its operations is represented in the building block *Key partnerships*. Finally, *Cost structure* constitutes of all the costs that are generated from the firms' operations and activities.

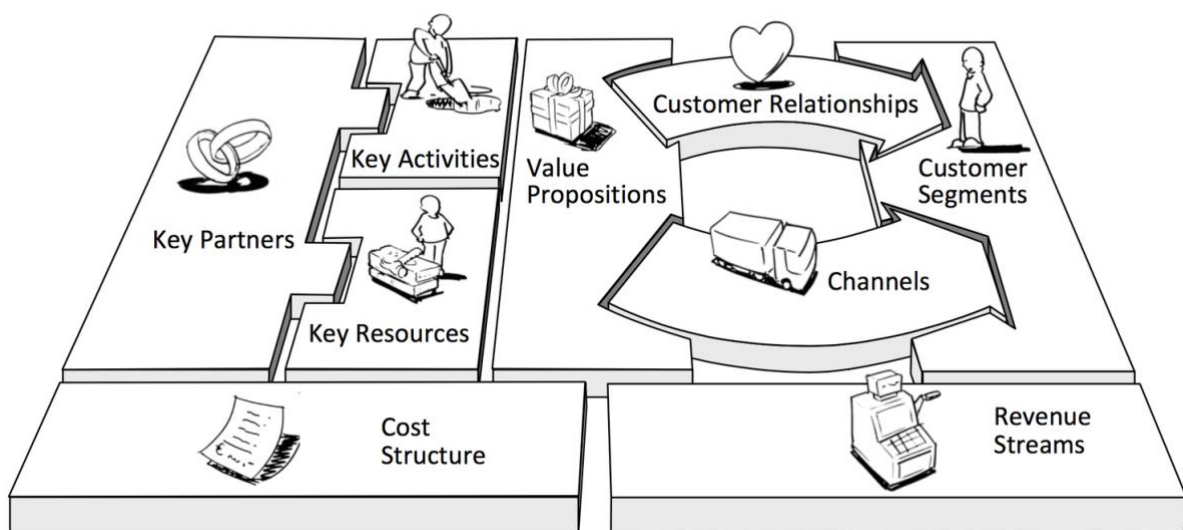


Figure 3.1. The Business Model Canvas (Osterwalder and Pigneur, 2010).

As the pressure on companies to become more sustainable has increased, various new forms of the Business Model Canvas have been developed to adapt to the changes. One category that has evolved is sustainable business models, which are business models that aim to incorporate the triple bottom line (Bocken et al., 2014). The triple bottom line refers to the three pillars of sustainability, i.e., environmental, economic, and social. Therefore, a sustainable business model enables companies to be economically sustainable while also being environmentally and socially sustainable. Several scholars have developed different types of such business models, however one that is widely cited is the *Triple Layered Business Model Canvas (TLBMC)* developed by Joyce & Paquin (2016). The TLBMC consists of three layers: economic, environmental, and social. Each layer consists of nine building blocks, which are presented in Figure 3.2 below. The economic layer is based on Osterwalder and Pigneur’s (2010) Business Model Canvas and hence includes the same nine building blocks explained above.

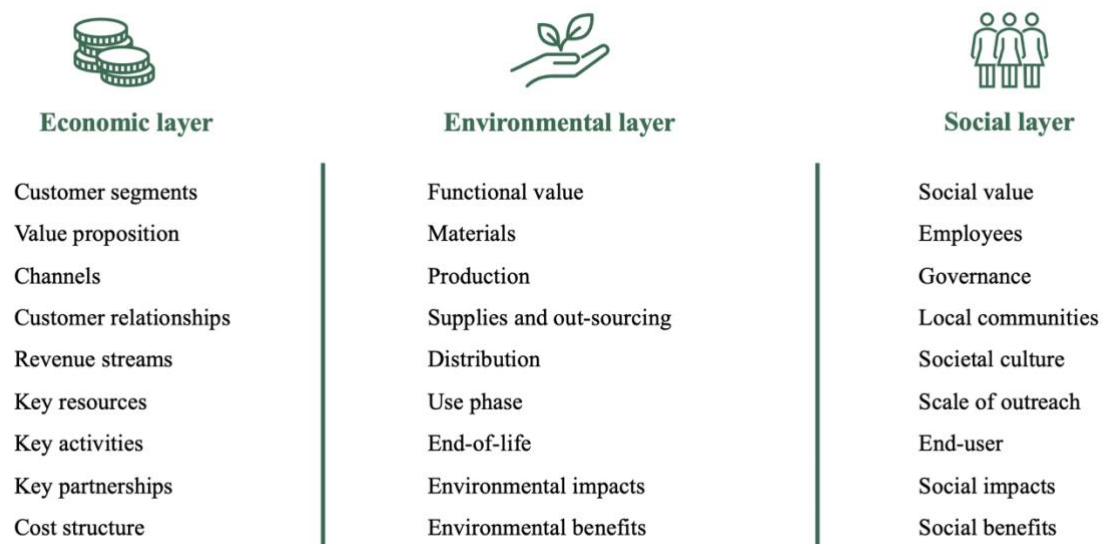


Figure 3.2. The building blocks of the TLBMC. Based on Joyce and Paquin (2016).

The environmental layer is used to assess how a company can generate more positive environmental impact than negative and it consists of nine building blocks (Joyce & Paquin, 2016). The first building block is *Functional value* which describes the central outcome of a firm’s service or product. Next block, *Materials*, entails the material used to produce the functional value. The building block *Production* is related to the activities a company performs to create value. It is important for firms to focus on their core activities which have high environmental impacts. Further, *Supplies and out-sourcing* include a company’s non-core

materials and activities. This can be materials and activities which are not central in the value creation, or which are outsourced. The building block *Distribution* represent a company's transportation of products. In the environmental layer, the focus should be on choice of transportation mode, transport distance, and weight of the transported products. Next block, *Use phase*, addresses the customers' impact when using the product or service. Considerations should be made to e.g., material and energy requirements during usage. *End-of-life* encompasses the customers' choice of ending the consumption of the product or service and its functional value. Related to the environmental layer, common issues are reusing, recycling, and product disposal. The block *Environmental impacts* considers the environmental costs of a firm's actions, and lastly, *Environmental benefits* relates to the environmental value created by a company.

According to Joyce and Paquin (2016) the social layer focuses on the relationships between a company and its stakeholders. Specifically important are a company's social impacts of those relationships. Similar to the economic and environmental layers, the social layer also consists of nine building blocks. The first block is called *Social value* and encompasses the benefits which a firm creates for the society and its stakeholders. Next block, *Employees*, focuses on the employees and their role as key stakeholders. This block contains many aspects such as type of employees, employee support programs, and employee development. A company's structure, ownership, and decision-making processes are included in the building block *Governance*. Further, the block referred to as *Local communities* focuses on the relationships a company has with its local communities and suppliers. A company can be more successful by establishing relationships that are mutually beneficial. Next block, *Societal culture*, comprise a firm's potential impact on society and can include actions such as collaborating with Non-governmental Organisations (NGOs). The block called *Scale of outreach* is used to describe the depth and breadth of a company's stakeholder relationships. For example, this includes whether the relationships are long-term or not and their geographical reach. *End-user* is a building block focusing on the consumers of the value proposition. The end-user might not be the same as the customer in the economic layer and it is important to consider how the value proposition contributes to the consumers' quality of life. The block *Social impacts* relates to a company's social costs while the last block, *Social benefits*, addresses the positive social value created by a company's actions.

3.3 Adoption of Sustainable Business Models

In the following section, companies' adoption of sustainable business models will be discussed. The different types of social value that can be created from adopting sustainable business models are summarised in the first part. In the two last parts, barriers and drivers for adopting sustainable business models are presented.

3.3.1 Social Value Created when Adopting Sustainable Business Models

The adoption of sustainable business models can contribute to the creation of different kinds of social value (Donner et al., 2021). According to Martin and Osberg (2007) social value is defined as a value either benefitting the society in general or a specific part of society. Several types of social value have been identified and are summarised in Table 3.1 below. The social values addressed in the interviews are considered relevant and will therefore be explained in the following section.

Table 3.1. Summary of social values created when farmers adopt a sustainable business model.

Social Value	Explanation	References
Reduced pollution	Sustainable practices reduce water and air pollution.	Zhu et al. (2019); Padilla-Rivera et al. (2020)
Job opportunities	Creating new jobs for everyone, including those outside of the labour market.	Mehmood et al. (2021); Daou et al. (2020); Scarpellini (2021a); Antikainen & Valkokari (2016); Padilla-Rivera et al. (2020); Scarpellini (2021b); Brehmer et al. (2018)
Community engagement	Farms integrating with the local community. This creates engagement and increases social inclusion.	Bocken et al. (2014); Joyce & Paquin (2016); Antikainen & Valkokari (2016); Padilla-Rivera et al. (2020); Dagevos & Lauwere (2021); Brehmer et al. (2018)
Partnerships	Farms establishing mutually beneficial relationships with other actors.	Joyce & Paquin (2016); Scarpellini (2021a); Brehmer et al. (2018)
Improved quality of life	Improving quality of life by e.g., providing healthy food and increasing the prosperity in society.	Joyce & Paquin (2016); Siepmann & Nicholas (2018); Tress (2001); Mehmood et al. (2021); Bocken et al. (2014); Scarpellini (2021a)
Environmental education	Educating society in sustainability.	Scarpellini (2021a), Wang & Pryor (2019)

Job Opportunities

One social value which can be created by adopting sustainable business models is *Job opportunities* (Mehmood et al., 2021; Daou et al., 2020; Scarpellini, 2021a; Antikainen & Valkokari, 2016; Padilla-Rivera et al., 2020; Scarpellini, 2021b). According to Scarpellini (2021a) the creation of new jobs often is a positive externality when companies apply circular practices. Brehmer et al. (2018) also explain that the social value can be further increased if job opportunities are created for people normally having difficulties with finding a job.

