Factors for adopting to organic or conventional farming

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Independent project • 30 hp
Swedish University of Agricultural Sciences,
Department of Energy and Technology
Master Thesis, Sustainable Food System
Molecular Sciences, 2025:11
Uppsala, 2025

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Credits:	30 hp
Level:	A2E
Course title:	Master thesis in Food Science
Course code:	EX0875
Programme/education:	Sustainable Food Systems
Course coordinating dept:	Department of Energy and Technology
Place of publication:	Uppsala
Year of publication:	2025
Title of series:	Molecular Sciences
Part number:	2025:11
Keywords:	agriculture, economic incentives, environment, innovation, market, network, values, working conditions

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Abstract

There are divided opinions about which production system, conventional or organic, is the solution of the future. Conventional farming gives the population cheaper and more amount of food, while organic farming has been proven to promote ecosystem services and good soil health. Regardless, the European Union have a goal of increasing the organic arable land with 25% in each member states till 2030. Sweden has its own goal with 30% organic arable land till year 2030. But today the organic arable land in Sweden is decreasing, and the goal is seen to be harder to reach. This study's purpose is to explore what external and internal factors affect a farmers decision-making process of choosing to adopt a conventional or organic farming method. The methodology is based on semi-structured interviews with a total of nine farmers, five organic farmers and four conventional farmers. The conceptual framework is based on prominent factors from previous research. Factors that have an influence on a farmers decision-making process. This conceptual framework made a basis for analysing and discussion of the result. In summary, both organic and conventional farmers had the market as a significant influential external factor for adopting their respective production methods. The internal factors influencing conventional farmers were economic values and working conditions in form of less workload. While organic farmers internal factors were environmental values and working conditions in form of less work with chemical inputs. The results indicates that the market must have a potential for the farmer to choose either production method, but internal values differed and were a stronger influence.

Keywords: agriculture, economic incentives, environment, innovation, market, network, values, working conditions

Abstrakt

Det råder delade meningar om vilket produktionssystem, konventionellt eller ekologiskt, som är framtidens lösning. Konventionell odling ger befolkningen billigare och mer mängd mat, medan ekologisk odling har visat sig främja ekosystemtjänster och god markhälsa. Oavsett har EU som mål att öka den ekologiska åkermarken med 25 % i varje medlemsland fram till 2030. Sverige har ett eget mål med 30 % ekologisk åkermark till år 2030. Men idag minskar den ekologiska åkermarken i Sverige och målet ses vara svårare att nå. Syftet med denna studie är att undersöka vilka externa och interna faktorer som påverkar en lantbrukares beslutsprocess när de väljer att anta ett konventionellt eller ekologiskt jordbruk. Metodiken bygger på semistrukturerade intervjuer med totalt nio lantbrukare, fem ekologiska bönder och fyra konventionella bönder. Det konceptuella ramverket bygger på framträdande faktorer från tidigare forskning. Faktorer som påverkar en jordbrukares beslutsprocess. Detta konceptuella ramverk utgjorde ett underlag för analys och diskussion av resultatet. Sammanfattningsvis hade både ekologiska och konventionella bönder marknaden som en betydande inflytelserik extern faktor för att anta sina respektive produktionsmetoder. De interna faktorerna som påverkade konventionella bönder var ekonomiska värderingar och arbetsmässiga värderingar i form av mindre arbetsbelastning. Medan ekologiska bönders interna faktorer var ekologiska värderingar och arbetsmässiga värderingar i form av mindre arbete med kemikalier. Resultaten tyder på att marknaden måste ha en potential för lantbrukaren att välja endera produktionsmetoden, men de interna värderingarna skiljde sig åt och var ett starkare inflytande.

Keywords: arbetsvillkor, ekonomiska incitament, innovation, jordbruk, marknad, miljö, nätverk, värderingar

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CF	Conventional Farming	Page 12
FAO	Food and Agriculture Organisation	Page 12

1. Introduction

This chapter introduces the problem followed by the aim, research questions, delimitations, and outline for the project, all of which serve as a guide for the report.

Agriculture is well-known for the crucial role it plays in feeding the growing global population and enabling economic development while also profoundly impacting the environment (Muchhadiya et al., 2024; Fusco et al., 2023). With the Food and Agriculture Organisation (**FAO**) projecting an increase in global food production by up to 70% by 2050 (Azarbad, 2022, 1), there are significant pressures placed on primary producers to feed the world. Organic farming (**OF**), while considered a costly method to introduce and maintain, relies on the use of natural substances rather than synthetic chemicals, and is commended for its beneficial impacts on soil health, biodiversity and nutritional quality (Rehman, 2024; Promi et al., 2023; Azarbad, 2022). Conversely, conventional farming (**CF**) relies on synthetic pesticides and fertilisers, which may lead to long-term environmental consequences but also enhances productivity while reducing production costs and required land use compared to OF (*ibid.*).

OF and CF are two of the most widespread and standardised agricultural methods in Europe today (European Court of Auditors, 2024). Implementing either method by the farmer greatly impacts the ability to feed a growing global population and is interdependent on market and environmental conditions. As such, farmers, policy makers, and consumers play a significant role in opting for and enabling organic or conventional agriculture methods (Rehman, 2024).

While OF generally has a lower environmental impact, it requires more land to produce the same amount of food compared to its counterpart, CF (Verdi et al., 2022). Although the environmental benefits of OF and the maintenance of soil health are crucial for global sustainability targets, the growing global population makes it challenging to rely solely on it. OF demands greater land accessibility, other than the 38% (Azarbad, 2022, 1) of the world's land surface already allocated to agriculture, which is difficult to achieve given the increasingly limited availability of land as more people inhabit the Earth (Promi et al. 2023; Verdi et al., 2022). Considering that the second Sustainable Development goal states that hunger should be ended and everyone should have access to safe, nutritious, and sufficient food by 2030, relying solely on organic food production is not feasible (UN, n.d.). Not only because of reduced land availability but also because organic food products cost more to produce and transport along the supply chain, ultimately resulting in higher consumer prices compared to conventional food options (Promi et al., 2023). Therefore, efforts are being made to enhance the efficiency and sustainability of conventional food production to provide for as many people as possible while ensuring that farming methods become more sustainable through technological and methodological innovations at the farm level (European Commission, 2023).

While consumer demand is one major driver influencing the food supply at a market level, it is also crucial to understand the farmer's perspective on choosing to farm organically or conventionally in supplying the market with food (European Commission, 2010). Previous research suggests that a farmer's decision to implement a certain farming method is influenced by a wide array of external and internal factors, including economic incentives, personal values, regulatory frameworks and environmental conditions (Anapuam & Gill, 2024; Bathfields et al., 2016; Rizzo et al., 2004). These factors, in turn, greatly impact what strategies farmers implement at the farm level to run their establishment (*ibid.*). Introducing the farmers' perspectives could provide a necessary complement to the well-established research on factors influencing consumer demand so that policymakers can develop more sound strategies in the future to meet national- and EU-level targets connected to organic and conventional farming methods.

1.1 Problem background

In the EU's farm to fork strategy, the organic target goal is that 25% of European agriculture must be organic by 2030 (EU, 2020). In the Nordic countries, various national targets, regulations, subsidies, and funding support research in the organic field to incentivise the spread of organic agriculture and consumption (Daugbjerg & Schvartzman, 2022). The Swedish government has since 2017 implemented a food strategy that seeks to promote both OF and CF (Government Offices of Sweden, 2017). Majority of agricultural land in Sweden is CF, while OF has a minority percentage of approximately 18% (Organic Sweden, 2024, 22). 18% is a good but not enough considering the Swedish national goal of 30% organic agricultural land by 2030 (The Swedish Board of Agriculture, 2018, 1). For the past six years, the organic farmland area has decreased in Sweden by approximately 2% (Organic Sweden, 2024, 22; The Swedish Board of Agriculture, 2024). A trend projection suggests that organic farmland is going to decrease further in 2025 due to lower consumer demand for organic food, resulting in several farmers to switch from OF to CF (Organic Sweden, 2024).

On the Swedish organic market, consumers can find both the EU organic logo and the privately owned national organic KRAV ("demands") logo, which has a 99% recognition rate among Swedish consumers (Johansson, 2022; KRAV, 2023). These labels enable consumers to identify food products certified according to organic standards and allow farmers to market themselves across Sweden and the EU (Johansson, 2022; European Commission, 2010). Moreover, the Swedish Board of Agriculture (2024) provides subsidies to organic farmers for adopting organic farming practices. Despite KRAV's prominent placement in the Swedish market, the rate of organic consumption has declined since its peak in 2019 (Organic Annual Report, 2023). Instead, other national brands like From Sweden and Garant, which are conventionally farmed, have gained popularity among Swedish consumers as they are cheaper and marketed as sustainable since they are locally produced (*ibid.*). This consumer trend has led to an increased number of farmers converting to conventional farming as organic farming has become less economically viable (*ibid.*).

Organic grain products are the smallest category of 3,4% products sold in grocery stores (Organic Sweden, 2025, 20). It can be argued that this is a group with growth potential or needs a growth ambition in the consumer market. Also, 20% of the Swedish grain production is for human consumption and 80% is for animal feed (Organic Sweden, 2024, 47). This could be because organic animal farmers grow their own feed foremost and use the animal manure to create a cycle of fertilisers and feed. Grain is a product that can be stored for years and therefore it has created a surplus on the market (Organic Sweden, 2024, 47). However, the organic production of grains has seemed to turn from having a surplus to a deficit in total production quantity, regarding the national demand in recent years (Organic Sweden, 2025). This could mean that better grain prices are on the horizon and could be due to farmers having switched from OF to CF. While this development could result in more favourable prices for farmers producing cereal crops, it does not align with Sweden's goal of having 30% of its agricultural land farmed according to organic standards by 2030. Gaining a better understanding the perspective of farmers producing grains on this trend in Sweden could provide national policy makers with relevant information to develop policies and incentives which will motivate farmers to align their production methods with national goals.

1.2 Problem

While the farmers' operations are heavily influenced by consumer demand and market conditions, other factors also influence which production method a farmer chooses to adopt (Daugbjerg & Schwartzman, 2022). In the end, why does a farmer choose to be organic or conventional, and why do they keep their chosen farm production? According to Anapuam and

Gill (2024) and Rizzo et al. (2024), both external and internal factors influence a farmer's strategic decision to adopt OF or CF. External factors are the certain conditions that creates the environment for a farmer to choose the production method (Anapuam & Gill, 2024). Internal factors encompass behavioural and psychological aspects of a farmer, such as intention, motivation, attitudes and expectations. The external factors create the foundation and internal factors are what attracts the desire to have either a CF or OF (*ibid.)*. While previous research considers how external and internal factors influence farmers in general to navigate towards OF or CF, there is less research available with a focus on farmers producing grains in a Swedish context. Since Swedish grain production makes up over one third of cultivated land in Sweden, cereal producers are key actors in Sweden's agricultural sector, it becomes crucial to understand what influences their choice to produce organically or conventionally.

It is pivotal for policymakers to get a clear picture of how farmers who produce grains are influenced by these external and internal factors to formulate sound strategies that aid the fulfilment of national and international environmental targets while ensuring that farmers can adopt the production methods they prefer. This study does not impose any values in which production method is better. Instead, it examines factors that influence a farmers' choice of agricultural method when cultivating grains.

1.3 Aim and research questions

The aim of this thesis was to identify which external and internal factors influence a Swedish farmer's decision to produce grains using organic or conventional production methods. By providing deeper insights into this field, future policy makers can implement strategies that are more strategically sound and take into consideration both the macro perspective of consumer demand as well as that of the farmers supplying the market with food.

The research questions are based on the theoretical framework and aid in identifying factors from a farmer's perspective.

- What are the external and internal factors involved in a Swedish farmers' decision to farm grains organically or conventionally?
- How do external and internal factors affect a Swedish farmer's choice to farm grains organically or conventionally?
- How do external and internal factors correlate in their influence on a farmer's choice of producing grains according to organic or conventional standards?

1.4 Delimitations

The theoretical framework is based on Anapuam and Gill (2024), and Rizzo et al. (2024) literature reviews from previous research in this subject of internal and external factors. Some factors that were excluded were age and gender. This delimitation was made because several studies have had inconsistent results of these factors (Anapuam and Gill, 2024). Therefore, it was unnecessary to include those factors as part of this study.

The empirical background is based on previous research in the field regarding how external and internal factors influence farmers' choice of adopting OF or CF. The delimitations of the empirical background were based on the choice of internal and external factors in the theoretical framework. Previous research not regarding those factors were excluded from this study to give this research study sufficient depth and focus.

Empirical delimitations made in this study was to focus on farmers that mainly produce grains. The specific grain species produced, and farm scale were not included in the data collection of this research as they were not defined by the theoretical framework to be part of the included external or internal factors. For data collection, semi-structured interviews were held with both conventional and organic farmers. Including farmers from both categories provided the study with a broader perspective for analysis. The study did not include a survey or a literature review since this investigative research sought a farmer's perspective through dialogue to deepen the understanding of how external and internal factors influence them.

During interviews, the participants were asked about strategies and how they manage risks and factors influencing their choice of agricultural method. Farmers strategies can give a good insight of decision-making. But further research on that specific subject of farmers strategies was chosen to not be part of the study. Moreover, we included participants who had always had the same production method as well as some who had converted during their careers. Initially this study sought to explore how external and internal factors influence the choice of conversion in addition to the farmer's original choice of production method for grain production. However, with research focused on two different topics, this posed the risk of creating superficial results for both focus areas. As such, it was decided to solely focus on the influence that external and internal factors have on a Swedish farmer's choice of production method for grain cultivation.

