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Farm decision making across contexts – from micro to macro perspectives

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ABSTRACT

Farm typologies, such as those employed by the European Commission, are commonly used to guide farm operations toward desired outcomes. While these typologies are valuable tools for assessing the economic performance of farms and informing policy development, those based solely on economic criteria may fall short in explaining why farms with similar structures and economic conditions make significantly different strategic decisions. Moreover, attempts to identify reproducible behavioural patterns among farmers encounter the challenge of a highly heterogeneous population, where behaviours and objectives are profoundly shaped by diverse geographical, ecological, social, cultural, and institutional contexts, as well as temporal and territorial factors. Addressing this complexity necessitates moving beyond static typologies and categories. This paradigm shift is crucial for uncovering the dynamic processes of change, which encompass micro-level factors (such as individual, family, and farm dynamics), meso-level influences (including social, cultural, and ecological environments), and macro-level determinants (such as policies and market systems). Our contribution is grounded in a social science approach, utilising the case study method, which broadens rather than constrains the range of features explored within each case. This methodology facilitates the discovery of unexpected findings, including those not directly aligned with the original research questions, thereby offering insights that might otherwise remain overlooked. The overarching aim of this research is to address the complexity inherent in the empirical cases under investigation.

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qualitative

Introduction

Farm or farmer typologies have been developed within specific research and cultural contexts, utilising diverse data sources and methodologies for various aims of research. The criteria used to develop farm typologies can be broadly categorised into farm structural characteristics, socio-environmental factors or individual farmer traits. Typologies based on farm holding structures are widely developed to assess the economic performance of agricultural enterprises and in order to inform agricultural policy development. Functional categorizations can be conceptualised as various ‘farming styles’ to describe different approaches or strategies that farmers use to manage their farms, based on various factors such as socio-economic conditions, cultural influences, environmental challenges, and market opportunities. Individual farmers’ decisions have been explored through several behavioural theories, which may analyze how farmers’ decisions are influenced by potential gains and losses, or by available resources such as finances, time, and knowledge or which examines how attitude, subjective norms, or values affect farmers’ decisions.

However, identifying behavioural patterns within the highly heterogeneous characteristics of farms, farmers, households, and their surrounding environmental and cultural contexts often requires moving beyond static typologies and categories. This shift is essential for uncovering the dynamic processes of change, which span micro-level factors (such as individual, family, and farm dynamics), meso-level influences (including social, cultural, and ecological environments), and macro-level factors (such as policies and market systems). In this article, we draw on qualitative interview data from 13 Finnish farmers to explore the diverse

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features and cycles that influence strategic decision-making in farm holdings, spanning from the individual level to the broader regime level.

Finnish farming

According to the Finnish Food Authority (2022a), approximately 46,800 farms applied for farmer subsidies in 2021. Family farms make up 85% of the total. On average, a farm has 51 hectares of arable land, with two-thirds of farms owning less than 50 hectares. Crop farms constitute 75% of all farms, while livestock farms account for 22%, the majority of which are dairy farms. These dairy farms typically house an average of 46 cows. Organic arable land represents 14.5% of the total farmland, and around 5,000 farms are certified organic. Subsidies contribute 29% of the total farm yield. The average age of farmers is 53 years. In terms of industrial structure, the share of employed individuals in agriculture and forestry stands at 4% of the total workforce in Finland as of 2021 (Finnish Food Authority 2022b).

Part-time farming has become common in all developed countries, including Finland. In 2000, 37% of the average farm-family income came from agriculture and forestry, while the corresponding share in 2017 was only 26%. In 2017, about 75% of farm families obtained less than half of their total income from agriculture. Income from off-farm employment, machinery contracting, and other off-farm sources has become more prominent (Statistics Finland 2019). In 2016, about 29% of the farms had additional business activities such as contracting services, tourism, or food processing (Natural Resources Institute Finland (Luke) 2018). In 2021, the legal structure of Finnish agricultural and horticultural businesses was divided as follows: private individuals 86% (38,149 businesses), agricultural partnerships 9% (3,939 businesses), limited liability companies 3% (1,269 businesses), estates 2% (1,020 businesses), and other companies 1% (242 businesses).