Community Engagement

The social value referred to as *Community engagement* can be created by companies integrating with stakeholders and local communities (Bocken et al., 2014). This type of engagement in local communities can improve stakeholders' quality of life (Joyce & Paquin, 2016).

Antikainen and Valkokari (2016) also argue that companies adopting sustainable business models can create value for society by cooperating with NGOs and end customers. Padilla-Rivera et al. (2020) add to the discussion by explaining that by allowing local communities to participate in the company's decision-making processes the local actors can feel empowered. Further, farmers can increase social inclusion by inviting and taking care of people experiencing difficulties in life (Dagevos & Lauwere, 2021; Brehmer et al., 2018).

Partnerships

The social value *Partnerships* entails farmers collaborating with several actors in order to develop a sustainable business model (Scarpellini, 2021a). According to Joyce and Paquin (2016) this type of collaboration can create long-term value for society if the relationships are mutually beneficial. Furthermore, Brehmer et al. (2018), argue that it is important to collaborate across company borders to succeed in implementing sustainable practices.

Improved Quality of Life

Another social value is called *Improved quality of life*. Many of the effects of adopting sustainable practices can in different ways lead to a better quality of life for local communities and the society (Bocken et al., 2014; Scarpellini, 2021a). For example, it can provide new job opportunities which in turn will increase the prosperity of the society (Mehmood et al., 2021), or it can create engagement in the community which also will contribute to a better life quality in the society (Joyce & Paquin, 2016). Tress (2001) argues that organic farming will provide a higher quality of products which is beneficial for the society and Siepmann and Nicholas (2018) further state that organic farming is better for the health and will minimise health risks.

Environmental Education

Finally, the social value referred to as *Environmental education* entails that by adopting sustainable business models, farmers can educate society regarding sustainability (Scarpellini, 2021a). Wang and Pryor (2019) also argue that farmers can provide social benefits in terms of environmental knowledge. This can further increase the awareness of environmental issues in society as well as increase the demand for sustainably produced food.

3.3.2 Barriers for Adopting Sustainable Business Models

Several barriers hindering farmers from adopting sustainable business models have been identified. These are summarised in Table 3.2 below. The barriers are divided into two types: internal and external which according to Ulvenblad et al. (2018) is a common division. Internal barriers relate to a company's own resources and competences while external barriers relate to a company's environment and its interaction with external actors (Sandberg & Aarikka-Stenroos, 2014). The barriers which were also addressed during the interviews are considered relevant for this study and are hence explained in the following section.

Table 3.2. Summary of barriers for farmers to adopt a sustainable business model.

	Barrier	Explanation	References
Internal Barriers	Farming not seen as a professional business	Farming is seen as a lifestyle rather than a professional business.	Björklund (2018); Sivertsson & Tell (2015)
	High initial costs	High implementation costs for e.g., materials and equipment.	Mehmood et al. (2021); Rodriguez et al. (2008); Sivertsson & Tell (2015); Pannell (2003)
	Lack of resources	Lack of e.g., financial, human, physical, and distribution resources.	Björklund (2018); Mehmood et al. (2021); Rodriguez et al. (2008); Ulvenblad et al (2018); Berti & Mulligan (2016); Pannell (2003)
	Lack of knowledge and skills	Lack of competences regarding e.g., strategic management, marketing, sales, and sustainable practices.	Björklund (2018), Berti & Mulligan (2016); Rodriguez et al. (2008); Ulvenblad et al. (2018); Mehmood et al. (2021); Sivertsson & Tell (2015); Siepmann & Nicholas (2018)
	Farmers unaware of true product value	Difficult for farmers to know the true product value when selling through an intermediary.	Hol et al. (2014); Grover & Gruver (2017)
	Difficulties with consistency	Difficult to consistently provide a wide range of high-quality products.	Berti & Mulligan (2016), Sivertsson & Tell (2015); Hol et al. (2014)
	Low profitability	The farming industry is unprofitable.	Björklund (2018); Hol et al. (2014); Rodriguez et al. (2008)
	Resistance to change	Farmers unwilling to change their current operations.	Hol et al. (2014); Sivertsson & Tell (2015); Rodriguez et al. (2008)
External Barriers	Financial risk	Financial risk deriving from uncertain customer needs and seasonal production cycles.	Mehmood et al. (2021); Sivertsson & Tell (2015); Pannell (2003)
	Unwillingness to pay for added value	Consumers unwilling to pay for the added value of sustainable and local products.	Björklund (2018); Grover & Gruver (2017); Sivertsson & Tell (2015)
	Lack of support from external actors	Lack of support from external actors such as public authorities and regulations not adapted for small-scale farming.	Björklund (2018); Grover & Gruver (2017); Mehmood et al. (2021); Rodriguez et al. (2008); Sivertsson & Tell (2015); Ulvenblad et al. (2018); Pannell (2003)

Table 3.2 (continued).

	Barrier	Explanation	References
External Barriers	Limited availability of local labor	Difficult to attract potential employees.	Bianchi et al. (2020); Grover & Gruver (2017); Rodriguez et al. (2008); Björklund (2018); Hol et al. (2014)
	Difficult to predict and adapt	Difficulties with predicting the future market and to adapt to changing conditions.	Berti & Mulligan (2016); Sivertsson & Tell (2015); Hol et al. (2014)
	Lack of cooperation between farmers	Lack of communication between farmers and no existing farming association.	Hol et al. (2014); Sivertsson & Tell (2015); Ulvenblad et al. (2018)
	Cultures and norms	Inherited cultures preventing farmers from adopting sustainable practices.	Björklund (2018); Ulvenblad et al. (2018); Pannell (2003)

High Initial Costs

One internal barrier hindering farmers from adopting sustainable business models is *High initial costs* (Mehmood et al., 2021; Pannell, 2003). Rodriguez et al. (2008) explain that it might be difficult for farmers to make expensive investments due to their often poor financial situation. According to Sivertsson and Tell (2015) farmers' operating costs are often high compared to their turnover. Therefore, it can take a long time for the farmers to reach the breakeven point after an investment.

Lack of Knowledge and Skills

The internal barrier *Lack of knowledge and skills* can derive from a lack of information regarding sustainable practices (Rodriguez et al., 2008; Ulvenblad et al., 2018; Siepmann & Nicholas, 2018). According to Rodriguez et al. (2008) sustainable farming practices can be complex which requires the farmers to learn and understand the systems, methods, and technical tools. Mehmood et al. (2021) also explain that for farmers to adopt sustainable business models, a certain level of technical competence and skills is required. In addition, the farmers must know the meaning behind terms such as circular economy. Farmers can also lack knowledge regarding strategic management, marketing, and sales which can impede them from innovating and commercialising their businesses (Björklund, 2018; Berti & Mulligan, 2016).

Lack of these type of competences can lead to farmers finding it difficult to maintain relationships with their customers (Sivertsson & Tell, 2015).

Low Profitability

Another internal barrier is *Low profitability*. According to Hol et al. (2014) the farming industry is often unprofitable. Björklund (2018) adds to the discussion by arguing that many farmers experience problems with liquidity. Rodriguez et al. (2008) also explain that many farmers have a poor financial situation, hindering them from adopting sustainable business models. Furthermore, many farmers are concerned whether sustainable practices will be profitable. These concerns might impact farmers to continue with their old routines instead of adopting new practices (Hol et al., 2014).

Financial Risk and Unwillingness to Pay for Added value

According to Mehmood et al. (2021) the barrier *Financial risk* derives from external factors such as seasonal production cycles and changing demand and supply conditions. These factors can impact the quality, availability, and price of the products. Sivertsson and Tell (2015) also explain that the weather can affect the farmers' product quality. All these factors pose a risk and uncertainty for the farmers and can hinder them from adopting sustainable business models (Pannell, 2003). Another external barrier is *Unwillingness to pay for added value*. This means that consumers often are unaware of the differences between products and therefore are unwilling to pay for the added value that sustainable products bring (Björklund, 2018; Grover & Gruver, 2017). Further, Sivertsson and Tell (2015) argue that consumers often are unwilling to pay for locally produced products' full cost.

Lack of Support from External Actors

The external barrier *Lack of support from external actors* can derive from a lack of support from the government (Ulvenblad et al., 2018). It can also derive from regulations that are not suitable for sustainable farming practices (Pannell, 2003; Mehmood et al., 2021; Rodriguez et al., 2008; Sivertsson & Tell, 2015; Grover & Gruver, 2017). Björklund (2018) adds to the discussion by arguing that the government sometimes is resistant towards changes. For

example, governments implement new fees and regulations limiting farmers' sustainable development. Furthermore, Rodriguez et al. (2008) mean that there is a disparity between subsidies for small and large farms. This might impede farmers from developing their operations and instead retain to their conventional practices. According to Mehmood et al. (2021) there is an overall lack of subsidies in the agricultural sector and the taxation system is not supporting sustainable practices.

Lack of Cooperation Between Farmers

Finally, the external barrier *Lack of cooperation between farmers* entails that scarce communication among farmers and lack of a farming association can hinder farmers from adopting sustainable business models (Hol et al., 2014). In the study made by Sivertsson and Tell (2015) the farmers expressed that they would have benefitted from collaborating more regarding both knowledge and assistance. In addition, Ulvenblad et al. (2018) argue that the networks and eco-systems in the agriculture industry are undeveloped.

3.3.3 Drivers for Adopting Sustainable Business Models

Apart from various barriers hindering farmers to adopt a sustainable business model, there are also several drivers for adoption. These are summarised in Table 3.3 below and are like the barriers divided into internal and external drivers. The relevant drivers, i.e., the ones addressed in the interviews, will be discussed further in this section.

Table 3.3. Summary of drivers for farmers to adopt a sustainable business model.