1.5 Outline

This abductive research follows the structure presented by Figure 1.

Figure 1. Project outline for the thesis approach and conclusions.

Chapter 1 is the introductions, which gives the readers a broad background and aim of the study. Chapter 2 contains a theoretical framework that gives the reader an understanding of what perspective the study has and its themes. Chapter 3 is the research design, also known as the method to which the reader gets a clearer picture of how the research was conducted. Chapter 4 is background empirics of the previous research of this field. Chapter 5 has the result from the semi-structured interviews structured in the form of the themes. Chapter 6 contains the discussion and connects the results with the empirical background and theoretical framework. Chapter 7 provides a conclusion of the study.

2. Theoretical framework

This chapter introduces the theoretical framework which provides the basis for conducting the research topic of this thesis. Starting with stating the phenomena at hand and unit(s) of analysis. Following this introduction, existing frameworks that are relevant in relation to the research aim and questions are explored. The chapter concludes with an adapted theoretical framework which will guide the following chapters of this thesis.

2.1 The phenomenon

According to The Swedish Board of Agriculture (2023), grain production makes up the majority of Sweden's arable land in plains region. This means that around 38% of Sweden's total arable land was dedicated to grain production. As such, Swedish production of grains makes up over one third of cultivated land in Sweden, cereal producers make up key actors in Sweden's agricultural sector (*ibid.*). Considering the negative consumption trend of organic grain products among consumers, a similar development can be seen among Swedish farmers who produce grains according to organic methods. Namely, there has been a 7% decrease in organic production of grains between 2020 and 2023, which is not in line with Sweden's national target of having 30% of its agricultural land farmed according to organic standards (The Swedish Board of Agriculture, 2023, 7). In the Swedish agricultural context, grain producers are at the intersection of major agricultural trends, including climate change adaptation, national environmental goals, and policy reform. As such, the phenomena at hand concerns how external and internal factors influence a farmers' decision to cultivate grains according to conventional or organic standards in a Swedish context. Moreover, the observation of producers converting between OF and CF for grain production is included, and how such conversion of production methods is influenced by external and internal factors. Therefore, the units of analysis for this research topic are external and internal factors in an agricultural context.

2.2 Factors affecting farmers

To understand a farmer's willingness to farm organically or conventionally, it is essential to identify the factors that influence this decision. Anapuam and Gill (2024) conducted a comprehensive review of existing theories related to such factors. Their theoretical framework, developed from 13 different studies, concludes that external and internal factors influence a farmer's ability and willingness to adapt to organic or conventional agriculture (*ibid*.). In this framework, external factors pertain to cultural, economic, environmental, and social aspects of a farmer's approach to farming methods.

These internal and external factors influence a farmer's decision to farm according to organic or conventional standards (Anapuam & Gill, 2024). According to Rizzo et al. (2024), external factors significantly impact a farmer's internal outlook on implementing innovations, novel farming methods, and overall risk attitude. Ultimately, for a farmer to become willing to farm organically, there needs to be external conditions such as advice support, economic incentives, education, and network structure to support that farming approach, as illustrated in Figure 2, inspired by Anapuam and Gill (2024, 10).

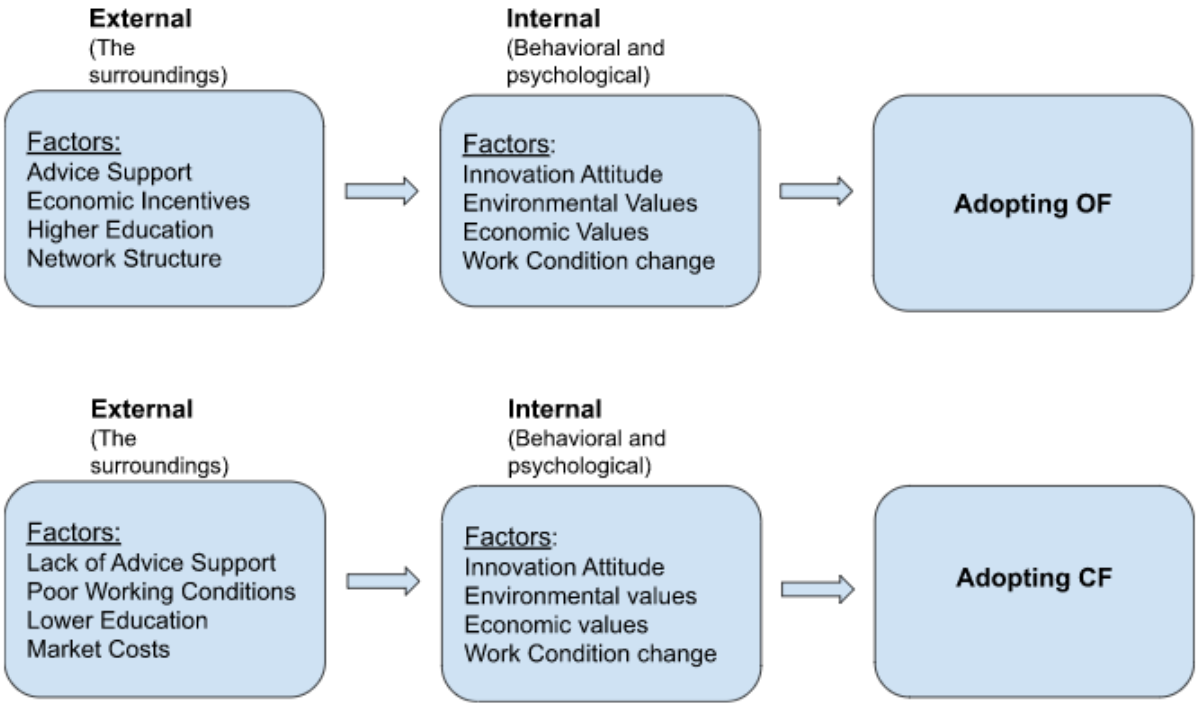

Figure 2. The interplay between external and internal factors that influence the strategic decision-making for farmers to adopt organic or conventional farming methods (adapted with modifications from Anupam & Gill, 2024, 10).

Figure 2 is demonstrating the external and internal factors of what affects a farmer to adopt OF or CF. The factors included were based on Anapuam and Gill (2024), and Rizzo et al. (2024) literature review in this specific subject. The external factors are the surroundings; *Advice Support, Economic Incentives, Education, Network Structure, Working Conditions and Market Costs.* Rizzo et al. (2024) explains that lack of advice support, lower education, adverse working conditions and market costs is a hindrance from the decision of adopting OF from CF. Correspondingly, the strategic decision to adopt OF was supported by the factors of advice support, economic incentives, higher education and network structure. The internal factors in Figure 2 for adopting OF or not are the same factors: *Innovation attitude, Environmental values, Economic values and Work Conditions change* (*ibid.*).

2.3 Farmers' decision-making process

A farmer has a decision-making process when adopting OF or CF and it is relevant for this study's discussion. It can be simplified that external factors affect a farmer's internal willingness and choice of adopting OF or CF. But a decision-making process is often complexed with a variety of strategies. Bathfields et al. (2016) explains that farmers face uncertainties to a certain degree and need to combat these uncertainties with shorter and, or long-term strategies. An uncertainty can be a risk that a factor brings. A long-term strategy can be the adaptation of OF or CF. What exact choice of strategy is irrelevant to this study, but rather understand that strategies are part of influencing a farmer's choice of adopting OF or CF. Figure 3 is inspired by Bathfields et al. (2016) with minor modifications. It illustrates how factors affect a farmer's decision-making regarding adopting a certain agricultural production method.

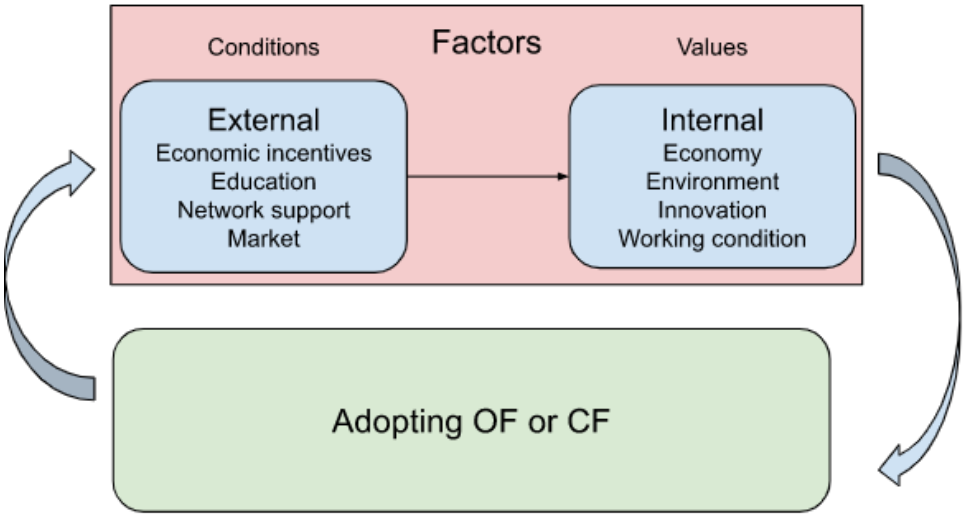

Figure 3. How factors affect farmers' decision-making and whether they affect the adoption of organic agriculture or not.

Figure 3 illustrates the decision-making process of a farmer to adopt OF or CF. External factors provide the conditions for a farm to either adopt innovations or maintain current farming activities. These external factors, in turn, influence the farmer's psychological behaviour and values regarding the adoption of organic or conventional agriculture. But a farmer might use strategies that change their external factors, in return might change the internal factors and the outcome of adopting OF or CF.

2.4 Conceptual framework

The conceptual framework is focusing on the concept of external factors *Advice Support and Network, Economic Incentives, Education* and *Market* and the internal factors *Innovation values, Environmental values, Economic values and Work Conditions values.* Hence, this study's aim is to understand how factors influence a farmer's choice. Figures 2 and 3 are both used in chapter 6 for the discussion to clarify the outcome from the result and how it relates to the theoretical framework.

3. Method

This chapter outlines the methodological approach used in this study, including the research design, the processes of reviewing the literature, the choice of units to be analysed, data collection, ethical considerations, the analysis of data, and limitations of the study.

3.1 Research design

This project investigated the complex phenomena surrounding the external and internal factors which influence a farmer to employ organic- or conventional farming methods related to food production. The case study surrounding the phenomenon pertains to Swedish farmers that produce grain and their decision to implement organic or conventional production methods.

An abductive approach using a mixed method for collecting data were chosen for this project. While previous research has investigated factors influencing a farmer's choice to adopt OF or CF, this topic is quite under researched in a Swedish context looking at specifically farmers producing grain. For this case study, a mixed-methods approach did, together with the established theoretical framework, provide the basis for this project. Considering the investigative nature of the research topic and aims at hand, a qualitative method was chosen for this thesis to obtain results. Qualitative research intends to understand phenomena from the perspective of its participants. Factors like human behaviour, experiences, and interactions were analysed, resulting in non-numerical data from which conclusions were drawn.

As the practice of farmers producing grain evolves and faces increasing pressures along the supply chain related to economic, social and environmental factors, there is currently a lack of a comprehensive framework that explains how farmers make the decision to farm organically or conventionally or convert between these methods. While existing theoretical frameworks may not fully account for the emerging patterns in the qualitative data, the abductive research design could bring forth novel insights in this context and provide relevant suggestions for future research.

For the project at hand, the theoretical frameworks developed by Anupam and Gill (2024), Rizzo et al. (2024) and Bathfields et al. (2016) formed the foundation for this research design and interview guide (Appendix 1) to explore the established research questions outlined in the introduction chapter. The data gathered from the performed semi-structured interviews were analysed in relation to the outlined theoretical framework to provide relevant conclusions and suggestions for further research.

3.2 Case study

A case study with external and internal factors as units of analysis in relation to the decision making of Swedish farmers who produce grain to opt for organic or conventional farming practices.

3.2.1 Participants

This project used a mixed sampling approach to identify and include interview participants, namely purposive sampling and snowball sampling (Widerberg, 2002). Purposive sampling was initially used to find the first subjects who fulfilled the inclusion criteria in relation to the research question at hand (Rautalinko, 2023), as can be seen in Table 1. This was achieved by contacting Crop Sales Representatives who work closely with farmers who are members of Lantmännen, a farm cooperative organisation that is owned by 17000 Swedish farmers, who produce according to both conventional and organic farming methods. Moreover, an

advertisement was sent to KRAV, the organisation behind the Swedish organic label, asking organic farmers to participate as interviewees in this study. The snowball sampling method was then introduced by asking the initial interviewees to recommend relevant candidates to participate in the study in relation to the inclusion criteria. This combination of purposive and snowball sampling methods ensured that the participants selected for the study were diverse in experiences and perspectives, contributing to a rich dataset (Widerberg, 2002).

Table 1. Inclusion and exclusion criteria for sampling interview participants

Inclusion criteria	**Exclusion criteria**
Farmers based in Sweden	Farmers based in a country other than Sweden
Farmers with grains as the main crop of their operations	Farmers who do not include any grain production in their operations
Farmers with grains as secondary crops	Retired farmers
Farmers following organic or conventional production methods for their grain production	Farmers producing grains according to production methods other than organic or conventional standards
Farmers who have converted their farming operations from either organic to conventional methods or vice versa.	