	Driver	Explanation	References
Internal Drivers	Innovation	New innovations facilitate the transition to sustainable business models.	Donner et al. (2021); Björklund (2018); Mehmood et al. (2021); Barth et al. (2021)
	Protecting the environment	Farmers motivated by a desire to positively impact the environment.	Mehmood et al. (2021); Jun & Xiang (2011); Siepmann & Nicholas (2018); Dagevos & Lauwere (2021); Dessart et al. (2019); Tress (2001); Mupfasoni et al. (2018); Sapbamrer & Thammachai (2021)
	Increased profit	Sustainable practices provide opportunities for farmers to increase prices and thereby their profit.	Mehmood et al. (2021); Siepmann & Nicholas (2018); Dessart et al. (2019); Tress (2001)
	Relevant knowledge	Relevant knowledge in sustainability is required to adopt sustainable practices.	Mupfasoni et al. (2018); Sapbamrer & Thammachai (2021); Pannell (2003); Dessart et al. (2019)
	High-quality products	Providing society with vegetables of high quality.	Siepmann & Nicholas (2018); Tress (2001)
	Positive health effects	Organic agriculture can minimise health risks such as allergies.	Mehmood et al. (2021); Jun & Xiang (2011); Siepmann & Nicholas (2018)
External Drivers	External support	Legislative and financial support from external actors.	Mehmood et al. (2021); Stępień et al. (2021); Sapbamrer & Thammachai (2021); Siepmann & Nicholas (2018); Dessart et al. (2019); Padilla-Rivera et al. (2020)
	Collaboration networks	A network where farmers and stakeholders can share knowledge and experiences.	Zucchella & Previtali (2018); Sapbamrer & Thammachai (2021); Siepmann & Nicholas (2018); Donner et al. (2021); Barth et al. (2021)
	Demand for sustainable products	Consumers having a positive attitude towards sustainably produced food.	Donner et al. (2021); Stępień et al. (2021); Siepmann & Nicholas (2018)
	Social norms	Social norms influencing farmers to adopt sustainable business models.	Sapbamrer & Thammachai (2021); Dessart et al. (2019)

Innovation

The internal driver *Innovation* facilitates the transition to a sustainable business model. Mehmood et al. (2021) mention that environmentally sensitive innovations and overall changes in practices are necessary for the transition. Adding on to this statement, Barth et al. (2021) argue that organisational innovation will create better prerequisites for adopting a sustainable business model. Continuous innovation of technologies can also drive the transition (Donner et al., 2021), as well as innovative farmers that are solution oriented (Björklund, 2018).

Protecting the Environment

An internal driver discussed by many scholars is *Protecting the environment*. Environmental awareness, concerns for the climate and a desire to protect the nature is an underlying motivation for many farmers (Jun & Xiang, 2011; Siepmann & Nicholas, 2018; Dessart et al., 2019; Tress, 2001). In addition, there is a sense of urgency that drives farmers to manage their operations in such a way that it can provide economic growth without damaging the environment (Mehmood et al., 2021; Dagevos & Lauwere, 2021). According to Sapbamrer and Thammachai (2021) and Siepmann and Nicholas (2018) an overall positive perception of sustainable practices, for example a belief that organic farming is better for the environment, also motivate farmers to adopt a sustainable business model. Further, farmers rethink their current operations because they feel it is important to do the right thing (Dagevos & Lauwere, 2021; Dessart et al., 2019).

High Quality Products

Another factor motivating farmers to integrate sustainable practices is that it results in products of higher quality (Siepmann & Nicholas, 2018; Tress, 2001). This internal driver is called *High quality products*. According to Siepmann and Nicholas (2018) farmers are driven by the fact that they can provide their customers with higher quality products for which they can charge a higher price. Additionally, the products taste better which is a further motivation.

External Support

One external driver is *External support*. According to Mehmood et al. (2021) government support, for example in terms of credits and loans, is especially important in the initial phase of the implementation, or the transition to a sustainable business model. Furthermore, government support is a main driver for the adoption of sustainable practices (Stępień et al., 2021; Sapbamrer & Thammachai, 2021; Siepmann & Nicholas, 2018; Padilla-Rivera et al., 2020). This support can be given in various forms such as subsidies, motivation programs and policies. Finally, Dessart et al. (2019) discuss how economic incentives can impact farmers to change their operations.

Collaboration Networks

Collaboration networks is another external driver for farmers' adoption of sustainable practices (Donner et al., 2021; Barth et al., 2021). Sapbamrer and Thammachai (2021) have found that farming associations create a place where knowledge can be shared, and where farmers can help each other solve problems. The existence of these types of networks increases the likelihood of farmers adopting organic farming methods. Zucchella and Previtali (2018), build on this by stating that sharing both tangible and intangible resources can help the actors in a network to generate and capture value, which will facilitate the adoption of a sustainable business model. It is also easier for farmers to adopt sustainable practices if others have done it before (Siepmann & Nicholas, 2018).

Demand for Sustainable Products

Finally, the *Demand for sustainable products* is another external driver. Consumers have an interest in organic food and the attitudes towards this type of food are positive, which motivates farmers to produce products in a sustainable way (Donner et al., 2021; Stępień et al., 2021). The social acceptance and demand for organic food supports the farmers to implement sustainable practices and business models (Siepmann & Nicholas, 2018).

4. Findings and Analysis

In this chapter the results from the case study are presented and analysed. The first section describes the participating farmers' contexts and sustainable practices. This is followed by three sections where data regarding social values, barriers, and drivers for adopting sustainable business models are presented. In these sections the data was compared with literature to be able to categorise it into social values, barriers, and drivers. This also enabled the authors to compile the data in a comprehensible way.

4.1 Farmers' Context and Sustainable Practices

Information about the participating farmers is summarised in Table 4.1 below. It contains a classification of where the farm is located, information about what products the farm sells, and any additional services provided. Further, it also includes what type of customers the farm has and what sales channels are used to sell the products.

Table 4.1. Summary of the farmers' contexts.

Name of Farm	Location	Products	Services	Customers	Sales Channels
Backa Köksträdgård	The outskirts of a city	Vegetables Herbs Processed products	Study visits Lectures	Consumers Local restaurant	Farm shop Weekly subscriptions Direct sales
Lia Gård	Countryside	Vegetables Eggs Meat	-	Consumers Local restaurants	Weekly subscriptions Direct sales
Lugnåbergets Ekogrönt	Countryside	Vegetables	Study visits Production of apple cider	Consumers Local restaurants	Farm shops Subscriptions REKO-rings ²
Vegostan Urban Farming	City centre	Vegetables Microgreens	-	Consumers Local restaurants Wholesalers Local distributor	REKO-rings Farm shop Direct sales
Johannas Stadsodlingar	The outskirts of a city (Indoor farming)	Salads Leafy greens	Lectures in aquaponics	Restaurants Conference centres Consumers	Direct sales REKO-rings
Timmervikens Skafferi	The outskirts of a city	Vegetables Honey Processed products	-	Consumers	Farm shop Weekly subscriptions
Landet Oss	Countryside	Vegetables Flowers	Workshops Lectures Study visits	Consumers Local restaurants Local florist Local distributor	REKO-rings Weekly subscriptions Markets Direct sales Self-harvest
Åshammars Trädgård	Countryside	Vegetables	-	Consumers	REKO-rings Markets Subscriptions Farm shop
Odlingsbolaget Svalan	City centre & Countryside	Vegetables	-	Consumers Restaurants	REKO-rings Direct sales Subscriptions
Gro och Grönt	The outskirts of a city	Vegetables Flowers Cotton	Workshops Bouquet binding	Consumers Local cafés Local distributor	Farm shop Direct sales
Greeny Grow	The outskirts of a city (Indoor farming)	Salads Microgreens	-	Restaurants Local supermarkets Wholesalers	Direct sales

² REKO-rings are a model for local distribution of food where producers are in direct contact with the consumers and can sell without involvement of intermediaries.

As shown in Table 4.1 the farms sell to different types of customers. Most of the farmers want to have as few intermediaries as possible in order to maximise their profit. However, two of the farmers sell to wholesalers since they argue that it is more time-efficient to sell to one wholesaler compared to e.g., several restaurants. The farmers also use different delivery methods. Some farmers deliver their products while others let the customers come to the farm to buy the products.

The majority of the farms were established in recent years and all of them have applied sustainable practises since the start. Two of the farms are indoor farms and have implemented hydroponic and aquaponic systems. Hydroponics is a method where plants are grown in water instead of in soil. Further, aquaponics is an extended version of hydroponics where fish is incorporated into the system to provide nutrients to the plants. Three of the farms are organically certified, however all the other farms still follow the requirements for organic farming. These requirements entail for example using natural substances and contributing to increased biodiversity, as well as not using pesticides or chemical fertilisers (KRAV, 2022). There are varying reasons for why some farmers have chosen to not be organically certified, but economic reasons were expressed by several respondents. In addition, the two indoor farmers explained that it is not a possibility for them to be organically certified since they do not cultivate in soil. Some of the farmers also apply the sustainable principles of Market Gardening which for example entails cultivating in fixed beds, growing a large variety of vegetables, and not furrowing the soil (Jordbruksverket, 2020). By applying these techniques, the soil becomes more active and living. In addition, many of the farmers work mainly with manual methods that does not require expensive machines.

Five of the interviewees highlighted that they focus on adopting circular systems on their farms. However, all farms are working with reducing waste, which is one of the principles of circular economy (Ellen MacArthur Foundation, 2022). A circular system could, for example, mean that the farmers have acquired animals that can eat leftover vegetables and produce natural fertiliser. One farmer even explained that they have extended their circular system by exchanging waste products and excrement from animals with a neighbour farm. Other farms are reducing waste by only harvesting vegetables that are already sold, making compost of the

spill-over, or utilising the resources as much as possible. In addition, many of the farms are to a large extent using local resources.

Apart from environmental sustainability, the farmers also addressed social and economic sustainability. For example, two of the farms have indoor cultivations and can therefore maintain the same production volume throughout the year. This results in their harvest being independent of the climate which positively impact their economic sustainability. Nevertheless, neither the farmers with indoor cultivations nor any of the other farmers are able to generate a reasonable salary from only producing vegetables. Therefore, none of the farmers are considered to be economically sustainable. Furthermore, several of the respondents discussed the balance between social, environmental, and economic sustainability. According to many of the interviewees, working on a farm can be both physically and mentally stressful and sometimes they are required to prioritise their personal sustainability. Some farmers also argue that it is important to achieve economic sustainability before they can prioritise environmental sustainability. For example, one farmer mentioned that they need to be economically viable before they can implement a system to use green energy. Further, social sustainability can also be difficult to achieve before economic sustainability. For example, one farmer explained that it is difficult to employ people since they cannot afford to pay the salary.

4.2 Identified Social Values

In the case study, it was discussed what different types of social value can be created when adopting a sustainable business model. The results are presented in Table 4.2 below. The table contains quotes from the interviews and explanations for each social value, as well as the number of farmers who discussed the same value. The table also contains references for those social values that have been identified in both the literature and in the case study.

Table 4.2. Summary of social values created when adopting a sustainable business model.

Social Value	Explanation	Quotes ³	Number of Farms	References
Job opportunities	Creating job opportunities for everyone, including those outside of the labour market.	<p><i>“I have people that are work training. ...So that’s a very important part...”</i></p> <p><i>“I work a bit with, or a school for young people with neuropsychiatric diagnosis, so we receive trainees from there.”</i></p>	9	Mehmood et al. (2021); Daou et al. (2020); Scarpellini (2021a); Antikainen & Valkokari (2016); Padilla-Rivera et al. (2020); Scarpellini (2021b); Brehmer et al. (2018)
Environmental education	Increasing knowledge about sustainably produced food in society through e.g., study visits, workshops and social media.	<p><i>“... I see education of society as a very important part of what we’re doing here, to talk about our perspectives and try to connect food and climate and sustainability, to communicate that”</i></p> <p><i>“I’m thinking that with such small-scale farming with direct contact with customers, then you build like a local food supply and local contact... that becomes very pedagogical...”</i></p>	10	Scarpellini (2021a), Wang & Pryor (2019)

³ Quotes from interviews held in Swedish have been translated to English by the authors. The authors are fluent in both Swedish and English, hence it is considered that the content of the quotes have not been lost in the translation.

Table 4.2 (continued).

Social Value	Explanation	Quotes	Number of Farms	References
Community engagement	Making the farm a place for social activities where their customers can connect through food.	<p><i>“That’s what we’re doing all the time, creating networks and getting people to connect in different ways through food”</i></p> <p><i>“Because a small thought is also to create relationships through food... and many people have gotten to know each other through my business”</i></p>	5	Bocken et al. (2014); Joyce & Paquin (2016); Antikainen & Valkokari (2016); Padilla-Rivera et al. (2020); Dagevos & Lauwere (2021); Brehmer et al. (2018)
High-quality products	Providing good food which contributes to a healthier society.	<p><i>“... if more people are going to feel good, we need to eat good, that’s the foundation. Therefore, I try to make good food”</i></p> <p><i>“... we contribute to society by providing good food to them”</i></p>	8	Tress (2001); Siepmann & Nicholas (2018)
Partnerships	Collaborations with other companies to facilitate development.	<p><i>“... we’re sharing the data [about the cultivations] with a department of IBM”</i></p> <p><i>“And yes, we have many collaborations with local small companies...”</i></p>	3	Joyce & Paquin (2016); Scarpellini (2021a); Brehmer et al. (2018)

Table 4.2 (continued).

Social Value	Explanation	Quotes	Number of Farms	References
Access to local food	Making locally produced food available for everyone.	<p><i>"...it [the food] has to be very easily accessible. And that is the whole point, that it should be very local..."</i></p> <p><i>"And that's part of my business motto that I don't want to produce vegetables for the small crowd that can afford to pay, but I want to be able to sell a vegetable for a decent price too..."</i></p>	6	-
Beautiful surroundings	Creating aesthetically beautiful surroundings that benefits society and is an attractive workplace.	<p><i>"... a working environment that's very good, when we work close with nature, and we work without machines and so on. And that environment... we want to make available for more people"</i></p> <p><i>"... because the whole vision with establishing this farm was not only to establish a farm... but also to show an aesthetically beautiful place for us working here... but also to invite people here..."</i></p>	5	-

Several scholars have described the creation of jobs as a social value created when adopting a sustainable business model (e.g. Mehmood et al., 2021; Daou et al., 2020). Therefore, all statements from the case study related to job creation have been categorised as the social value *Job opportunities*. Statements regarding how the farmers contribute to an increased environmental knowledge belong to the social value referred to as *Environmental education*. This is because literature emphasise that farmers can provide social benefits in terms of environmental knowledge (Wang & Pryor, 2019). Further, numerous scholars have addressed the social value created when farmers integrate with society (e.g. Bocken et al., 2014). Thus, quotes from farmers related to their engagement with society have been categorised as *Community engagement*. The social value *High-quality products* comprise of statements regarding farmers' production of good food and their contribution to a healthier society. This is in line with how the social value is described in literature (e.g. Tress, 2001). Finally, scholars explain that the society can benefit from farmers establishing mutually beneficial relationships with other actors (e.g. Joyce & Paquin, 2016). Thus, quotes where farmers discuss their collaboration with external actors have been classified as *Partnerships*.

Two additional social values emerged from the case study, *Access to local food* and *Beautiful surroundings*. These were not identified in the literature. Several farmers argued that they make local food accessible for everyone. Since society benefits from an increased accessibility to local food, these statements have been categorised as *Access to local food*. Further, several farmers also discussed how their farms are beautiful places which are both pleasant to work at and to visit. Hence, all quotes related to this were categorised as the social value *Beautiful surroundings*.

4.3 Identified Barriers

Several barriers for adopting a sustainable business model were discussed in the case study. The barriers are summarised in Table 4.3 and are divided into internal and external. Each barrier is accompanied by an explanation and a quote from one of the farmers. The table also present the number of farmers who addressed each barrier as well as references for the barriers which were also identified in the literature.

Table 4.3. Summary of the identified barriers for adopting a sustainable business model.

	Barrier	Explanation	Quotes⁴	Number of Farms	References
Internal Barriers	Low profitability	It is difficult to make a living by only producing vegetables.	<p><i>"... the revenue does not cover the wages for what they should, so I have always worked extra or outside [farming] as well"</i></p> <p><i>"I was on a digital study visit yesterday and on that farm they are two people working full time. And they said they could take out 9000 SEK each per month last year... and that's not sustainable. For me that's not sustainable"</i></p>	11	Björklund (2018); Hol et al. (2014); Rodriguez et al. (2008)
	High initial costs	Acquiring land and equipment in the initial phase is expensive.	<p><i>"... you need to invest in different solutions that require money, and then it's immediately much harder"</i></p> <p><i>"And therefore it's quite high investment costs the first three years since I have basically invested all revenues these three years"</i></p>	3	Mehmood et al. (2021); Rodriguez et al. (2008); Sivertsson & Tell (2015); Pannell (2003)

⁴ Quotes from interviews held in Swedish have been translated to English by the authors. The authors are fluent in both Swedish and English, hence it is considered that the content of the quotes have not been lost in the translation.

Table 4.3 (continued).

	Barrier	Explanation	Quotes	Number of Farms	References
Internal Barriers	Lack of knowledge and skills	Previous knowledge regarding sustainable practices is scarce.	<p><i>"... there is no like structure to lean on"</i></p> <p><i>"...it can be difficult to know which alternative is the most sustainable"</i></p>	4	Björklund (2018), Berti & Mulligan (2016); Rodriguez et al. (2008); Ulvenblad et al. (2018); Mehmood et al. (2021); Sivertsson & Tell (2015); Siepmann & Nicholas (2018)
	Risk aversion	Due to uncertainties within the industry, there are worries to invest in a business, especially the farmers' own money.	<p><i>"... it's super scary to let go of an income that you are used to have for something that you don't know"</i></p> <p><i>"... it's my private economy that I invest money with. ... That's a little unpleasant. And above all, it inhibits the development"</i></p>	3	-
	Time consuming	Small-scale farming is time consuming and requires more than regular working hours.	<p><i>"... the biggest challenge is the time, since a lot of the things we do are so incredibly labour-intensive"</i></p> <p><i>"... but whatever you do, it's very hard to get paid for the work that you do"</i></p>	4	-

Table 4.3 (continued).

	Barrier	Explanation	Quotes	Number of Farms	References
Internal Barriers	Logistics	Difficult to manage multiple sales channels.	<p><i>“Because you cannot sell on too many different places”</i></p> <p><i>“If it’s going to be worth it for me, I need to sell directly to consumers. ... I cannot have intermediaries, then the prices will be lower”</i></p>	4	-
External Barriers	Lack of support from external actors	Financial support from public actors is not adapted to small-scale farming.	<p><i>“There is a lot of support to receive, but it is not adapted to this type of small-scale business”</i></p> <p><i>“There was no support for me to receive really. ... no subsidies and there are no EU-subsidies to get for this either because it is much too small-scale...”</i></p>	10	Björklund (2018); Grover & Gruver (2017); Mehmood et al. (2021); Rodriguez et al. (2008); Sivertsson & Tell (2015); Ulvenblad et al. (2018); Pannell (2003)
	Financial risk	Due to the climate in Sweden, it is difficult to predict the production volume and to produce all year round, thereby creating a financial risk.	<p><i>“These winter months, December, January and February, it [capacity] is extremely low and very hard to get any real liquidity...”</i></p> <p><i>“We have very seasonally tied, like workflows and sales and things like that”</i></p>	7	Mehmood et al. (2021); Sivertsson & Tell (2015); Pannell (2003)

Table 4.3 (continued).