The inclusion and exclusion criteria were formulated based on the research question, theoretical framework, as well as the empirical background chapter of this project (Rautalinko, 2023). In the end, nine participants were included in this research, four of them farming grains according to conventional standards, and five with organic production methods. Two respondents made the switch from conventional to organic production methods and one participant switched from organic to conventional production of grains. The dates of performing each interview, sending the analysis of results to each participant and receiving feedback can be seen in Table 3.

3.2.2 Semi-structured interviews

Interviews are a vital source of data collection when researching a case study (Gill et al. 2008). When performing interviews, there are three main types of methods that a qualitative researcher can opt to implement, namely structured interviews, semi-structured interviews or unstructured interviews. Choosing the most suitable approach depends on the chosen research topic, the case study and phenomena at hand, what the research gaps are, and what the aims of the project are (*ibid.*). Table 2 provides a summary of the intentions behind each interview method and in what research contexts they are relevant to implement.

Table 2. Explanation of various interview methods for qualitative research (Gill et al., 2008 with modifications)

Interview method	How to perform	Context of use
Structured	Like a questionnaire performed face-to-face with no deviation from set questions.	When clarification of specific topics is required
Semi-structured	Guided by key themes and questions, allowing for deviation to explore emerging ideas.	Appropriate when a topic is under-researched or when gaining new perspectives is important.
Structured	Informal and conversational - lacks structure or theoretical framework to guide the interview.	When little is known about a topic, or a foundational understanding is needed.

Considering the under-researched nature of how external and internal factors influence a Swedish farmer's decision to implement organic- or conventional farming practices, a semi-structured approach to conducting interviews was chosen. Moreover, due to the investigative quality of the identified research question, the semi-structured interview approach was deemed most appropriate.

3.2.3 Formulating the interview guide

After selecting the semi-structured interview method, an interview guide was written to provide as a guide for each interview to ensure that relevant data was obtained. The structure of the semi-structured interview is divided in three parts: *Open-ended Questions, Revisiting Questions* and *Theoretical Questions* (Galleta et al., 2012). Figure 4 provides a visual representation of these parts and what types of questions are included in each phase of the interview.

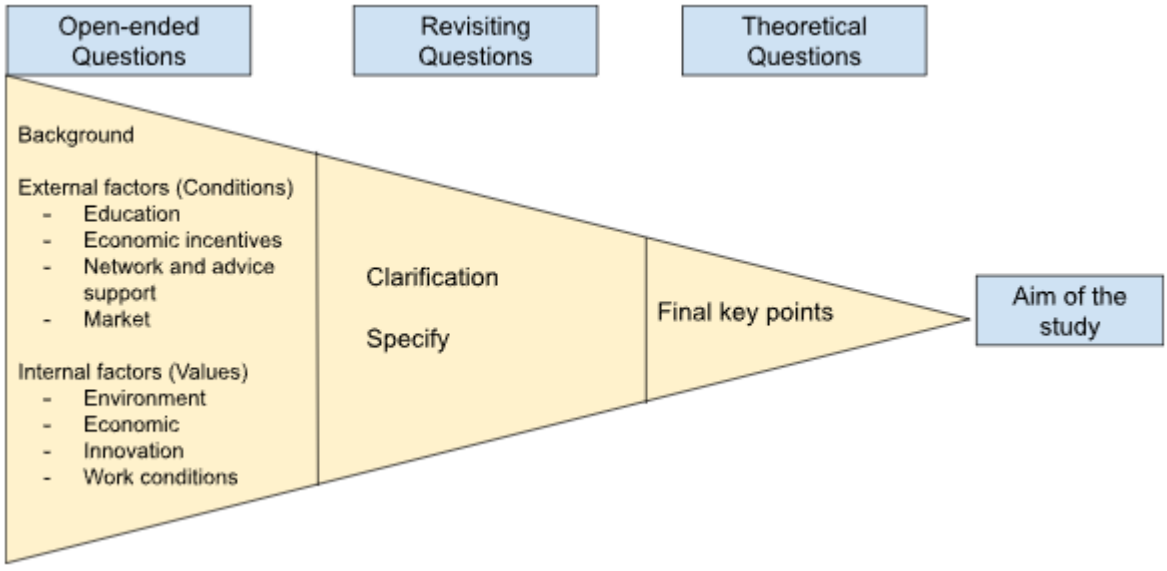

Figure 4. The structure of the interview guide (Adopted by Galleta, 2012 with modifications).

Figure 4 demonstrates the first part, *Open-ended Questions*, that stretches throughout the interview and provides the participant with the opportunity to share information about themselves, their farming operations, whether they farm grains according to conventional or organic standards, and whether they have ever switched between the two agricultural methods. Next, interviewees get to answer questions related to external factors, or the conditions related

to previous education, economic subsidies, the market or social network which have influenced their choice of production method for grain production. Thereafter, internal factors are explored in connection to the participants' values connected to their economy, the environment and long-term goals in relation to their chosen production methods. Lastly, questions throughout the interview probe at what strategies farmers have used for their agricultural business and how they relate to farming according to organic or conventional standards (Galletta, 2012).

These open-ended questions are broad to allow the participants to freely share and expand on how things currently are, the "What" regarding their grain production operations (Galletta, 2012). The *Revisiting Questions* are asked to gain clarification and further information about the "Why" behind the answers to the open-ended questions shared by the farmer. The final part of the interview is connected to *Theoretical Questions,* which explore the connection between the information obtained by the interviewee and the factors they relate to, provided by the included theoretical frameworks. The questions asked do not mention the external- and internal factors or theories specifically, but are rather asked in a way to elicit data that could support or challenge existing theoretical models, aligning with the abductive approach of generating new insights based on interviewee responses (*ibid.,* 51-52)

Recognising themes before the interview is essential, as the themes can contribute to questions (Widerberg, 2002). The themes are recognised in Figure 5 and are based on the theoretical framework. The questions are based on these themes. Semi-structured interview questions are mixed with both open-ended and theoretical questions (Galletta, 2012, 45). The themes start with open-ended questions, revisiting questions and end with theoretical questions.

The interview questions must reflect the study's aim but not be too direct (Galletta, 2012, 45; Rautalinko, 2023, 64-65). There is a balance between being too abstract and too concrete with the interview questions. The interview and questions should feel informal, as it could make it easier for the participant to answer and tell their story (*ibid.*).

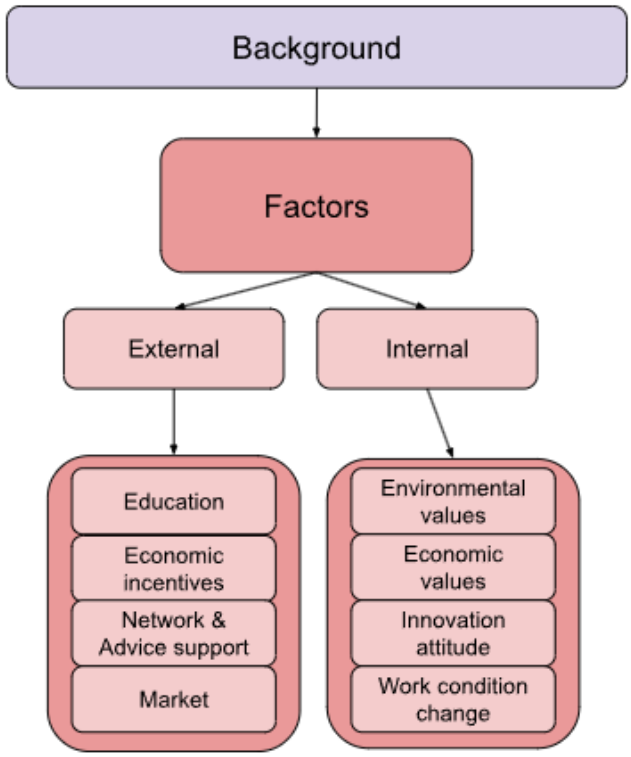

Figure 5. The themes for the interview.

Figure 5 demonstrates the themes for the interview guide. The themes are chosen based on the conceptual framework. The first theme is background, and it includes broader questions to get a wholesome perspective of the farmers' story. The background theme allows the farmer to tell their story and perspective. Then the two main themes from the theoretical framework are *Factors,* but the two are divided into smaller sub-themes: *External* and *Internal.* The external factors are *Education, Economic Incentives, Network and Advice support, Market.* The internal factors are: *Environmental values, Economic values, Innovation values, Working Conditions values.* The internal factors are values and can be harder to ask directly about since participants might answer as they think the interviewer wants to hear. Therefore, internal factors must be picked up during the interview or asked about abstractly. The interview guide and questions are in the Appendix 1.

3.3 Data collection

Initial contact were made through phone calls during which we introduced the topic and purpose of our study. Participants could choose to accept or decline the interview invitation and were informed that they could end their participation or abstain from answering questions at any point during the interview (Bell & Waters, 2016; Galleta, 2012). Following this, participants received an email containing an introduction of both researchers, information about our studies, and the main themes to be discussed during the interview. This ensured that participants understood the purpose of the study and could provide their informed consent (*ibid.*). The email-template can be seen in Appendix 2**.** Since one of the researchers was employed at Lantmännen during the thesis period, the email included a paragraph clarifying that the study was solely related to their role as a student and not to Lantmännen. The interviews were conducted online through Teams, and with the participants consent, we used the recording and transcription functions of the Teams program, which allowed us to fully focus on each interview.

3.4 Data analysis

After each interview, a transcript and a summary of the main results were produced and sent to each participant for validation (Widerberg, 2002). This step ensured that our interpretation of each interview aligned with the participant's expectations. With each conducted interview fresh in mind, the transcripts were analysed using thematic coding. In this method, codes are connected to themes and applied to the transcripts to identify and sort relevant sections from each interview (*ibid*.). The codes for this study were connected to the external and internal factors identified as units of analysis, which also structured the interview guide based on the established theoretical framework. To conduct thematic analysis, the software Atlas.ti was used, a well-known application for thematic coding and analysing interview results (Hwang, 2008). Through the software, open coding was initially applied to come up with appropriate codes corresponding to relevant sections in the transcripts and the aims of the study (Klapwijk, 2011). The formulation of these codes changed throughout the process of collecting and analysing the results (*ibid*.). Following this, axial coding was implemented to determine whether the selected codes sufficiently covered the selected data, and where main codes were differentiated from sub-codes (*ibid*.). Finally, selective coding was applied to identify connections between the codes, and the themes they represented, and the research questions and aims of this study (*ibid*.). The main codes corresponded with the external and internal factors identified through the included conceptual framework, whereas the sub-codes were formulated through open- and axial coding.

For the discussion chapter, it is crucial to analyse not only in relation to the theoretical framework and identified themes but also consider previous research through empirical

findings (Bell & Waters, 2016; Galleta, 2012; Widerberg, 2002). Widerberg (2002) argues that including empirical findings can help identify additional perspectives or new themes when analysed together with interview results. Moreover, the abductive approach mitigates this risk further by allowing researchers to move freely between theory, empirical background and analysis.

3.5 Ethical considerations

Ethical considerations are principles guiding researchers to conduct their studies responsibly and respectfully in relation to their topic at hand as well as the included interview participants (Bell & Waters, 2016; Galleta, 2012). Informed consent is a crucial factor when conducting qualitative and semi-structured research (Bell & Waters, 2016). This was accomplished by ensuring that the interview participants understood the purpose of the project before accepting their participation in the study. The interviewees were also informed of their rights to end their participation and choice to abstain from answering any questions during the interview (*ibid.*).

According to Bell and Waters (2016), When asking a participant to be interviewed, they must understand the purpose of the project beforehand, so they have time to process the meaning of participating (Bell & Waters, 2016, 190). Before the interview started, the participants were informed again about the study's purpose and were thanked for participating (Galletta, 2012, 46). The participants were informed of their rights to end or not answer questions whenever or withdraw participations (*ibid.*). All the participants were asked if it was okay to be videotaped and all said it was okay. After the interview, the video recording was dissected and a document with a summary transcript of the interview result was given to each participant, see Table 3. This choice was made because of ethical considerations and validation. The participants then got a second chance to change their answers, withdraw or complement the result in any way.

3.6 Validity and reliability

Individual biases constitute another significant risk when analysing interview results (Tracy, 2020). For example, through subjectivity in which a researcher subconsciously interprets data in a way that align with their own beliefs or confirmation bias, where a researcher places large focus on data that supports their hypothesis or preconceived notions while downplaying data that contradicts them (*ibid.*). By including multiple researchers, the risk for individual biases is reduced as it allows for diverse perspectives which can identify and challenge existing biases and provide a more balanced analysis by discussing, delivering more nuanced interpretations (*ibid.*; Evans, 1989). This ensures a higher degree of triangulation and trustworthiness in relation to identifying novel relationships and variables without losing diverse insights from gathered data (Bell & Waters, 2016).

Table 3. The participants and the transcripts validation

Participant	Production method	Date of the interview	Transcript sent	Transcript validated
A	Organic	19th of March	10th of April	
B	Organic	9th of April	2nd of May	2nd of May
C	Conventional	25th of April	2nd of May	2nd of May
D	Organic	1st of April	1st of April	
E	Organic	28th of March	10th of May	
F	Conventional	18th of March	10th of May	
G	Organic	29th of April	12th of May	
H	Conventional	29th of April	12th of May	
I	Conventional	5th of May	12th of May	12th of May

Table 3 includes the participants, their production methods, when the transcript summary of the interview was sent back to them and what date they validated that they either received or wanted changes in the transcript. Only three out teen participants validated the transcript.