	Barrier	Explanation	Quotes	Number of Farms	References
External Barriers	Bureaucracy	Swedish law is not adapted to small-scale farming and regulations are difficult to follow.	<p><i>“It [the Swedish law] is very slow and quite hard, and the local authorities are often not in sync”</i></p> <p><i>“... you have to keep to the rules and standards that there is and that can sometimes be... I mean, regulations that can be quite hard to actually live up to.”</i></p>	6	Pannell, (2003); Mehmood et al., (2021); Rodriguez et al., (2008); Sivertsson & Tell, (2015); Grover & Gruver, (2017)
	Different prerequisites	It is difficult to replicate business models for farming from other countries or regions due to different prerequisites.	<p><i>“Many of the models for this with Market Gardening comes from ... where the market and society looks a little different. So, something that might work somewhere else is not really possible to copy here”</i></p> <p><i>“But then we have such incredibly different prerequisites although we actually work in the same way...”</i></p>	2	-

The literature discusses how the low profitability of the farming industry creates a barrier for the farmers' operations (e.g., Rodriguez et al., 2008). Therefore, all statements from the farmers related to their low liquidity have been categorised as the barrier *Low profitability*. Several scholars also identified high initial investment costs as a barrier (e.g., Mehmood et al., 2021). Statements regarding investments in the initial phase thus belong to the barrier *High initial costs*. In the case study, statements addressing that farmers are hindered by the scarce knowledge of sustainable practices or the lack of previous structures in the industry have been categorised as *Lack of knowledge and skills*. This is because scholars explain that a lack of information regarding sustainable practices is a barrier (e.g. Rodriguez et al., 2008).

The barrier *Lack of support from external actors* comprise of quotes discussing how financial support from external actors is inadequate. This is in line with the literature which also emphasise that the existing support is not suitable for small-scale farming (e.g., Pannell, 2003). Furthermore, literature has identified external factors such as seasonal production cycles as a barrier (e.g., Mehmood et al., 2021). Thus, information related to how the climate influences the business operations is categorised as *Financial risk*. Finally, scholars argue that regulations are not always adapted to small-scale farming (e.g., Pannell, 2003). Hence, quotes addressing inconsistencies between legislation and industry activities belong to the barrier called *Bureaucracy*.

Apart from the barriers addressed in the literature, the authors have identified four additional barriers that has emerged from the case study. The first is called *Risk aversion* and contains statements regarding farmers' worries to invest in their businesses. Quotes related to the high labour-intensity of small-scale farming have been categorised as the barrier *Time consuming*. Further, the barrier *Logistics* comprise of statements where the farmers discuss challenges with different sales channels. Lastly, discussions regarding how different prerequisites make it difficult to replicate business models have been included in the barrier *Different prerequisites*.

4.4 Identified Drivers

When discussing the adoption of a sustainable business model in the case study, a number of drivers were identified. These are presented in Table 4.4 below and are divided into internal and external drivers. For each driver, there is an explanation and a quote from one of the farmers. Furthermore, the table shows how many farmers mentioned each driver, and references for the drivers which were also addressed in the literature.

Table 4.4. Summary of the identified drivers for adopting a sustainable business model.

	Driver	Explanation	Quotes⁵	Number of Farms	References
Internal Drivers	Protecting the environment	The desire to do something meaningful which positively impacts the environment.	<p><i>“It’s something that always drives you, to do something for the environment and doing something that actually makes a difference for everyone really.”</i></p> <p><i>“And my business plan, there I have incorporated the entire Agenda 2030. ... The sustainability work permeates the whole business and the environment may be the driving force...”</i></p>	10	Mehmood et al. (2021); Jun & Xiang (2011); Siepmann & Nicholas (2018); Dagevos & Lauwere (2021); Dessart et al. (2019); Tress (2001); Mupfasoni et al. (2018); Sapbamrer & Thammachai (2021)
	High-quality products	The desire to provide society with high-quality food.	<p><i>“We would like to, there is some ideology in this, that it’s local, that you provide the local community with really good food.”</i></p> <p><i>“... and that’s one aspect which I think is important, that you have good products”</i></p>	5	Siepmann & Nicholas (2018); Tress (2001)

⁵ Quotes from interviews held in Swedish have been translated to English by the authors. The authors are fluent in both Swedish and English, hence it is considered that the content of the quotes have not been lost in the translation.

Table 4.4 (continued).

	Driver	Explanation	Quotes	Number of Farms	References
Internal Drivers	Decrease food import	Contributing to making Sweden more self-sufficient.	<p><i>“I would really love Sweden to become more self-sufficient in their food. ... I think it’s somewhat ludicrous that we have to import so much.”</i></p> <p><i>“... to not be so dependent on import. ... such things are also important I think. So it’s a little from that perspective too that I’m very concerned that there should be local food production”</i></p>	4	-
	Make small-scale farming profitable	To prove that it is possible to run a profitable small-scale farm.	<p><i>“I wanted to show a model that actually stands on its own and is not dependent on free labour or subsidies, or big investors either.”</i></p> <p><i>“... so that’s what I’m hoping for, that I eventually will be able to show a model where you actually can go from one job and change to this type [farming] of career or industry”</i></p>	3	-

Table 4.4 (continued).

	Driver	Explanation	Quotes	Number of Farms	References
Internal Drivers	Inspire others	Inspire others to start farming.	<p><i>“Because then I believe that if you can show it [a good business model], then we can motivate others to do the same thing too.”</i></p> <p><i>“... on Instagram I try to inspire others to cultivate...”</i></p>	3	-
	Better lifestyle	Valuing working outside in the nature rather than in an office.	<p><i>“And then I feel very good when cultivating. And I have worked in an office, and I wanted to get away from that and do something else...”</i></p> <p><i>“But it’s for yourself too, it’s much better work than, like before I worked in an office, now I’m outside almost all year around. So yes, it’s a lifestyle”</i></p>	5	-

Table 4.4 (continued).

	Driver	Explanation	Quotes	Number of Farms	References
Internal Drivers	Business-oriented	Motivated by running a business.	<p><i>"...for many of us it's probably just that you think it's fun to run a business..."</i></p> <p><i>"In hindsight I have realised that this was pretty fun to do. I have never run a business before and never been interested in it but now I'm doing it anyway and yes, it's exciting!"</i></p>	3	-
	Interest in farming	Having farming as a hobby.	<p><i>"It started as a hobby this [farming]. We wanted to become more self-sufficient"</i></p> <p><i>"It is like a hobby for us. We are friends. We are a group that, we get to meet around something that feels valuable"</i></p>	5	-

Table 4.4 (continued).

	Driver	Explanation	Quotes	Number of Farms	References
Internal Drivers	Educate the society	Ambition to educate people about food and sustainability.	<p><i>“So, we are trying to educate the customers in that sustainability and a sustainable diet is a lot about choosing a menu based on the food and not the other way around”</i></p> <p><i>“... an ambition that the ones that buy vegetables from me will learn to eat things that thrive in Sweden”</i></p>	6	-
	Bring people together	Creating a local community through food.	<p><i>“For me it has been so natural to create this context where people feel that they belong and are part of the organisation and feel like a part of something else.”</i></p> <p><i>“...to gather around a common purpose, so that is something that I have wanted to work more with in this context [farming] as well. Like to build a community.”</i></p>	5	-

Table 4.4 (continued).

	Driver	Explanation	Quotes	Number of Farms	References
External Drivers	Demand for sustainable products	The interest for sustainably produced food is increasing.	<p><i>“... it’s an increasing interest all the time, so no, it’s no problem to sell the vegetables”</i></p> <p><i>“For me it has almost been that, at least these last years it has almost been hard to have time to produce. ... There have been very many who want to buy.”</i></p>	10	Donner et al. (2021); Stępień et al. (2021); Siepmann & Nicholas (2018)
	Collaboration networks	Farmers helping each other by sharing work tasks, resources and knowledge.	<p><i>“So we can absolutely, both regarding work tasks and economically, share things. ... So, it’s a huge help”</i></p> <p><i>“... there’s a support in being many of us. ... but the fact is, we don’t have an organised network”</i></p>	10	Zucchella & Previtali (2018); Sapbamrer & Thammachai (2021); Siepmann & Nicholas (2018); Donner et al. (2021); Barth et al. (2021)

Table 4.4 (continued).

	Driver	Explanation	Quotes	Number of Farms	References
External Drivers	External support	Support from public actors, both in terms of knowledge, e.g., courses and mentorship programs, and financing.	<p><i>"... and if it [support] also came with a bag of money... it would have been grateful"</i></p> <p><i>"We have gotten a cultivation mentor for many hours from Hushållnings-sällskapet Väst. It has been very valuable. ... And now we also have one [mentor] via Business Region Göteborg."</i></p>	11	Mehmood et al. (2021); Stępień et al. (2021); Sapbamrer & Thammachai (2021); Siepmann & Nicholas (2018); Dessart et al. (2019); Padilla-Rivera et al. (2020)
	Collaboration with other actors	Farmers collaborating with companies and universities to exchange knowledge and resources.	<p><i>"And then we also have 'Holma Folkhögskola' very close to us. And that has meant very much to have them as a neighbour where you can exchange resources and information..."</i></p> <p><i>"But we also get supporting kind from universities and, like I said, the insect farms and a lot of our restaurants help us as well."</i></p>	3	-

The literature describes the driver *Protecting the environment* as a desire to do something with a positive impact on the environment (e.g., Jun & Xiang, 2011). Consequently, statements related to a concern for the environment and an ambition to make a difference belong to this driver. The driver *High-quality products* relates to statements where farmers have discussed that it is important for them to produce food of high quality. This is because scholars state that being able to provide high-quality products is a motivation for farmers (e.g., Siepmann & Nicholas, 2018).