4. Empirical background

This chapter provides a comprehensive overview for understanding the factors that influence Swedish farmers' decision-making process to adopt organic or conventional farming practices. It explores previous research in this area of internal and external factors.

Factors are often context-specific, making it harder to generalise conclusions of why farmers choose OF or CF (Home et al., 2019). The previous research is a collection of studies from farmers around the world that has shared what factors influence their choice of adopting OF or CF. This research subject is under-researched in a Swedish context, therefore the importance of this study. A generalisation of the previous research is made and will be a base to understand the result form this study's interviews. Then it is compared with the result from this study in the discussion chapter.

4.1 External factors

External factors are risks or conditions that affect a farmer's decision-making process (Anupam & Gill, 2024). This chapter explores previous research on farmers' education, economic initiatives, their network and advice support, and the market.

4.1.1 Market conditions

The market has a significant influence on farmers' willingness to adopt OF or not (Azam & Shaheen, 2019). A farm is a business and is therefore affected by the market of supply and demand. The conventional Swedish farmers that are producing grains are part of the international stock market (Lantmännen, n.d.a). While the Swedish organic farmers are more part of a domestic market (Lantmännen, 2023). Most of the organic grains produced in Sweden are used as animal feed for the Swedish organic animals. Some organic grains are exported but is mostly sold within the country (*ibid.*). In a study from Leduc et al. (2023), some organic farmers in Sweden argue that they have a shorter supply chain. An organic farmer doesn't necessarily have shorter supply chain. But an organic farmer is often more self-sufficient with combining animals with own grown animal feed or just creating smaller local cycles (The Swedish board of Agriculture, 2025). This means that organic farmers are not as impacted by world events compared with conventional farmers that buys imported fertilisers or agrichemicals (*ibid.*).

4.1.2 Economic incentives

Economic incentives, such as governmental subsidies, are a way of market control to try to help production or products. A liberal market perspective is to let the market be free from control, and the government should not overuse subsidies. Chmielinski et al. (2019) studied Polish farmers to determine what influenced their decision to adopt OF. Economic incentives such as environmental subsidies were just a minor factor in the farmers' willingness to produce organically. Instead, it was explained that governmental support should be used to create legislative relief, help sales channels, have an organised quality control system, and promote organic food and societal values (*ibid.*). However, Xie's et al. (2015) study with Chinese farmers promote that the government should strengthen policy support, subsidies, reduce certifications and reduce agricultural taxes if increasing organic production is the goal. Both studies recommended governmental support, but differed in the result of increasing subsides as a solution for OF.

4.1.3 Network and advice support

Neighbouring farmers and other like-minded individuals can be influential in a farmer's choice of adopting new production methods (Bakker et al., 2021). A network can give advice, support and approval of the chosen agricultural method (Bakker et al., 2021; Home et al., 2019). It is part of a farmer's knowledge gathering. Either through other farmers or advice support of experts. Having a social network of other organic farmers is an important factor (*ibid*.). In Sweden there are a few organisations for both organic and conventional farmers that helps them in advising or sharing new knowledge or lobbying their agenda. The Federation of Swedish farmers is a business and interest organisation with 120 000 members with a goal of promoting farmers businesses to grow and be competitive (The Federation of Swedish farmers, 2025). LRF is not politically bound organisation but are active in the political forum and can help farmers to raise their interests.

Other network organisations for Swedish farmers are the Hushållningssällskapet that works as a farmers' network that consults with knowledge and education (Hushållningssällskapet, n.d.). It is an old Swedish farmer organisation from the year 1791. They are an independent organisation that gives farmers education through different activities, crop cultivation advisory and has a goal of developing the agricultural, food and forestry industry (*ibid.*). Lantmännen organisation started as a co-operative for farmers that is producing grains and wanted to create a more balance of power in the Swedish market (Lantmännen, n.d.b). Today Lantmännen is a corporate group that is buying and selling grains in Sweden. They also have crop cultivation advisory service, writing articles and reports for farmers to gather knowledge. Swedish Organic Farmer Association is a farmer's organisation that is focused only on the organic farmers and members interests (Swedish Organic Farmer Association, n.d.b). They have a newspaper, write market reports and have a goal in promoting the organic market. These different types of agricultural organisations are part of a farmers' network and advice support. It can be a social network, advocacy, or it can be a network for business or knowledge gathering.

4.1.4 Education

Rizzo et al. (2024) emphasise the importance of education as a significant factor in farmers' willingness to adopt organic or conventional practices; the higher the education level, the greater the willingness to innovate farming practices towards sustainable methods, such as OF. Another study's result from Panneerselyam et al. (2012), indicated that organic farmers had lower education than conventional farmers. But didn't find that the education was an influence in adopting either CF or OF. Neither did the study by Azam and Shaheen (2019), the education level varied by farmers from the respective organic and conventional sector and weren't seen as an influential factor of adopting OF. The previous research about farmers' education and how it affects their decisions-making process seems to be debatable. Maybe it is a context-specific factor or maybe it doesn't influence a farmer's production method choice.

4.2 Internal factors

Social situation, values, attitudes, and norms held in the farming family or community have a definite influence on adopting or not adopting OF (Home et al., 2019). Health, safety and environmental issues are some of the internal factors that make a farmer more prone towards OF, while economic values play a lesser role (*ibid.*). Internal factors are values from the farmers and are affecting the decision-making process. This chapter explores previous research on farmers' economic, environmental, innovation and working condition values.

4.2.1 Economic values

Economic values have often been the foremost explanation for farmers' decision-making regarding production methods (Leduc et al., 2023). Conventional farmers have a higher tendency to value economic interests. Organic farmers also have economic interests but might have higher social values. Social values such as societal health and societal security. However, a farmer's values can influence a decision that reduces economic benefits (*ibid.*). In a study by Singh & Kaur (2024), organic farmers would agree that they have lower economic benefits compared to conventional farmers. This indicated that organic farmers have lower economic values. However, in the same study, the farmers believed that they had lower production costs, due to lesser inputs in the form of agrichemicals (*ibid.*).

Often farmers will be more positive towards adapting organic production methods if they expect a higher income from it (Xie et al., 2015). It can be costly to change a current agricultural system (Home et al., 2019). If a conventional farmer wants to change from a CF to OF, then they might need to rebuild, have a transition period, apply for certifications and so forth. This can become a hindrance for the farm and be a risk for the farmer's willingness to adopt OF (*ibid*.).

4.2.2 Environmental values

There have been similar studies investigating organic and conventional farmers' environmental and social values (Home et al., 2019). The conclusion has been that organic farmers have stronger ideological environmental values compared to conventional farmers. A farmer with high environmental concerns is more willing to adopt OF and less willing to convert to CF (*ibid.*). A study by Xie et al. (2015) confirms that environmental values are a significant factor for farmers to adopt organic farming practices. Rizzo et al. (2024) explain that economic growth can be considered secondary if environmental values are of higher priority for the farmer. The environmental values and the economic values have a correlation in the previous research. A higher economic value means a lower environmental value and vice versa.

Conventional farmers see the risk of having a pest or weed outbreak because of the lesser use of pesticides and herbicides, which makes the farmer less willing to adopt OF (Home et al., 2019). The motivation for an organic farmer to reduce their chemical inputs relates to their environmental values and health concerns (Bakker et al., 2021). Farmers in Bakker's et al. (2021) study thought that not using chemical inputs were risky and would therefore not do it. But a farmer who had a higher environmental concern would oversee the risks and reduce their use of pesticides (*ibid.*). Here is a difference between conventional and environmental farmers and their attitude towards agrichemicals. Where the conventional farmer put the value of risks higher and the safety of the crop production yields. While an organic farmer puts the environment and health concerns as higher values.

4.2.3 Working condition values

Organic farming tends to increase the labour (Xie et al., 2015). Therefore, the farms that have access to workers or help with the labour can more easily adapt to organic production (*ibid.*). Due to the thought of intensified labour, a conventional farmer might be more cautious about wanting to adopt organic farming (Home et al., 2019). The study by Davidova et al. (2022) found that conventional farmers with a larger workload were unsatisfied compared with a farmer with less workload and spare time. However, organic farmers that had higher workload were overall more satisfied compared with conventional farmers. This was probably due to organic farmers feeling a higher self-esteem from being less dependent on external inputs. Also, more labour often means increased costs (*ibid.*). If the economic values are high for a farmer, then the working load might be an influence on the decision-making process.

Health concerns, such as working with chemicals, have been a factor for adopting organic farming (Singh & Kaur, 2024; Tsai, 2021). In the study by Tsai´s (2021), farmers who adopted OF were often older and that could have been a factor for why they were more health concerned. Health values are social values and are part of the working condition values for a farmer, since it regards the work with chemicals. More research in this subject could be considered for further research projects.

4.2.4 Innovation values

There are several studies about factors of farmers' willingness to innovate. Innovation is influenced by different types of factors and could be part of further research itself. Innovations are somewhat a risk-taking that hopefully will generate capital for a business. Therefore, several studies claim that risk-taking farmers tend to have a higher willingness towards adapting organic agriculture compared to risk-averse farmers. (Xie et al., 2015; Home et al., 2019; Azam & Shaheen, 2019). There can be a diversity of risks for a farmer's production, if it is anticipated risks or immediate risks that demand responsive action.

Capital resources are a factor that influences a farmer to innovate new strategies (Fuetsch, 2022). A farmer with fewer financial resources may be less risk-taking. If a farmer is facing an immediate risk, they will have more short-term solutions and may not have long-term innovative solutions (*ibid.*). Farmers are more likely to opt for sustainable innovations related to their farming practices if they align with their economic interests, such as organic farming or implementing innovative technology in either conventional or organic farming contexts (Rizzo et al., 2024). Economic values and innovation values seem to have a correlation between each other. Diversifying a farm's production can be part of a strategy (Khanal et al., 2019). Diversification strategy can be an activity which adds income or value to an already productive farm. It can be seen as a risk-avoidance strategy to deepen and broaden the farm's productivity in different directions, instead of having one main production or farm activity. It can also be part of expanding the presence in the market with more products and services (*ibid.*).

Being more open-minded towards adopting innovation can be influenced by age (Payen's et. al., 2022). The younger a farmer is, the more willing and prone they are to adopt a new farming strategy because they tend to be more exposed to new technology and knowledge. A younger farmer might have long-term goals and envision compared with an older farmer that might be more stuck in their traditional ways (*ibid*.). However, a literature study by Anapuam and Gill (2024) explains that age wasn't a factor for influencing a farmers decision-making process of adopting CF or OF. Neither did Tsai's (2021) study, where the older farmers were more likely to adopt organic farming. In fact, older age was a significant influence on adopting organic farming (*ibid.*).

5. Results

This chapter introduces the results gained through interviews with participants. The structure follows the main themes related to external and internal factors, as can be seen in the theoretical framework. The results are included with the purpose of providing insights in relation to the established research question of this study. The results will then be analysed in the following Discussions chapter.

5.1 External factors

Based on the previously outlined theoretical framework, the identified themes in the respondents' answers were connected to external factors influencing a farmer's decision to farm grains according to organic- or conventional standards. Namely, education, economic incentives, network and advice support, and market conditions. The results for each theme are introduced accordingly (Table 4 and Table 5).

Table 4. Summary of external factors influence on production methods regarding the organic farmers.

Participant	**A**	**B**	**D**	**E**	**G**
Production method	Converted from CF to OF	Organic production of grains	Organic beef and grain production	Converted from CF to OF	Converted from CF to OF
Education	M.SC. Agricultural Engineering	M.SC. Agronomist in Business & National Economics	No formal education	No formal education	No formal education
Network and advisory support	Not an influence	Not an influence	Not an influence	Not an influence	Not an influence
Economic Incentives	Not an influence	Not an influence	Not an influence. But positive for subsidies	Not an influence	Not an influence. But positive for subsidies
Market conditions	Significant influence	Significant influence	Some influence	No influence	Significant influence

Table 4 showcases the summary of the interview result with the organic farmers. Two out of five farmers started with OF while three out of five converted from CF to OF. Two farmers had an agricultural education background, and the others did not have a formal education. None of the participants felt that network and advisory support were influential in their choice of OF, but felt it was still important. Neither did the organic farmers feel that economic subsidies were influential. But two farmers thought that organic ley farming would benefit from subsidies and were more positive for governmental subsidies. All organic farmers except two thought that the market had a significant influence on their choice of adopting OF. Participant D thought that

the market just had some influence, while participant E didn't think that the market had any influence at all in their choice.

Table 5. Summary of external factors influence on production methods regarding the conventional farmers.

Participant	**C**	**F**	**H**	**I**
Production method	Conventional production of eggs and grains	Conventional production of grains	Conventional production of grains	Converted from OF to CF
Education	No formal education	M.SC. Agronomist	No formal education	M.SC. Agricultural Technologist
Network and advisory support	Not an influence	Not an influence.	Not much of an influence	Not an influence.
Economic Incentives	Not an influence	Not an influence	Not an influence	Not an influence
Market conditions	Significant influence	Significant influence	Significant influence	No influence

Table 5 showcases the summary of the interview result with the conventional farmers. Three out of four farmers started with CF and only one of the farmers converted from OF to CF. Two participants had no formal education, while two had formal education in agriculture. None of the participants felt that network and advisory support were influential in their choice of CF. Neither did economic incentives defined as subsidies influence the farmers' decision of CF. However, most farmers agreed that the market had a significant influence on their choice of production method. Participant I was the only one who didn't have market conditions as an external factor as an influential factor for adopting CF.