Farmers are driven by society's positive attitude towards sustainably produced food and the high demand for it (e.g., Donner et al., 2021). Therefore, quotes where farmers express that there is a high interest for their products have been categorised as the driver *Demand for sustainable products*. Further, scholars argue that networks where knowledge and resources can be shared is a driver for adopting sustainable business models (e.g., Sapbamrer & Thammachai, 2021). Farmers' statements related to sharing of work tasks, resources and knowledge are thus categorised as *Collaboration networks*. Finally, the driver *External support* comprise of quotes emphasising that support from external actors facilitates the farmers' operations. This is in line with the literature which states that various forms of external support create incentives for farmers to adopt sustainable business models (e.g., Padilla-Rivera et al., 2020).

In addition to the drivers mentioned in the literature, nine more drivers have been identified in the case study. *Decreased food import* relates to statements where the farmers express a desire to contribute to Sweden's increased self-sufficiency. Some farmers stated that they want to prove that small-scale farming can be profitable. These types of quotes belong to the driver *Make small-scale farming profitable*. Some farmers also expressed that they are motivated by creating good farming practices to inspire others to do the same. Statements like these have been categorised as the driver *Inspire others*. The driver *Better lifestyle* comprise of quotes regarding how the farmers' well-being has improved since starting to work at a farm. Furthermore, statements about the farmers' interest in running a business belong to the driver *Business-oriented*. Quotes about how having farming as a hobby is motivating relates to the driver *Interest in farming*. The farmers also discussed how being able to educate the society regarding sustainable food motivate them. These quotes have been categorised as the driver

Educate the society. Discussions regarding how farmers are driven by creating a context where relationships are created belong to the driver *Bring people together*. Lastly, the driver *Collaboration with other actors* consists of statements where the farmers describe how they benefit from collaborating with external actors.

5. Discussion

This chapter summarises the key findings related to the three stated research questions. The first section discusses social value created when adopting a sustainable business model and relates to the first research question. Subsequently, barriers and drivers for the adoption are identified, thereby addressing research question two. Finally, to relate to the third research question, important building blocks from the TLBMC for small-scale farmers is presented in the last section.

5.1 Social Value Created when Adopting Sustainable Business Models

Many types of social value can be created by adopting sustainable business models (Donner et al., 2021). In this section the social values identified in the theoretical framework, found in Table 3.1, will be compared with the social values from the case study, found in Table 4.2. In total, there are four corresponding social values in the theoretical framework and the case study.

Community Engagement

The first corresponding social value is referred to as *Community engagement*. Both the literature and case study emphasise how a small-scale farm can contribute to building a local network. The literature focus on the value created when farmers engage with all types of stakeholders in the society (e.g., Bocken et al., 2014; Antikainen & Valkokari, 2016), while the farmers in the case study focus on the engagement with customers. Despite this difference, the authors have identified that the integration with the local community contributes to an active society where business opportunities are increased and there is a wider range of social activities. In addition, the farms' engagement with the community creates new relationships and a sense of belonging. This is especially important in sparsely populated areas where there is less activity and a higher risk for people to feel lonely.

Job Opportunities

Job opportunities is the second corresponding social value. This social value is supported by many of the references in the literature (e.g., Mehmood et al., 2021; Daou et al., 2020; Scarpellini, 2021a) and by many of the participating farmers. However, the number of job opportunities created is relatively low due to the small scale of the farms. On the other hand, many farmers employ people who are outside of the labour market or who have difficulties in life. According to the authors, this is valuable since it gives an opportunity to people who are currently not fit to work with other types of jobs, for example in an office. Therefore, it is considered to create high social value, which is also supported by Brehmer et al. (2018).

Environmental Education

The third corresponding social value is called *Environmental education*. Few of the articles used in the theoretical framework mention this social value. However, all farmers but one expressed that they want to use their farms as educational platforms, thus creating the social value of increased awareness of sustainability. Although few articles address this social value, those who discuss it emphasise its importance since it leads to a higher demand for sustainable products and a more sustainable way of living (Wang & Pryor, 2019). The importance of this social value is further strengthened by the case study. The reason for the lack of articles discussing this social value can be that this value is created over time. Since small-scale farming is an emerging industry, the value of environmental education has not been substantially created yet. Thus, few scholars have been able to identify this social value. However, based on the authors' insights, environmental education is important for two reasons. Firstly, an increased knowledge of sustainability will influence customers' behaviour which is necessary to mitigate the effects of the climate change. Secondly, by spreading knowledge the farmers can inspire others to start similar businesses and increase the number of sustainable farms.

Partnerships and Improved Quality of Life

The fourth corresponding social value is *Partnerships*. Although this social value has occurred both in the literature (e.g. Joyce & Paquin, 2016; Brehmer et al., 2018) and in the case study, it is not frequently discussed and hence not considered a prominent social value. On the other hand, *Improved quality of life* is emphasised by many researchers (e.g., Bocken et al., 2014;

Scarpellini, 2021a). According to the authors, this social value comprises of the values *Beautiful surroundings*, *High-quality products*, and *Access to local food* from the case study. The reason for this connection is that if people eat healthy food which is easily accessible for everyone, and are surrounded by beautiful environments, quality of life is improved. Furthermore, a beautiful surrounding gives value to more people in the society than the customers without requiring any additional effort from the farmers. Additionally, to increase the access to local food is an important part of making Sweden more self-sufficient (Fermskog & Dahlin, 2022), which ultimately will increase the country's food security. Based on this discussion, *Improved quality of life* is regarded as a more prominent social value than *Partnerships*.

5.2 Barriers and Drivers for Adopting Sustainable Business Models

Multiple barriers and drivers for adopting sustainable business models have been identified in the case study. These can be found in Tables 4.3 and 4.4. In this section, these barriers and drivers will be compared with the barriers and drivers in the theoretical framework, found in Tables 3.2 and 3.3. Altogether, there are five barriers and five drivers in the theoretical framework corresponding to the results from the case study.

5.2.1 Barriers for Adopting Sustainable Business Models

High Initial Costs

High initial costs is the first corresponding barrier. The literature mostly discusses the high costs of acquiring machines (Rodriguez et al., 2008), while the farmers emphasise the costs of buying land to cultivate on. A reason for this is that the farmers from the case study mainly use manual labour and no machines. Based on this, it would be easier to start a small-scale farm than an industrial farm due to lower initial costs. However, the farmers from the case study have emphasised that they often have to invest their private money in the initial phase, since they are not entitled to the same financial support as industrial farms. Therefore, the authors argue that the investment is perceived as higher than if investing company money, which creates a high barrier for entering the small-scale farming industry.

Lack of Knowledge and Skills

The second corresponding barrier is *Lack of knowledge and skills*. Both farmers and the literature discuss the lack of knowledge regarding sustainable practices (e.g., Ulvenblad et al., 2018; Siepmann & Nicholas, 2018). Many farmers emphasised the lack of structure for sustainable small-scale farming. The authors have identified that one reason for the lack of knowledge and structure is that sustainable small-scale farming is a relatively new industry. Another reason is connected to the barrier *Different prerequisites* identified in the case study. Due to differences in countries and regions, it is difficult to replicate a business model from one farmer to another. This makes it difficult to create a common structure suitable for many farmers in the industry. To enable more people to start small-scale farms, this is an important barrier to overcome. In addition to sustainable practices, the literature also addresses the lack of knowledge regarding other skills such as management, sales and marketing (Björklund, 2018; Berti & Mulligan, 2016). This issue is not discussed by the farmers in the case study. Based on the authors' insights, the reason for this is the high demand for sustainable products, implying that there is no current need for the farmers to excel in these skills.

Low Profitability

All the farmers mentioned that small-scale farming is not profitable. This is the third corresponding barrier referred to as *Low profitability*. The literature also addresses the low profitability of small-scale farmers but adds the perspective of liquidity concerns when making a transition to sustainable practices (Björklund, 2018; Rodriguez et al., 2008). This aspect has not emerged in the case study since all the farmers have applied sustainable practices from the start. However, some farmers discussed how their low profitability hinders them from investing further in their business, which is necessary to reach their desired level of sustainability. For example, some farmers explained that they would have wanted to invest in different types of systems to make processes more circular. The authors argue that the farmers' inability to invest also can hinder them from scaling their business in the future. In addition, the barrier *Time consuming* was discussed in the case study. Since sustainable practices mainly consists of manual labour, a lot of time is required to maintain the production. Hence, the revenues are low compared to the costs of production, which leads to the low profitability. According to the authors, low profitability is one of the biggest challenges for small-scale farmers. This is

because without being profitable, the farmers will not be able to continue creating benefits for the society and environment.

Lack of Support from External Actors

The fourth corresponding barrier is *Lack of support from external actors*. Both the literature and the farmers discuss that external support suited for small-scale farming is scarce (Rodriguez et al., 2008; Mehmood et al., 2021). In addition, the literature addresses how regulations are not adapted to small-scale farming (e.g. Pannell, 2003; Grover & Gruver, 2017), which is similar to the barrier called *Bureaucracy* from the case study. This barrier emphasises that the legislations are lagging in the development of the farming industry. For example, the indoor farmers in this study discussed that their produce cannot be certified as organic since they do not cultivate their vegetables in soil. Due to the inconsistency between legislation and industry activities, it is difficult for public authorities to provide farmers with the support they need. In contrast, one identified driver is *External support*, which implies that external support facilitating farmers' operations exist. Many farmers described the existence of support in terms of knowledge, e.g., through courses and mentorship programs, but not as much in terms of financial support. Consequently, the external support that exists is not adequate. By providing financial support, some barriers for adopting a sustainable business model will be lowered, for example *High initial costs*.

Financial Risk

The last corresponding barrier is *Financial risk*. According to literature, this barrier comprises of different external factors such as changing demand and supply conditions and weather conditions (Mehmood et al., 2021). However, the farmers in the case study only addressed the challenges of having a weather-dependent production. According to the authors, there are three main reasons to why the farmers only mentioned the weather factor. The first is that the production, and thereby the supply, is highly dependent on the weather conditions, making them difficult to separate. The second reason is that the demand for the farmers' products is much higher than their supply and therefore small changes in the demand are unnoticeable. Lastly, the farmers have close relationships with their customers and for each season they can therefore adapt their production based on customer demand.

The weather cannot be changed and therefore this barrier is difficult to eliminate. However, it can be minimised by practicing, for example, indoor farming which is undertaken by two farmers participating in the case study. By having an indoor cultivation, the harvest is independent of weather conditions. Thus, it is possible to produce vegetables throughout the year which lowers the financial risk. Due to the Swedish climate, the season for outdoor production is short which makes it difficult to cultivate crops adequate for the entire country. To make Sweden more self-sufficient and to increase the profitability, the barrier *Financial risk*, specifically regarding the climate, is therefore important to address.

5.2.2 Drivers for Adopting Sustainable Business Models

Protecting the Environment

The first corresponding driver is *Protecting the environment*. This driver is mentioned by all farmers but one and by many scholars (e.g. Jun & Xiang, 2011; Dagevos & Lauwere, 2021; Dessart et al., 2019), which demonstrates its importance. Since the case study has proven that small-scale farming has low profitability, the financial motivation for this type of business is low. Therefore, other incentives become important and protecting the environment is one of the main internal drivers. Another driver addressed by the farmers is *Decrease food import* which is also related to the driver protecting the environment. By decreasing the import of food, emissions for transportation are reduced and thereby also the negative impact on the environment.

External Support

External support is the second corresponding driver emphasised by all farmers and multiple scholars (e.g. Sapbamrer & Thammachai, 2021; Padilla-Rivera et al., 2020). Due to the low profitability of small-scale farming, external support in terms of financing is a main driver for enabling farmers to produce in a sustainable way while being small-scale. In the literature, it is argued that the support is especially important in the initial phase (Mehmood et al., 2021) which was confirmed in the case study. Since initial costs are high this further supports the argument that external support is particularly important in the starting phase of the business. The literature also states that external support can increase the economic incentives to start a

sustainable farm (Dessart et al., 2019). The authors argue that by increasing the economic incentives, the need for internal motivations such as *Protecting the environment* will be lower. In the future, this will increase the number of sustainable farming businesses since people are more likely to be motivated by economic motivations than by internal. An increased number of sustainable farming businesses will further increase the availability of sustainably and locally produced food.

Collaboration Networks

The third corresponding driver is *Collaboration networks*. Scholars in this area discuss how different types of collaborations between farmers, for example sharing physical resources and knowledge, facilitates the adoption of a sustainable business model (Zucchella & Previtali, 2018). Farmers also discussed the sharing of work tasks and costs, as well as the exchange of information. The authors have identified two reasons for this type of collaboration. The first is the lack of previous knowledge regarding sustainable small-scale farming, which makes it necessary for farmers to work together. The other reason is the current lack of competition in the small-scale farming industry, and the high demand for sustainable products. This creates an environment where farmers are comfortable exchanging knowledge with each other. Although this cooperation currently occurs spontaneously, farmers have expressed a need for a more organised farming association where knowledge can be exchanged. The authors suggest that external actors should be involved to facilitate the establishment of such an association.

Demand for Sustainable Products

Demand for sustainable products is the fourth corresponding driver. Both the literature and the case study emphasise that there is an interest for sustainable products (e.g. Donner et al., 2021). On the contrary, the literature identifies the barrier *Unwillingness to pay for added value* which implies that customers are not prone to pay for the added value sustainable products provide (e.g. Sivertsson & Tell, 2015). However, this barrier was not identified in the case study. According to the authors, one reason for this is that all the farmers experienced a high demand and found it easy to sell all their products. The demand for sustainable products derives from an increasing awareness in society regarding sustainability issues. Furthermore, external events such as Covid-19 have also increased the demand for local products by making people realise

the importance of self-sufficiency. The other reason is that the farmers sell directly to consumers, enabling the farmers to communicate the added value for their local products. This way consumers become aware of the difference between the farmers' products and others' which makes them willing to pay, thus contradicting what literature describes (Björklund, 2018; Grover & Gruver, 2017).

High-quality Products

The final corresponding driver is *High-quality products*. In the case study, the farmers connect this driver to ideology and that they can contribute to the well-being of society by providing high-quality food. The literature rather focuses on those farmers who are driven by providing food of high quality since it allows them to charge a higher price for their products (Siepmann & Nicholas, 2018). Hence, there is a difference in what drives the farmers to produce products of high quality. In addition, this driver is mentioned by fewer sources than other drivers and is therefore not considered one of the most prominent.

5.3 Aspects to Consider in Sustainable Business Models

In this section, the TLBMC developed by Joyce and Paquin (2016) is used as a framework for the discussion. Based on the previously discussed social values, barriers and drivers, it has been identified that some of the building blocks need to be considered to better suit small-scale farming businesses. These building blocks are discussed in the following section and are highlighted in Figure 5.1.

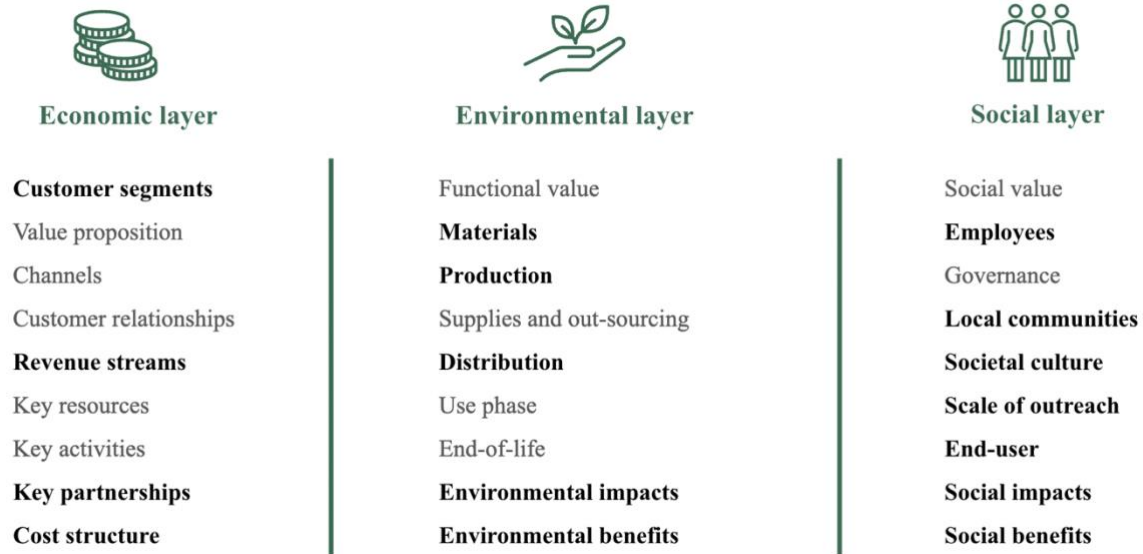


Figure 5.1. The building blocks of the TLBMC, based on Joyce and Paquin (2016). The building blocks in bold are important for small-scale farmers to consider.

5.3.1 Building Blocks from the Economic layer

None of the farmers from the case study make a living based on revenues generated from the farming alone. This demonstrates that there currently is no business model for sustainable small-scale farmers which is economically viable. Some farmers in the case study are trying to develop a profitable business model but have not succeeded yet. Therefore, the economic layer of the TLBMC is important and needs to be adapted to the small-scale farming industry. Specifically, four of the building blocks in the economic layer are subject to consideration.

Customer Segments

One of the identified building blocks is *Customer segments*. The majority of the farmers have end consumers, restaurants and cafés as customer segments. A few also sell to local distributors and wholesalers. The reason to why most of the farmers do not use intermediaries is because, according to them, they lose a large portion of their profit when selling to intermediaries. According to the authors, not selling through intermediaries appears to be a cultural norm in the industry. On the other hand, the farmers who sell to wholesalers argue that it is more time-efficient to sell larger volumes to one wholesaler compared to selling smaller volumes directly

to many customers. By saving time in sales activities farmers can spend more time on value adding activities, such as cultivation, and thereby generate more revenues. This implies that although intermediaries take a part of the farmers' profit, it can be preferred over direct sales if the time and effort put into the direct sales is too high. On the contrary, for the farmers to be able to create additional value it is important to be close to the consumers. When farmers sell through intermediaries, the proximity to the consumers is lost and it is difficult for them to differentiate their products from others (Hol et al., 2014). Therefore, when selling through intermediaries it is important for the farmers that the origin of their products is known to the consumers. In conclusion, there are many possible customer segments, and they can all be suitable depending on the situation. However, when deciding which customer segments to focus on it is important for the farmers to compare the revenues each alternative generates with the time and effort it requires. This means that in some cases farmers would benefit from defying the cultural norm and sell through intermediaries.

Revenue Streams

Another building block is *Revenue streams*. The main revenue for the farmers in this case study is from selling vegetables. Five of the farmers in the case study also offer additional services. Since vegetables are inexpensive, providing additional services is a means to increase the profitability of the business as well as generating revenues throughout the year. Providing additional services will also make the business less sensitive to external circumstances, for example weather damaging the harvest (Sivertsson & Tell, 2015). Therefore, more farmers should consider offering additional services. Furthermore, farmers can secure their revenue streams by subscription-based offerings. By having a subscription, the customers commit to buying a certain amount of vegetables during a specific period. This way, the farmers can predict their revenue streams and adapt the production volume. Two of the farms also have indoor cultivations which means they can produce and sell vegetables throughout the year. This is a way to achieve consistent revenue streams during the whole year. Although not everyone is able to only cultivate indoors, farmers should consider having parts of their cultivation indoors to increase their revenues.

Cost Structure

Aside from revenues, it is important for farmers to focus on the building block *Cost structure*. One of the barriers for the farming industry is high initial costs (e.g., Rodriguez et al., 2008). To attract more people to the farming industry, more financial support from external actors should be given in the initial phases (Mehmood et al., 2021). Since small-scale farming is labour intensive, the authors argue that farmers should standardise their work to minimise the time required for each work task. Thereby, the farmers would lower their labour costs. Additionally, automating parts of the production processes would reduce the need for manpower and lower the labour costs further. To facilitate the development of automation solutions, a high process innovation rate is needed.