5.1.1 Education

Among the included respondents, four out of ten had previous education connected to farming, ranging from Agricultural Engineering to Agronomist and Business Administration, Agricultural Technologist. For those six without formal education, previous experience and deep interest with food production guided their decision to enter the organic or conventional agricultural sector. Previous experiences were often through growing up on a farm and having family in agricultural production. Tables 6 and 7 contain quotes from the farmers regarding their education and how they gain new knowledge.

Table 6. How the level of education influenced participants' outlook on agriculture.

Quote	Insight	Participant
"*My education has allowed me to have the courage to try out different agricultural methods.*"	Participant transitioned from conventional to organic standards in 2002, crediting his education as a contributing factor in that shift.	A - Organic
"*I do not have prior educational experience, I just thought it probably would not be too hard to give it a go.*"	Participant entered organic dairy farming and grain production without previous experience himself.	D - Organic

Table 6 contains quotes from two organic farmers. Participants A has a formal education and felt that it has helped in wanting to try new methods. Participant E doesn't have a formal agricultural education but doesn't see it as a hindrance. Whether organic or conventional, all participants voiced the importance of keeping up with news in the agricultural sector to perform better in one's chosen agricultural method. The channels most mentioned for knowledge access were reading industry newspapers such as ATL, Greppa Näringen, Lantbruks Press etc, participating in short courses and workshops, and finally visiting other farmers and engaging through various network forums, some of which are subsidised by the EU (Participant E).

Table 7. How respondents gain knowledge regarding their chosen production method.

Quotation	Insight	Participant
"*I implement practices to improve productivity based on proven, fact-based and reliable methods.*"	Respondent highlighted that he relies on facts and research through agricultural journals and articles before implementing production methods on his farm.	F - Conventional
"*I sometimes join short-lasting courses, like those that last a day. But making use of my network or reading agricultural newspapers also help to gain knowledge.*"	Participant explained that he joins short courses connected to his agricultural production as a way to gain knowledge and expand his network. A routine which interviewee E shares.	E - Organic

Table 7 contains quotes of how farmers gain knowledge. Participant F has a formal education and clarifies that they are fact-based when gathering new knowledge. Participant D has no formal agricultural education, but does gain knowledge through smaller courses, reading or through their network.

5.1.2 Network and advice support

Network and advisory support can be a way of gaining knowledge. It can also be a form of social support system. Making use of a farmer's social network and access to advisory support, such as crop consultants, is something all respondents are involved with in various forms. For most, their network plays a contributing role in navigating their chosen production methods. Moreover, intergenerational knowledge transfer within some participants' families also plays an influential role in planning the succession of the agricultural business and which production

method to continue with. Table 8 indicates through quotes from the farmers that a network system is important.

Table 8. How the participants make use of their network and advisory support in relation to their chosen production methods.

Quotation	Insight	Participant
"*When it does not work out within the family to manage things, we either collaborate with other farmers or include seasonal hires during harvest season.*"	The respondent shared that collaborating closely with other farmers provides moral and practical support during seasons when labour is intense and external hires are needed. Participants C, E, and F voiced similar opinions.	B - Organic
"*There is no other industry which is so open about sharing knowledge amongst each other.*"	The participant explained that being a part of a network of organic farmers who openly share their methods and emotions has had a high influence in his choice of farming organically.	D - Organic
"*These social networks allow me to meet other organic farmers from all over the country. (...) but it does not impact my choice of becoming an organic farmer. For me this choice has always been obvious.*"	Interviewee shared that despite valuing the connections made through national farm visits and events, it does not define her choice farm organically.	E - Organic
"*It is critical to have advisory support in relation to which inputs to use on my farm and when is the best time to sell my crops.*"	The participant explained the important role advisory support plays in relation to managing his farm.	F - Conventional

Table 8 describes the importance of having a network. Participant B explains that the use of other seasonal workers during the harvest helps the farm. Participant E and D talks about how networking can help in meeting and sharing knowledge with other farmers. Participant F clarifies the importance of advisory support for CF production.

5.1.3 Economic incentives

Economic incentives, in the form of subsidies are something all participants receive for their grain production, regardless of following organic or conventional farming practices. Several participants emphasized that while subsidies are helpful to some extent, they did not play a primary role in their choice of farming method. Some participants acknowledged that organic farmers have access to a larger availability of economic subsidies compared to conventional farmers due to the higher input costs, labour demands, and an assumed more sustainable impact on the environment. Table 9 includes quotes from the participants on how economic subsidies have influenced their choice of CF or OF.

Table 9. How economic subsidies influence participants' choice of production method.

Quotation	Insight	Participant
"*The organic subsidies have not influenced my choice of production method. It may have helped my business but has not impacted my choices. It is rather the entirety of the economic balance sheet that influences my choice of agricultural method.*"	The respondent explains that his decision to farm organically was ultimately based on broader financial reasoning. A sentiment shared by interviewees B, C, and F.	A - Organic
"*I believe the importance of economic subsidies are higher for farmers looking to convert to organic farming since they can apply for more grants than conventional farmers. (...) but it would not be a deciding factor for me to want to convert my farming to organic standards*"	The participant reflected on how the abundant availability of subsidies for organic farmers could motivate conventional farmers to transition their production methods, but not for him.	C - Conventional
"*The subsidies for organic production are higher to some extent (...) this can definitely make the choice to continue organic production easier, but not the deciding factor.*"	Respondents shared that the organic subsidies facilitate the choice to remain organic while not being the only factor considered in that decision.	B - Organic

Table 9 indicates that economic subsidies have not been an influential factor in deciding an organic or conventional production method. Participant B points out that economic subsidies can make the choice easier to have an organic farm but was not an influential factor. Participant C thought that economic subsidies might have a higher value for organic farmers, rather than conventional farmers. Some participants shared that they would prefer it if economic subsidies in the future would not play an influencing role in a farmer's decision to produce according to organic or conventional standards, see the citations in Table 10.

Table 10. The future desire of some participants in relation to the role subsidies play.

Quotation	Statement	Participant
"*My personal opinion is that the farming profession should not be based on needing subsidies. Instead, it should be market demand that should impact the value of a product. It should be clear what a product costs and what it is worth.*"	Participant expressed a desire for a future where subsidies are no longer necessary, arguing that profitability should be driven by market demands instead of government support. An opinion shared by respondent C.	B - Organic

Table 10 is a statement from the organic participant B. The participant has a former education in Business and National Economics. Their opinion is that there shouldn't be a need for subsidies, instead the market should control a product's value.

5.1.4 Market conditions

Market conditions emerged as a significant external factor impacting the participants' decision to implement organic or conventional standards in their grain production. Everyone except two respondents agreed that profitability and demand shape their choice of production method.

Some participants added that high costs and risks involved with switching production methods makes the thought of conversion unappealing. Table 11 indicates that the market conditions played a significant role for both organic and conventional farmers.

Table 11. How market conditions influence participants' choice of production method.

Quote	Insight	Participant
"*If there is no demand on the market, we will not continue our organic production, we need to remain calm under pressure, but this will not be possible to maintain for several years.*"	Participant emphasized the importance that market conditions play for their choice to maintain- or convert production methods in the future.	B - Organic
"*(...) The biggest challenge in the future are the market conditions. there must be consumers demanding organic products and the prices need to be right.*"	Respondent voiced the significant impact which consumer demand and prices play on his choice of production method.	A - Organic
"*The market conditions affect the choice of production method significantly. It takes time to convert from conventional to organic farming, all while the market can fluctuate quickly. There must be a long-term trend for me to want to convert my production method.*"	Interviewee explained the lengthy and costly process of converting production methods from conventional to organic farming. A sentiment shared by participants F and G.	C - Conventional
"With the grain prices that exist now, we wouldn't have switched to organic"	Farmer explains that the current market conditions make them unwilling to adopt OF.	I - Conventional

Table 11 includes the organic participants A and B. They describe that there are challenges with the current market and that it will have an influential deciding effect if the conditions aren't getting better. Some participants shared that the market conditions play a less significant role in their choice of production method, despite the organic market currently facing unfavourable conditions according to them, see Table 12.

Table 12. Depicts market conditions having less influence on some participants' choice of production method.

Quotation	Insight	Participant
"*The current market, despite inflation, has not affected my choice to farm organically.*"	Participant shared the extent to which market conditions affect her choice of production method.	E - Organic
"(...) *Instead, we would opt for selling land and scale down our overall production size. (...) it provides comfort to sell based on volume instead of through the stock market.*"	Respondent explained how he would manage a negative trend in the organic market.	D - Organic
"It's a big disadvantage really, since you have world market prices for grain. (...) The difference with organic is perhaps it is more domestic (...). Smaller market then."	The participant describes the negative effect of the conventional market and how a smaller organic market is more beneficial.	I - Conventional

The organic farmers D, E and the conventional farmer I in Table 12 were the three participants who didn't think that the market had a significant impact on their choice of adopting OF. Farmer E made it clear in the interview that the market wasn't part of the decision-making process of adopting OF. Farmer D thought that the market had some influence but would sell land or scale down the production rather than convert to CF. Lastly, farmer I didn't convert from organic farming to conventional because of the market and rather thought it was a negative effect. Farmer I further explain in Table 13 how the geographical location affected their choice of converting to CF from OF.

The interviewees reflected on the interconnected nature between the factors of market- and environmental conditions, and what role this connection plays in their risk management and choice of production method, see Table 13.

Table 13. States the connection between market- and environmental conditions in relation to risk management.

Quotation	Insight	Participant
"*The environment together with the economy are the main parameters that farmers can work with and are highly connected to how to manage or spread our risks.*"	Participant highlighted the interplay between market conditions and the environment play a significant role in his choice of production method and his risk management at farm-gate.	F - Conventional
"I think it depends a lot on where the farm is located. Some areas are more suitable for organic farming, especially if you can combine it with animal husbandry."	The location of the farm is seen as an important factor on why a farm is more suitable to become organic or not.	C - Conventional
"But the problem with organic in our region or because of the drought in the spring is mainly the manure and getting it available to the plants. That's what felt like the biggest problem compared to putting in some fertilizer and it might rain 5 millimetres"	The participant explains how the farm location a significant effect had on why they converted from OF to CF.	I - Conventional

All the quotations in Table 13 are from conventional farmers. Participant F highlights how the environment and economy are interlinked in a strategy to manage risk factors. Participant I and C lifts the geographical location as an external factor for adopting CF.

5.2 Internal factors

Following the external factors are the internal factors influencing a farmer's decision to produce grains according to organic- or conventional standards. Internal factors are connected to an individual's personal opinions and values and how they interplay in favouring organic or conventional farming. The results presented in relation to themes connected to internal factors are economic values, environmental values, innovation values and values surrounding working conditions. The results for each theme are introduced accordingly (Table 14 and Table 15).

Table 14. Summary of internal factors influence on production method regarding the organic farmers.

Participant	A	B	D	E	G
Production method	Converted from CF to OF	Organic production of grains	Organic beef and grain production	Converted from CF to OF	Converted from CF to OF
Economic Values	Significant influence	Significant influence	Not an influence	Not an influence	Not an influence
Environmental Values	Not an influence	Not an influence	Significant influence	Significant influence	Some influence
Innovation Values	Significant influence	Not an influence	Not an influence	Not an influence	Not an influence
Working Condition Values	Not an influence	Some influence	Significant influence	Significant influence	Significant influence

Table 14 is the summary of results from the interviews with the organic farmers. It shows that economic values had a significant influence on participants A and B. Both A and B however, didn't have environmental values as an influence on their choice of choosing OF. Compared with the other organic participants D, E and G, they didn't have economic values as an influence but rather had environmental values as a significant or some influence. Participant A was the only one having innovation values as a significant influence for adopting OF. While all the others expect participant A thought working condition values had a significant influence.

Table 15. Summary of internal factors influence on production method regarding the conventional farmers.

Participant	C	F	H	I
Production method	Conventional production of eggs and grains production	Conventional production of grains	Conventional production of grains	Converted from OF to CF
Economic Values	Significant influence	Significant influence	Significant influence	Not an influence
Environmental Values	Not an influence	Not an influence	Not an influence	Not an influence
Innovation Values	Not an influence	Not an influence	Not an influence	Not an influence
Working Condition Values	No influence	Not an influence	Some influence	Significant influence

Table 15 indicates that neither environmental nor innovation values had an influence in their choice of adopting CF. However, economic values had a significant influence on participants C, F and H. Participant I didn't think that economic values had an influence but rather thought

that working condition values had a significant influence. Participants C and H also thought that working condition values had some influence on their decision to adopt CF.

5.2.1 Economic values

Economic values emerged as a major internal factor influencing participants' choice to farm grains organically or conventionally, with several respondents underscoring profitability as essential to sustaining their operations. For most of the participants, economic values did play a significant role in their choice of production method. The conventional farmers were more influenced by this value than by any other internal factor. Table 16 shows quotations from the farmers and how the economic values have had an influence.

Table 16. Shows how economic values influence respondents' choice of production method.

Quotation	Insight	Participant
"*In short, the economy is the most deciding factor for me to farm conventionally.*"	Participant shared that the economic viability of their business is the core reason for their choice to farm conventionally.	C - Conventional
"*I receive great pleasure from managing a profitable business, despite the risks of farming.*"	Respondent shared similar sentiments as participant C.	F - Conventional
"*It feels natural to be an organic farmer. At the same time, the economy also plays a great role in that it must be profitable because this is not just a hobby.*"	Interviewee shared that his interest in profitability for his business aligns with his choice of producing dairy and grains organically.	D - Organic
"*It has always been natural for me to farm organically (...) profitability or inflation does not impact my decision to farm organically. (...) it is nice that I can set my own prices for my grains"*	Participants voiced that for her it has always been natural to be an organic farmer, with profitability or market conditions not being an influencing factor in her choice of organic farming.	E - Organic

Table 16 demonstrates how both organic and conventional farmers consider economic values in relation to their choice to farm grains organically or conventionally. Most respondents agreed that economic viability and profitability are some of the main factors influencing their choice of production method when producing grains. Farmers F and D shared that while genuine feelings of pleasure in relation to their chosen production method play a role, it is ultimately the economic outcome that is the deciding factor. For participant E, on the other hand, the economy and the market situation for grains had no impact on her choice to produce grains according to organic standards.

5.2.2 Environmental values

Environmental values constitute another significant internal factor influencing a farmers' decision to produce grains organically or conventionally. While both organic and conventional farmers expressed environmental concern, their approaches and underlying ideologies differed. Table 17 showcases how values related to the environment had an influencing factor on organic farmers' decision to produce grains according to organic standards.

Table 17. How environmental values influence organic farmers' choice of production method.

Quotation	Insight	Participant
"*Sustainability plays a crucial role in my decision to produce organically. It is nice how pollinators fly among the grasslands (...) even though we prioritize grain production we find it important to support biodiversity as well.*"	Participant shared his sentiment towards sustainability and biodiversity in relation to his choice of production method.	E - Organic
"*At the moment I could not imagine anything else than organic farming (...) There is no reason for wanting to be an organic farmer just because I am considerate of the environment*	While his connection to the environment is strong, it is not the sole reason to opt for organic production standards.	A - Organic

The results in Table 17 reflect how internal environmental values have influenced organic farmers to opt for the organic production method in their grain cultivation. For participant E organic values played a crucial role in his decision to farm organically. Participant A shared that they too had a strong connection to environmental values, but did not consider it to be the most important factor in their decision of production method. The participants who produce grains according to conventional standards also consider the role which environmental values play in their decision of production method, as can be seen in Table 18.

Table 18. How environmental values influence conventional farmer's choice of production method.

Quotation	Insight	Participant
"*I regard conventional farming to make use of proven resources and methods. For example, if a substance or pesticide is no longer allowed, then it should not be allowed to be used.*"	Participant explained that he has always had an interest in ensuring his grain production to be resource efficient and profitable, resulting in a sustainable business throughout.	F - Conventional
"*Factors like where the farm is located affects our choice of farming conventionally. (...) it is more in the north of the country that have plenty of land for grazing and pasture, as well as ley farming more appropriate for organic farming*"	Interviewee explored the idea that the location of his farm in Sweden plays a significant role in their choice to farm conventionally. A sentiment which was shared by interviewee I.	C - Conventional

Both participants included in Table 18 expressed their interest in ensuring their production method would favour the environment to ensure a sustainable business. Moreover, interviewees C and I shared that geographical location has a significant influence on their decision to farm conventionally. A novel insight that emerged was the connection that exists between environmental and ideological values in a farmer's choice to farm grains organically or conventionally, see Table 19.

Table 19. How farmers relate to their production method and the environment on an ideological level.

Quotation	Insight	Participant
"*My ideological connection to organic farming plays the largest role in my choice to farm organically, but the environment as well. One could say they are both connected.*"	For this participant, her ideological connection to organic farming, alongside her environmental values, are the greatest factors influencing her decision to farm organically.	D - Organic
"*Not everyone believes that organic farming really is more environmentally friendly than conventional farming and you must be convinced of your own belief before choosing your farming method. One cannot work with something, one does not believe in ideologically. In the end it might be the prices or the economy that plays the largest role in selecting a production method, but one has to also fulfil the ideological part to be able to practice it.*"	Respondent reflected on his opinion of how ideology plays a role in shaping one's opinion in relation to either production method. That one must believe in what they do to be able to follow through apart from other factors playing a significant role in the choice of production method.	C - Conventional

As Table 19 shows, participant D voiced that ideological values connected to organic farming were one of the most crucial factors influencing her choice to farm organically. Producer C also shared his opinion that ideology plays a fundamental role in a farmer's decision to opt for conventional or organic production methods.

5.2.3 Innovation values

For innovation values, several respondents communicated how they were driven by the complexities of farming and often sought for new ways to approach challenges or practices related to their choice of OF or CF for grain production. Table 20 presents the results connected to innovation values as an internal factor.

Table 20. Shows how innovation values influence a farmer's choice of production method.

Quotation	Insight	Participant
"We grow grains ourselves and feed the hens with it and then we sell our eggs directly to the consumer."	Participant looks to integrate sustainable and circular practices in his family's farming business in the future by further connecting his grain and egg production - to use the grains as feed for the chickens and use the chickens' faeces as manure for their crop production.	C - Conventional
"If you apply fertiliser, there is a sensor that reads the green mass and only applies fertiliser where the crop can absorb it. And there is a sprayer that scans every part of the field and only applies pesticide where it is really needed."	The participant C explains how technology and the innovative precision farming is part of their farming strategies.	C - Conventional
"It was a combination of the economy, the calculation looked pretty good then, and my drive too. I wanted challenges all the time. (...). I wanted challenges, that was the main reason. Yes, it will be boring otherwise"	Participant A emphasised on how the need for challenges made him want to farm organically.	A - Organic
"I am working on developing some of my own cultivation strategies. (...). I grow rye in white clover."	Participant G shared his thoughts about developing a novel farming strategy for his grain production.	G - Organic

Table 20 demonstrates how innovations are often part of a farmer's production strategies. Participants A, C, and G all showcased different ways in which their values towards innovation in different ways fuelled their interest in opting for OF or CF related to their grain production.

5.2.4 Working condition values

In terms of values surrounding working conditions, participants reflected on how their choice of agricultural method impacts their level of worker safety and their thoughts on continuing with their chosen agricultural method. Organic farmers were more concerned about working conditions in the form of handling the chemical inputs, see Table 21. While conventional farmers valued working conditions regarding the workload, see Table 22.

Table 21. Presents the impact which chemical handling impact farmers' choice of production method.

Quotation	Insight	Participant
"*Chemical handling is a risk you have then. (...) that's the risk that exists compared to organic. (...). But it's still necessary.*"	The participant explains that there is a risk with handling chemical inputs but sees it as a necessity for farming.	I - Conventional
"There are very high requirements for how to use the crop protection sprayers. You must be qualified. You must take courses. You must understand how they work. You must have a tractor that has a special air filter."	Conventional farmer C explains that there are laws and regulations for using chemical inputs and it is good that they have these legislations.	C - Conventional
"But it was very nice to not have to deal with the chemical inputs. That was the big advantage. I realised afterwards that I actually hated the chemicals. But I knew that it was so incredibly effective"	Organic farmer G explains that converting from CF to OF meant they didn't have to deal with the chemical inputs anymore.	G - Organic
"Spraying chemicals is not possible, it is not in our minds. I cannot understand why people want it on either food or feed."	Participant E argues that there is no way they will use chemical inputs in their farming.	E - Organic
"We are organic in our thinking. It feels really weird to wear protective clothing to spray food."	Farmer E talks about the choice to adopt OF lies somewhat in not having to use chemical inputs.	D - Organic

Table 21 demonstrates the difference in attitude towards chemical inputs from respectively organic and conventional farmers. The organic farmers tend to be more sceptical and less trustworthy in the use of chemicals. While conventional farmers see it more as a necessity and that it is safe to use in a rightful way. Participants G and H explained that the most dangerous part of conventional farming is related to spraying chemical fertilizers on their fields.

Table 22. Stipulates the ways in which other work-related factors influence the producers' choice of production method.

Quotation	Insight	Participant
"The work effort is greater in organic farming. There are more hours, perhaps more wage costs and above all more machinery costs. (...). I would think it is a more expensive form of farming."	Participant C has economic values as a significant influence and describes that OF is a more expensive production method.	C- Conventional
"It must have been the working hours at the time with chopping that made it difficult to keep up."	Participant I explain how the amount of extra workload was a contributing factor to convert from OF to CF.	I - Conventional

Table 22 demonstrates that the workload for adopting OF is seen as higher and costly by the conventional farmers.

5.2 Result analysis

The result indicated that the market was the only significant influence on the farmers decision-making process of choosing their production method. Conventional farmers had higher economic values, while organic farmers had higher environmental values. Both farmer groups valued working conditions as a significant influential factor, but they valued it differently. The conventional farmers valued working conditions as wanting lesser workload. Meanwhile organic farmers valued working conditions as wanting lesser chemical exposure.

6. Discussion

This chapter discusses this study's result in relation to empirical research and theoretical framework. In doing so, this chapter provides answers to the study's research questions, highlights how the empirical results influence the theoretical framework, and reveal novel findings recommended for future research.

6.1 What factors influence the farmer

The initial research question of this study was: *What are the external and internal factors involved in a Swedish farmer's decision to farm grains organically or conventionally?* The results indicate that mainly internal factors are involved in the farmer's decision of production method. The organic farmer participants empathised with their environmental values more than economic values, while this was the opposite for the conventional participants. Moreover, both groups thought that working conditions were an important influence but valued different aspects of the same factor. The organic farmers talked more about the removal of chemical exposure as an important part of choosing OF. Conventional farmers, on the other hand, reflected on how less workload played a significant role in their choice of adopting CF. In relation to external factors, the market emerged as the main influential factor for both organic and conventional participants in their decision of production method since an environment enabling growth and profits ensured the viability of their farming operations. Figure 6 is an illustration from the theoretical framework that demonstrates the results of this study.

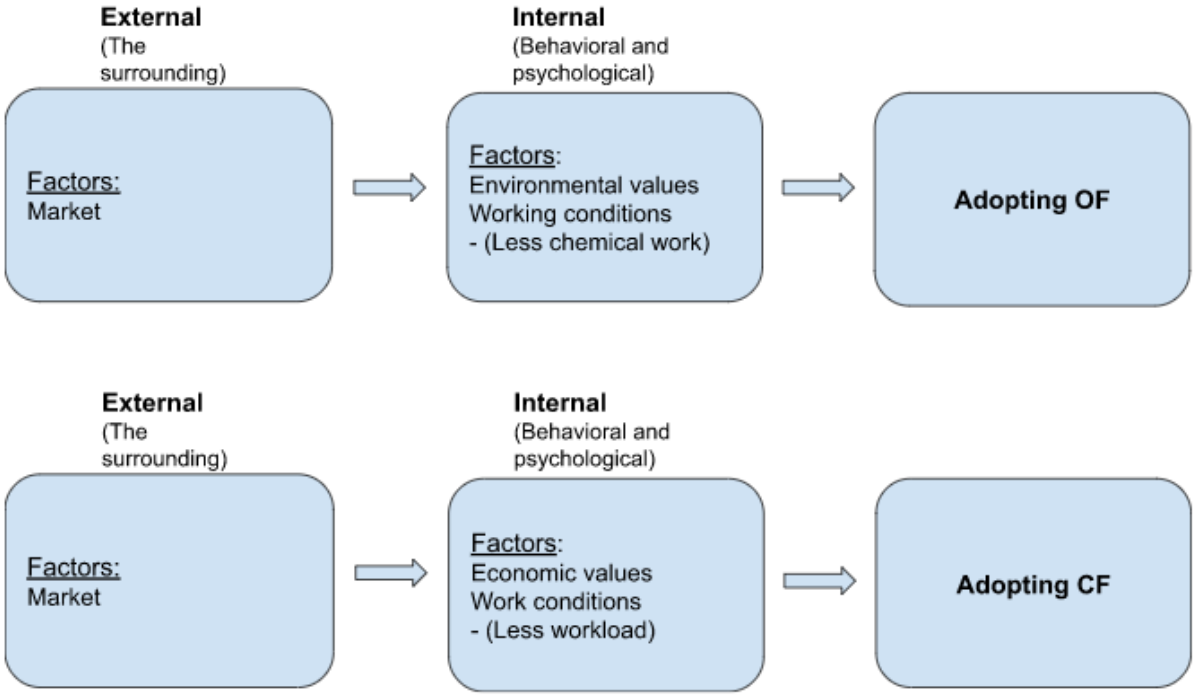

Figure 6. The external and internal factors from the result affect farmers to adopt OF or CF.

Figure 6 clarifies which external and internal factors emerged as the main ones involved in influencing the farmer's choice of adopting OF or CF. The market emerged as the only main external factor influencing both organic and conventional farmers in similar ways. For internal factors, there were more factors that emerged as having an influential impact on the participants. Different aspects of the same internal factors influenced the organic- and conventional participants respectively in relation to working condition values. The different internal values

for the respective group were environmental and economic values. However, this result is a generalisation from the participants. Some of the participants answered differently from others which is interesting.

6.2 How factors influence the farmer

Having identified which external and internal factors are involved in the decision to opt for OF or CF when producing grains in a Swedish context, it is important to understand how these factors influence the farmer's choice of production method. As such, the following paragraphs seek to answer *How do external and internal factors affect a Swedish farmer's choice to farm grains organically or conventionally?* Moreover, the external and internal factors which emerged as not having an equally significant influence are also discussed to provide evidence as to why that is the case.

6.2.1 Market conditions

Market conditions was the only external influencing factor for both groups. Previous study from Azam and Shaheen (2019) empathises that the market is a significant influence of a farmers decision-making process. Just two out of ten participants didn't think it had an influence in their decision-making process. The organic farmers saw an opportunity in the organic market and either converted or started their organic agriculture when the demand for organic products were increasing. The market opportunity of economic profit makes it easier for a farmer to choose OF. This statement aligns with Xie et al. (2015) and Home et al. (2019) studies.