Key Partnerships

Finally, the farmers' operations can benefit from focusing on the building block *Key partnerships*. Many of the farmers have discussed how a personal network of farmers have had a positive impact on their development. In these networks, farmers can exchange knowledge, share resources, and support each other in performing work tasks (e.g., Zucchella & Previtali, 2018). However, there is no organised farming association for small-scale farming where both farmers, public actors, and private organisations are involved (Hol et al., 2014). As previously suggested by the authors, external actors should be involved in forming such an association. An association would allow the farmers to get in contact more easily with different types of actors and exchange knowledge, which would accelerate the development in the industry.

5.3.2 Building Blocks from the Environmental layer

In this study it has become evident that protecting the environment is a large motivation for many to start a small-scale farming business. Consequently, the environmental layer is at the core of many of the farmers' business models. In some cases, the environmental sustainability of the business even has higher priority than the economic sustainability. Therefore, all of the farmers have adopted processes that are largely environmentally sustainable. However, in five of the building blocks small improvements can be made and these should be considered by small-scale farmers.

Materials and Production

Materials and *Production* are two of the identified building blocks. All the farmers in this study have low environmental impact in their material use and production. For example, they do not use toxic or artificial additives and the majority of the used materials are recyclable. Furthermore, some of the farmers mentioned that they buy raw material, such as seeds and fertiliser, from local suppliers. These practices should be applied by more farmers to decrease the transport emissions and thereby the environmental impact. Another way to decrease the environmental impact is to create a circular production system (Ellen MacArthur Foundation, 2022), which some farmers have done. In this type of system, waste from one process becomes input to another process. According to the authors, one reason for why farmers have not implemented these types of systems is the lack of financial resources. However, one farmer described a more holistic view where the circular system does not have to be limited to the farm but where the farm can be part of a bigger circular system. For example, waste from one farm can function as input to a process at another farm, which can then circulate back to the first farm. To become more circular while being limited by financial resources, more farmers should apply this holistic view. In the creation of such holistic circular systems, collaboration networks are important. In this case, the sharing of work tasks and resources are especially important since it can increase both the efficiency and circularity of the production processes.

Distribution

Another building block in need of consideration is *Distribution*. The studied farmers currently sell and distribute their products to local customers. From an environmental perspective this is good since it minimises the transportation. Since many of the farmers are still in their start-up phase, they are likely to expand and might lose their local focus. Therefore, they should actively work to expand their customer base in the local area. The farmers should also consider what distribution model is most suitable. Some farmers in the study deliver the products to their customers, while others have the customers come to them to collect the products. The advantage of delivering the products to the customers is that the farmer can control the choice of transport mode and reduce the number of transport routes compared to if customers come to the farm. However, this is time consuming for the farmers who already have limited time (Rodriguez et al., 2008). On the other hand, if customers collect the products at the farm, the farmer will lose its influence over the choice of transport mode and thereby its environmental

impact. Furthermore, when customers visit the farm, the farmer is given an opportunity to sell additional products. This can for example be excess products which would otherwise have been waste. Additional sales also increase the revenues and thereby contribute to the economic sustainability of the farm. To conclude, which distribution model is most suitable depends on the farmer's situation. For example, the farmer needs to consider where its customers are located, how much time and what resources the farmer has available, and the farmer's need for additional sales. In some cases, the farmer might even have to use different models for different customers to adapt to their needs.

Environmental Impacts and Benefits

Finally, the farmers' operations result in *Environmental impacts and benefits*, which also are two of the building blocks in the environmental layer. As previously discussed, the farmers in this study have low negative environmental impact since they have incorporated sustainable practices from the start. However, they still have environmental impacts in terms of for example use of electricity and water, and transportation emissions. To some extent, these impacts can be reduced, for instance by implementing circular systems (Ellen MacArthur Foundation, 2022), but it is difficult to fully eliminate the impacts. Further, sustainable small-scale farming contributes to environmental sustainability in several ways, for example by increasing biodiversity and reducing waste. In total, the environmental benefits outweigh the impacts. However, the authors recommend each farmer to thoroughly review their own farm's environmental impacts and benefits to identify areas of improvement. In this way, the farmers can implement solutions suitable for their specific situation and thereby improve their environmental sustainability.

5.3.3 Building Blocks from the Social layer

Social Benefits and Impacts

In the social layer, seven of the building blocks are important for the farmers to consider. Two of the blocks are *Social benefits* and *Social impacts*. As previously discussed, many of the farmers in this study create social benefits in different ways. Some of the farmers actively work to create social value because it is important to them while for others, social value is created as a by-product of their daily operations. This means that the farmers prioritise social

sustainability to different degrees but regardless, social value is created. Thus, the farmers' operations result in low social impact. However, more farmers should work actively to create social value since the authors have found that farms have high potential to create different types of social value.

One social impact from the farmers' operations is the higher prices of locally produced vegetables compared to non-ecological vegetables in the supermarkets. Due to the higher prices, not all can afford the vegetables which negatively influences the accessibility of locally produced food. On the other hand, it is difficult for the farmers to lower their prices since they already have low profitability on their products (e.g., Björklund, 2018). Therefore, based on the current situation of the farmers' businesses, it is not reasonable for them to lower their prices.

Local Communities, Societal Culture, and End-user

Three of the building blocks, *Local communities*, *Societal culture* and *End-user*, concern how the farm interacts with the society (Joyce & Paquin, 2016). When farmers interact with both other farmers and people in society, an environment is created where knowledge is exchanged, and relationships are created (e.g., Bocken et al., 2014). Some farmers in this study expressed their desire to use the farm as a gathering place for the community, which the authors argue they should. This way the farm becomes a natural part of the community, and they can use their platform to spread a culture with focus on sustainability (Wang & Pryor, 2019). By having direct contact with the customers, relationships are established which makes it easier for the farm to create awareness regarding sustainability. The relationship with customers also increases the farmers' understanding of the customers' needs which enable them to fulfil these needs.

Employees

Another building block is *Employees*. Many of the farmers want to employ people but find it difficult due to financial reasons and irregular workload over the year. However, most of the farmers who wish to employ want to hire people who are outside of the labour market, for

example immigrants or people in need of work training. This is a good way to create social value since it both create job opportunities and leads to personal development for the employees (Brehmer et al. 2018). Therefore, the authors encourage farmers to employ people who are outside of the labour market.

Scale of Outreach

Finally, *Scale of outreach* is an important building block to consider. It is useful for farmers to have different depth and breadth of their relationships depending on the purpose. For example, the authors argue that in terms of sales, the farmers should focus on having a local outreach since this way they can minimise transports and create long-term relationships with recurring customers. In terms of education, however, the outreach should be broad in order to spread knowledge to many people.

6. Conclusions

The aim of this thesis was to explore how a sustainable business model can be adapted to small-scale farmers. As part of this, it was important to investigate what type of social value is created when adopting a sustainable business model. The study resulted in four social values being identified as prominent: *Community engagement, Job opportunities, Environmental education, and Improved quality of life*. Furthermore, it was necessary to identify what hinders and facilitates small-scale farmers from adopting a sustainable business model. To this end, the study has resulted in identifying five prominent barriers: *High initial costs, Lack of knowledge and skills, Low profitability, Lack of support from external actors, and Financial risk*, and four prominent drivers: *Protecting the environment, External support, Collaboration networks, and Demand for sustainable products*.

The adaptation of a sustainable business model was discussed based on the social values, barriers, and drivers. This study has identified several important aspects to consider in a sustainable business model. Overall, the main challenge for small-scale farmers is to be profitable while also being environmentally and socially sustainable. Therefore, the economic layer of the TLBMC is important to consider, especially the most efficient way to use time and generate revenues. However, there are important aspects to consider in the environmental and social layers as well. To create circular systems on the farm and to apply a holistic view to circularity is essential. Farmers should also utilise the opportunity to use their farm as a platform for community engagement and sharing knowledge.

Finally, the study has identified several new social values, barriers and drivers that has not been addressed in the literature before. These are the social values: *Access to local food, and Beautiful surroundings*, the barriers: *Risk aversion, Time consuming, Logistics, and Different prerequisites*, and the drivers: *Decreased food import, Make small-scale farming profitable, Inspire others, Better lifestyle, Business-oriented, Interest in farming, Educate the society, Bring people together, and Collaboration with other actors*. All of these are a contribution to theory about the small-scale farming industry.

6.1 Future Research

Building on the insights from this study there are potential areas for further research. Firstly, several new social values, barriers, and drivers have emerged from this case study. However, further investigation is needed to confirm if these exist in other contexts. Secondly, this study has identified the lack of external support. A next step is therefore to investigate what kind of support is needed and how that should be realised. Thirdly, small-scale farming is currently not economically viable which calls for further research in how economic sustainability can be achieved. Lastly, it is meaningful to study how farmers can scale their businesses since their current low profitability hinders them.

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Appendix 1

Below is the interview template which was used in the interviews with the farmers. The questions are divided into five different themes.

Basic knowledge about the business:

- Would you like to start by telling us a little bit about your business?
- What type of crops do you grow?
 - Why do you grow these?
- How do you sell your products?
- What is your revenue per year?

Customers:

- What type of customer do you have?
 - Why these types of customers?
- How do you reach out to new customers?

Sustainability and circularity:

- How do you work with environmental sustainability?
- Do you work with social sustainability in any way?

Challenges:

- What do you consider to be the main challenges with running a small-scale farming business?
- Did you experience any barriers with implementing sustainability in your business?
- Would you want to work more with sustainability?
 - In that case, what can help you shift towards a sustainable business?

Support from the environment:

- What factors drive you to work sustainably?
- Do you receive any kind of support from external stakeholders?
 - What kind of support do you receive?
- Are there any other types of support that you would need/want to run your business in a better way?

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