Some organic farmers expressed positive views about having a shorter supply chain and to not be part of the stock market for grains. The perception of having a shorter supply chain aligns with a Swedish study by Leduc et al. (2023), which explains that even if organic products might not always have a shorter supply chain, the perception from the farmers is that his is the case. The only organic farmer that didn't consider the market as an influence had much stronger internal factors influencing their decision-making process, such as environmental values.

The conventional farmers expressed that they would not change to OF based on the current state of the organic market. Only if the organic market showed a long-term positive economic trend would the conventional participants consider to convert production methods, particularly since conversion is a risk-filled and costly operation. The only conventional farmer who did not have the market as a significant influential factor had changed from OF to CF and rather thought that the stock market showed a negative trend. Instead, this participant's conversion towards CF was more influenced by their geographical environment. An external factor that was not included in this study but would be interesting to include for further research in its impact of a farmer's decision to farm grains organically or conventionally. These results related to long-term market trends and geographical location also provide a base for researching the impact of factors on the choice of converting production methods among farmers who produce grains in Sweden in the future.

6.2.2 Economic incentives

None of the participants said that economic incentives in the form of governmental subsidies played a role in their choice of OF or CF. Some farmers welcomed subsidies as an incentive to farm organically, but most of the participants were sceptical about receiving subsidies. They thought it made the market artificial and instead that the market should decide a product's value. Previous research from Chmielinski et al. (2019) indicated that governmental subsidies aren't a deciding factor while some research such as Chmielinski et al. (2019) and Xie's et al. (2015) supports the idea of increasing subsidies for farmers whether it is to increase OF or CF. Instead

of governmental subsidies, governments can promote and make legislative changes to facilitate farmers and their chosen farming method. Economic incentives are a broad concept and were defined as economic subsidies in this study. Perhaps further research can explore other aspects of its broad concept instead of it just being explored as economic subsidies. However, this result contradicts the result from Xie's et al. (2015), which promotes subsidies as a solution for increasing organic farming. Rizzo et al. (2024), Anapuam and Gill's (2024) result is also contraindicated since they as well concluded that economic incentives are an influential factor.

6.2.3 Network and advice support

Neither network and advisory support was a significant influential factor for adopting OF or CF. While all participants appreciated their network and advisory support connections to different degrees, none of them saw it as a deciding factor in their choice to farm organically or conventionally. This result stands in contrast to empirical research which suggests that it does have a strong influence. Bakker et al. (2021) points out that neighbours or like-minded farmers can influence the decision of production method. Home et al. (2019) doesn't specifically say that network support is influential but identifies that it is an important factor. The participants felt that their social network and advisory support were important for them, but not in a deciding matter. Talking with other farmers about farming methods was a common strategy for both the organic and conventional groups. The network was more used as a social platform and a way of gathering knowledge.

6.2.4 Education

Based on the results, half of the participants had a formal education background related to agriculture while the other half did not. This applied to both organic and conventional farmers. According to empirical results of Rizzo et al. (2024), a higher level of formal education led to a higher probability of choosing OF. However, this was not always the case among the participants who participated in this study. In fact, among the participants who were organic farmers, the majority had no educational background related to agriculture. Which aligns with the result from Panneerselyam et al. (2012) study that organic farmers had lower education. Azam and Shaheen (2019) study resulted in that the education levels between organic and conventional farmers varied.

Instead, more internal factors played an influential role - like environmental-, and working condition values. The two organic farmers who had a formal agricultural education were also the two organic farmers that economic values influenced their decision higher than their environmental values. Further research could explore the correlation between higher education and higher economic values compared with lower education and higher environmental values in a group of organic farmers.

6.2.5 Economic values

Farmers are often self-employed, and economic profitability is needed in their production. The farmers have some regard for economic interest. However, conventional farmers tended to have economic values as a more significant factor compared to organic farmers in their choice of OF or CF. The organic farmers tended to talk more about their environmental values and working condition values. While the conventional farmers talked about economic values and working condition values. An interesting correlation was that those who had economic values as an influential factor didn't have environmental values as an influential factor. In fact, no conventional farmer had environmental values as an influential factor. This result is aligned with previous research of Leduc et al. (2023), Singh and Kaur (2024), that explains that organic farmers have higher environmental values and can even compromise economic interests for their ideology.

6.2.6 Environmental values

The conventional farmers didn't think their production methods were less sustainable or less environmentally friendly. While the organic farmers were convinced that their production method was. Farmers from both groups work with nature and need to consider the environment in their production. One of the conventional participants felt that the chemical inputs are scientifically well tested and if they would become forbidden, then they shouldn't be used. Some conventional farmers felt that losing their production to fungus or parasites were too much of a risk and therefore felt that the need of chemical inputs is necessary. Home et al. (2019) have the exact same results of farmers not wanting the risks of having pests or weed outbreaks, therefore losses in yields, and ultimately using chemicals are needed. It also explained by Xie et al. (2015), Home et al. (2019) Azam and Shaheen (2019) that organic farmers are more risk-takers while conventional farmers are more risk-averse

While the organic farmers who had environmental values as an influencing factor for adopting OF talked about how their production method helps pollinators and insects. This clarifies what previous research of Home et al. (2019), Xie et al. (2015), Rizzo et al. (2024) and Bakker et al., 2021 has concluded, that environmental values are higher in organic farmers. It was interesting that some conventional farmers had a perception that organic production of grains is weaker and probably had more difficulty responding to climate change. While some organic farmers had the opposite opinion and thought their grain production was more resilient against weather changes due to climate change. One of the organic farmers talked about broader societal values of wanting to be part of a solution for society. Previous research by Leduc et al. (2023) suggested that organic farmers have higher societal values. But only one expressed it clearly in the interviews.

6.2.7 Working conditions values

Both organic and conventional farmers had working conditions as an influential internal factor. But how they valued working conditions differed between the groups. Organic farmers had working conditions as a significant influence on adopting OF. This was mainly because of the unwillingness to work with chemicals by applying pesticides and herbicides in their fields. They highlighted the environmental and health-related hazards connected to working with such chemicals. Tsai (2021) and, Singh and Kaur (2024) studies pointed out that health concerns from organic farmers were high and therefore wanted lesser chemical exposure.

Some conventional farmers agreed with the hazards of working with pesticides, but it was not enough of a deciding factor to discontinue their CF operations. Rather, they argued that the workload in CF was more manageable than that for OF operations, which played an influential factor in their decision to farm conventionally. There was also a mention from conventional farmers that increasing workload would cost money. This aligns with the study by Davidova et al. (2022), Home et al. (2019) and Xie et al. (2015) that conventional farmers would see the economic costs as a hindrance of adopting OF.

6.2.8 Innovation values

Only one of the participants had innovation values as a significant influence. The organic farmer A said that challenges were a driving factor towards choosing to adopt OF. The idea of new challenges and wanting to try new things were a driving factor for choosing to adopt OF from CF for participant A. The other farmers had innovation values and ideas. Farmers talked about how technology has helped in precision farming. While other farmers talked about how to refine their grains, a strategy to sell their grains in the form of another product. One farmer talked about their innovation project that considered growing rye in ley fields, without tillage. It is

safe to say that both groups of farmers were innovative and had their own strategies. However, the other farmers didn't adopt OF or CF because of their innovative values.

This result contradicts previous research highlighting of innovation being influential in a farmer's decisions-making process. The previous research of Fuetsch (2022) points out that capital resources influence a farmer's choice of innovative strategies. It could be said that if a farmer has lower economic values, then they might be willing to adopt OF. But is organic farming a type of innovation, at least it can be seen as a strategy and strategies are types of innovations. But it would be to be generalised to say that organic farmers automatically are more innovative, just because they are more prone to be risk-takers and have lower economic values. Instead, it was only one farmer that highlighted that the choice of producing organically was to manly challenge himself as a farmer.

6.3 How the factors influence each other

Having identified the main external and internal factors influencing a farmer's decision to produce grains organically or conventionally, and how these factors influence this decision, it is time to analyse how these factors influence each other. There is a correlation between the different factors and how they influence a farmers decision-making process. It is illustrated in Figure 7 how the prominent factors of a farmer's choice of adopting OF or CF is affected by each other.

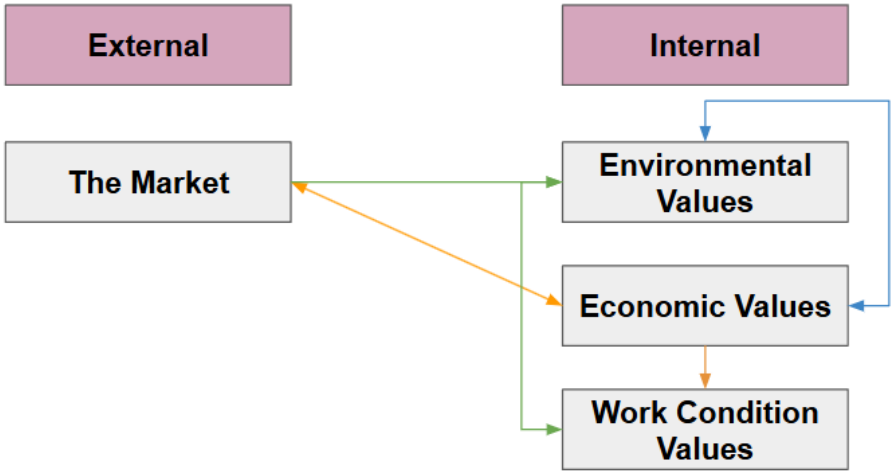

Figure 7. The correlation of the prominent factors influencing a farmers decision-making process.

The yellow arrows represent the conventional grain producers, see Figure 7. As can be seen, the market and economic values influence each other greatly in their choice to become conventional farmers. If there is a long-term economic trend favouring the conventional production method, this aligns with their economic values and the choice of adopting CF. This relationship is also true for considering converting between CF and OF if long-term economic trends favour OF. The economic values of the conventional participants also feed into their sentiments regarding working condition values when choosing CF. Namely, they believe that OF is too costly to manage and results in lower harvest quality. Because they prefer efficiency and high economic returns, as well as a lesser workload compared to OF, these factors together influenced the conventional participants to choose CF when producing grains. This aligns with the previous research of Home et al. (2019) and Beakker et al. (2021) that explains that conventional farmers think that higher workload and not using chemical inputs is a higher risk. Therefore, they will protect their economic value and not expose themselves to these risks.

The green arrows represent the organic grain producers. Most organic participants mentioned that market conditions for organic grains had a major influence on their choice of choosing OF. At the same time this did not compromise the importance they place in their environmental values. Rather the consumer demand for more sustainable products feeds into their environmental values and reaffirms their choice of implementing OF. Moreover, the environmental values of the organic participants feed into their working condition values when choosing OF as production method. Namely, that they could not imagine working with chemicals and pesticides that are harmful both to themselves and the environment. This as well aligns with the previous research that environmental values and health concerns to have lesser exposures of chemicals is interlinked. Singh and Kaur (2024) and Tsai (2021) explains that organic farmers are more concerned about their health. Home et al. (2019) and Beakker et al. (2021) further elaborates that the organic farmers' lower economic values make them choose a more costly production method.

The blue arrow represents a loop wherein high economic values lead to low environmental values and vice versa for the farmer who produces grains, regardless of being organic or conventional. The correlation of economic values and environmental values has been discussed by Rizzo et al. (2024). This study's result finding of higher environmental values leads towards lower economic values and vice versa matches with the found previous research.

Adopting OF or CF can be argued to be a type of strategy for farming. There is a decision-making process for a farmer that is conditioned by external and internal factors. Figure 8 demonstrates the decision-making process and how it also affects the factors.

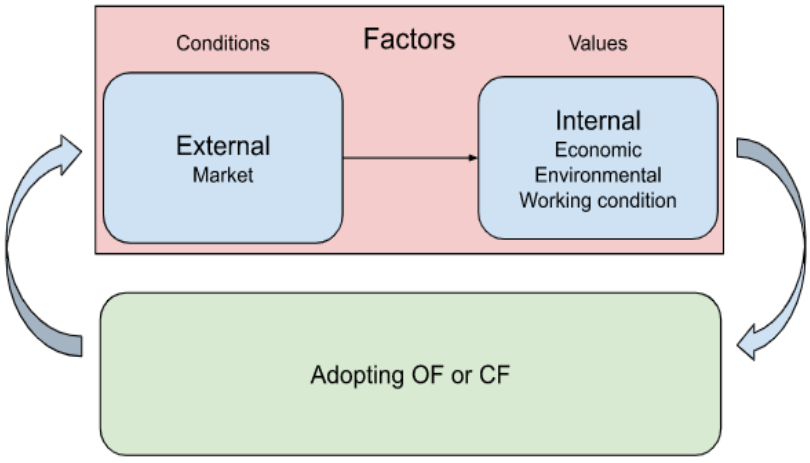

Figure 88. A farmer's decision-making process for adopting OF or CF. Including the main factors from the results

An example of Figure 8, a conventional farmer is part of the stock market which has its own values. If this conventional farmer sees opportunities in the organic market and has values aligned with these decisions, then they might convert to adopting OF instead of CF. When they convert, the market will change, and their internal values will either grow stronger or change.

This decision-making process is an endless loop of factors that contributes to a farmer's decision of adopting or continuing their choice of production method.

Understanding the interconnectedness of the factors involved in influencing the farmer provides answers to the third and final research question: How *do external and internal factors correlate in their influence of a Swedish farmer's choice of producing grains according to organic or conventional standards?*

7. Conclusions

The conclusion chapter provides a reiteration of the aim and contributions of the performed study. Moreover, this final chapter offers a critical perspective on the methods chosen to perform this research. Finally, the conclusion chapter explains the implications of the contributions from this study and suggests how future research could take these contributions further.

7.1 Contributions

The aim of this study was to identify which external and internal factors influence a Swedish farmer's decision to produce grains using organic or conventional production methods. Although previous research has delved into identifying factors which influence a farmer's choice to farm organically or conventionally at a general level, this research specified on a Swedish context, and on farmers who produce grains, a staple crop in Swedish agriculture. With grain production making up more than one third of cultivated farmland in Sweden, where producers experience volatility in market prices as well as environmental impact on their crops this has resulted in farmers choosing to maintain their production method or convert between OF and CF. Moreover, Sweden has implemented several ambitious national goals, one of them being the expectation of 30% of all farmlands to be organically farmed by 2030, which currently lies at 18% (Government Offices of Sweden, 2017; The Swedish Board of Agriculture, 2024). By having built onto previous research on which factors influence a farmer's decision to commit to OF or CF and how these factors interact, the ambition of this study was to provide insights for future policy makers to use for developing and implementing strategies that are strategically sound in relation to fulfilling national goals while considering both the macro perspective of consumer demand as well as that of the farmers supplying the market with food.

This study has shown that the market has the most impactful influence on both organic and conventional farmers in their choice of production method for grain cultivation. This was in line with previous research, suggesting a crucial connection between the farmer's operations and market supply and demand. Economic subsidies were not considered a factor among the study participants to have enough influence in their choice of OF or CF in their grain cultivation. As such, it is of great importance that policymakers work towards enabling market conditions which benefit all parties involved in the food supply chain and allow farmers the economic space to implement production methods which align with national sustainability targets.

Among the internal factors, values surrounding working conditions were considered influential for both organic- and conventional farmers who participated in this study in choosing their production method for grain cultivation. While for the organic participants it was important to not rely on using chemical pesticides for the health of themselves and the environment, conventional participants argued that they preferred the conventional production method as it requires a lower workload and is less physically demanding than organic farming.

A correlation was found that high environmental values generated lower economic values and vice versa. This means that the internal factors were a strong influence on a farmers decision-making process, while a prominent market makes a choice possible. This result contributes to the public, politicians and others in the food market systems to consider their participation in reaching our national goal of increasing organic farmland. The market as an external factor has a significant influence. But the ideology of the farmer plays a vital role in influencing a farmer to choose their production method. If the goal is to increase the organic farmland, then the environmental values must be installed in farmers rather than high economic values.

7.2 Limitations

As with any research paper, some of the implemented choices and approaches to conducting this research led to limitations in relation to the performance and result of the study.

This study followed the abductive approach by using an observation and pre-defined theoretical framework as guidance for conducting the research. While this can give the study and data collection a profound base to develop the study, it can also create researcher bias by enabling preconceived ideas of what the results might be (Rautalinko, 2023). As such, conclusions may be drawn prematurely resulting in other important aspects being lost (ibid.).

Semi-structured interviews were used as the method for data collection. While it allows for a flexible structure and ability to derive novel findings when interviewing participants, it also brings along certain limitations. Bell and Waters (2016) argue that this flexible structure of data collection is time consuming to both prepare and perform. Particularly when a study is carried out over a limited time frame it can lead to results not being generalisable, as was the case with our study only managing to include 9 participants (*ibid.*). The low number of participants was also triggered by the study being conducted during the spring months, which are considered as an intense period for farmers as they prepare for sowing and harvest. Thus, potential participants that were contacted either did not respond or have the time to perform an interview for our study. Moreover, since the farmers received some information about the study in advance of the interviews, this may have also led to participant bias as they might provide answers, they believe to be useful for the researchers, thus not entirely reflecting reality (Bell and Waters, 2016).

Factors like farm scale and grain species were not included as factors influencing the farmer's decision to produce grains organically or conventionally. Mainly because it did not directly connect to the factors included for our research, but which may have had an influencing factor on the farmer's choice of production method.

Lastly, the participants included for this research included both farmers who had always had the same production method as well as those who had converted during their careers. This was in line with our research questions, and particularly the final one exploring how factors influence the conversion of production methods. However, this also created a divided focus of the research in exploring how factors influence a farmer's choice of committing to a production method, and how they influence conversion. Based on the limited time frame and space provided for our research, this study could not explore these aspects further.

7.3 Further research

The new findings in the study were that geographical location was mentioned as a part of an external factor for conventional farmers. This finding would have been interesting to explore in further research. When investigating geographical location as an external factor, it would be interesting to include farm scale and grain species included in the farmer's production to see

how these options influence the farmer's decision of production method. Also, the correlation of higher education and high economic values in the group of organic farmers could be part of further research. Another novel factor emerged as ideology may play an influential role choosing adopting OF or CF. Both farming groups had strong beliefs in their own chosen production method as reflected in the results section. It could be of interest to conduct further research about how a farmer's ideology could have an influence on their adaptation for CF or OF, since a farmer needs to believe in what they do to ultimately be able to do it, as was shared by Participant C.

Further research might also collect data by involving more participants and include farmers in other production categories in Sweden. If the Swedish farmers' perspective is mapped out to a greater extent this can deepen the understanding of the producers' choice of production method, as they make up a vital player in the food supply chain. As such, this study can serve as a guide for future researchers to conduct similar research at a larger scale.

Moreover, future research could use our study as a base to further understand how external and internal factors influence the Swedish farmer's decision to convert production methods for grain cultivation. This is crucial information to collect and understand to gear the Swedish food system in the direction that is in line with national and international environmental goals. As such, this study could serve as an introduction for policy makers to gain a better understanding of the farmer perspective in relation to their choice of production methods for grain production. Ultimately, this could hopefully impact how policy makers support farmers in line with reaching national and international goals related to economic growth, sustainability, and self-sufficiency

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Acknowledgements

First, I want to thank my writing partner Linnéa Peters for hard work and dedication to our project. It has been stressful at times, and you were wonderful in helping us find all farmers for this project. We have always had a good working relationship between each other, which I'm grateful for. It has been easy to understand, compromise and communicate with you. I wish you all well with your future work and accomplishments.
Secondly, I want to thank all the farmers for their time and energy to help us students in our final essay. Our graduation wouldn't been possible without your contributions and for that I'm for ever grateful. I wish you all the best and good luck with your respective farming methods and I hope this study was found interesting or at least well-received from all of you.
Thirdly, I want to thank our supervisor Cecilia Mark-Herbert. Thank you for all your input and all our meetings. It helped tremendously in finding our aim and theory for this research. You have inspired me in working as a researcher.
Lastly, I want to thank my boyfriend Jesper Karlsson that has helped me with creating a structure in our day-to-day life. Making breakfast for me, letting me live in your apartment, letting me use your computer whenever or giving me pep-talk. It all has given me motivation for working on this thesis. You have done all of this for me while also working on your own master thesis and your own work dedication has inspired me. You really came into my life at a perfect timing.

- Ulrika Runsala

To my writing partner Ulrika Runsala; I am very grateful to have worked alongside you on this project. Thank you for being so flexible, hard-working, understanding, a good listener, and always seeing the possibilities whenever we experienced obstacles. I truly enjoyed getting to know you through this thesis process and I wish you all the best for your personal and professional future.
I would also like to express my gratitude to the farmers who agreed to participate in our thesis research. Your positive and open-minded energy and perspectives provided us with the necessary insightful perspectives without which the completion of this research would not have been possible. Thank you for making time for us in your busy schedules.
For our supervisor, Cecilia Mark-Herbert, I would also like to extend my biggest gratitude, for checking in with us regularly during our writing process and always being available to give feedback, advice and encouragement. Moreover, I would like to share my appreciation for suggesting that Ulrika and I work together, I believe that this suggestion has ultimately made it possible for me to finish my degree at this time.
Lastly, I would like to share my love and admiration to my life partner Mihai Popa, for always believing in me when I could not and for being so generous with your endless love and support.
To my family I would also like to express my deep appreciation for the endless love, support and motivation you give me. Words cannot express how much it means to me.

- Linnéa Peters

Appendix 1 Interview guide

Introductory questions:

- If you feel comfortable, could you share your name, gender, and age?
- It would be great to hear more about your farm's history; how long have you been involved in farming?
- Can you give an overview of the size and scope of your farming operation?
- What do you currently produce on your farm?
- Have you been involved in organic, conventional, or both methods during this time?

Questions related to current choice of organic or conventional farming:

- Do you currently farm according to organic or conventional standards?
- What would you say are the main factors overall that have influenced your decision to farm organically or conventionally?

Education/Experience:

- How has your previous experience and education influenced your farming practices?
- Have you participated in any training programs or courses related to farming?
- How have they influenced your practices?
- How do you stay informed about new developments in organic or conventional farming?

Support system/network:

- Can you describe the support network you have for your farming operation?
- Do you receive any external advice or support for your farming practices?
- If so, where does this support come from?
- Do you collaborate with other farmers or organizations?
- How does this affect your farming practices?
- How important is your support network in your choice of farming method?

Economy:

- Do you receive any financial incentives or subsidies for your farming operations?
- If so: where do they come from, and how do they affect your decisions and long-term planning of your farm?
- What are your thoughts on the current financial subsidies available to farmers?

Market:

- In what ways do market conditions affect your choice of farming method?
- What is your view of the benefits and challenges of the current market?
- Can you describe any recent changes in the market that have affected your farming methods?
- How do you typically react to unexpected market fluctuations?
- How do you prepare for future market challenges?

Environment:

- In what ways do climate/environmental conditions affect your choice of farming method?
- How do you take climate change into account in your farming operations? (weather conditions, temperature changes, biodiversity, etc.)
- How do you prepare for future environmental challenges?

Working conditions:

- Have there been any external circumstances that have influenced how you develop your farm?

- If so, can you describe how you have responded to these pressures?
- How do you manage risks associated with your farming method?
- Can you share an example of a significant risk you encountered and how you managed it?

Questions about the future of the farm:

- Given the history and current state of the farm, do you have any long-term goals for your farm currently?
- And how does your chosen farming method help you achieve the goals?
- How do you prepare for potential future challenges that may affect your farm?
- Have there been any past circumstances that have influenced how you develop your farm?
- If so, can you describe how you have responded to these pressures?

Appendix 2 Email-template for participants

Hi (name of participant),

Hope you are well. So glad you are willing to participate in our thesis. Our names are Linnéa Peters and Ulrika Runsala, and we are Masters students at the Swedish University of Agricultural Sciences in Uppsala. We are in the last semester of the Master's program Sustainable Food Systems and are writing our thesis about the factors that influence a farmer's choice to grow organic or conventional grain.

I, Linnéa Peters, am currently both a Graduate Trainee at Lantmännen and a Master's student at SLU, but would like to emphasize that this work is strictly connected to my education and will have no connection to Lantmännen's values or operations. The Team's link is shared through my work email, as our student email does not have a stable subscription connected to Zoom or Teams. So, it is only to facilitate our interview.

Here is an overview of the themes and questions we will ask during our interview. We estimate that it will take between 30 and 45 minutes. The interview is completely anonymous. We would also like to emphasize that the results will be used anonymously for our research, and you have the right to end your participation at any moment.

We will start by asking introductory questions about you as a farmer and your business. Then we will move on to questions that touch on different themes, see below:

- **Education / Experience:** How has your previous experience and education influenced your farming practices?
- **Support system/network:** Can you describe the support network you have for your farming business? And what role it plays in your choice of farming method.
- **Economy:** Do you receive any financial incentives or subsidies for your farming business?
- **Market:** In what ways do market conditions affect your choice of farming method?
- **Climate:** In what ways do climate/environmental conditions affect your choice of farming method?
- **Working conditions:** Have there been any external circumstances that have influenced how you develop your farm? If so, can you describe how you have responded to these pressures? We conclude with some questions regarding what your business looks like now, what goals you have for your business going forward, and how you see your choice of farming method helping you get there.

We look forward to hearing your thoughts on (Date of interview). Hope you have a wonderful day, /Linnéa and Ulrika

Appendix 3 Popular science summary

What are the driving forces of a person's choices? It can be the environmental surroundings or values that affects someone's choice of adopting a lifestyle or even a business. A farmer is a person with internal values that's guides them in their everyday choices. At the meantime, a farm is a business that must thrive under certain conditions. All farmers are dependent on the market as an external factor that influences them in their choice of farming method. But there is a difference between organic and conventional farmers internal values. An organic farmer has higher environmental values. While a conventional farmer tends to have higher economic values. Conventional farmers also don't want higher workload that organic farming often provides. While the organic farmers don't mind higher workload, as long they don't have to work with chemical substances, which conventional farming provides. Organic farmers tend to have more health concerns and don't want to use the conventional pesticides or herbicides that contains harmful chemicals.

This conclusion of what factors drives a farmer's choice of farming method was made through nine interviews with both conventional and organic farmers. The aim was to understand how especially Swedish farmers that produces grain, reasons their choice of choosing to either produce organically or conventionally. Because currently the organic farmland in Sweden is decreasing and farmers have chosen to convert from organic to conventional farming. While Sweden also has a national goal of 30% farmland must be organic until 2030. This creates a political problem of not fulfilling the set goals. The Swedish society and politicians will probably not fulfil the goal of 30% organic farmland until 2030. But in understanding the driving forces of a person's choices, especially a farmer's choices, the goal can hopefully be helped in reaching.

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