Terminologies concerning farmer household, farmer and farm

According to Statistics Finland (n.d.), a household is not considered as a farmer household if the main source of income reported is renting of fields or if no income is derived from the farm. The share of farming land rented from others is included when calculating the cultivated area. Farmer households are further divided into agricultural households and part-time agricultural households. The activity from which the highest income is gained is recorded as the main production line of the farm.

Furthermore, a farmer is a farm entrepreneur, an independent business owner who earns a livelihood, or part of it, by professionally engaging in farming as a business. The term 'farmer' is also used to refer to the practical tasks of cultivating crops, not the business activities of running a farm (Statistic Finland 2024). When discussing the role of agriculture as a sector of primary food production especially in the Western context, terms such as primary producer or agricultural producer are used. In addition, as a legal and tax-labile entity, a farm refers to a unit in the income and tax statistics register that has at least two hectares of agricultural land under cultivation and is managed by a natural person. The definition for business and income statistics additionally requires that taxation occurs under the Agricultural Income Tax Act. As a physical asset, a farm comprises one or more properties or parts of properties that are owned by the same individual or group of individuals.

In this article, through the analysis of qualitative interview data from 13 Finnish farmers, we aim to uncover qualitative factors within agricultural holdings, farmers' careers, and farm households that influence decision-making processes. Initially, we provide a brief theoretical overview of various farm and farmer typologies and business strategy categories to establish a foundation for our research and subsequent findings.

Theoretical concepts

Farm typologies

To enhance understanding of farm holdings decision-making processes, a variety of farm system and farmer typologies have been developed within specific study contexts, utilising diverse data and methodologies. Typologies that emphasise structural characteristics of farms are commonly referred to as 'farm system

typologies,’ while ‘farmer typologies’ focus on individual characteristics (e.g. Bartkowski et al. 2022). ‘Farm typologies’ is used as an umbrella term to encompass both sets at the same time. The primary goal of building a typology is to define groups of farms or farmers with minimal variation within each group and maximal variation between groups. The criteria used to develop farm typologies can be broadly categorised into three main areas: structural characteristics, socio-environmental factors, and individual farmer traits (Huber et al. 2024).

Research on farm typologies typically serves several purposes, with one primary objective being to understand the characteristics, heterogeneity, and development of farm systems to inform policymaking. As the number of observations increases, the method’s ability to form distinct typological clusters naturally improves. In other contexts, typological research can be especially valuable for understanding significant changes, particularly when conducted longitudinally to track evolving processes across a broad spectrum of farms, thus providing additional empirical support for the conclusions. Furthermore, using functional variables instead of structural ones in multivariate analysis represents another viable approach (e.g. Tittone 2020).

The literature on structural farm typologies examines the diverse and heterogeneous nature of agriculture across multiple spatial, temporal, and institutional dimensions (e.g. Bock et al. 2020; Graskemper et al. 2021; Upadhyaya et al. 2021). For instance, in the European Union, farm typologies are widely used to assess the economic performance of agricultural businesses and to guide policy formulation. In establishing a structural typology for agricultural holdings, the European Commission primarily relies on the Community Farm Accountancy Data Network (FADN). The FADN collects microeconomic data at the farm level through an annual survey conducted by the EU Member States (MS). Agricultural holdings are selected for the FADN survey based on sampling plans devised at the regional level within each MS. The methodology used for farm typology aims to categorise farms across three key dimensions: region, economic size, and type of farming. These dimensions are captured through both physical and structural data (e.g. location, crop areas, livestock numbers, and labour) as well as economic and financial data (Unay-Gailhard et al. 2018).

Functional farm typologies are typically defined as frameworks designed to capture farmers’ decision-making processes, considering their constraints and responses to economic, ecological, or social changes (Tittone 2020). These typologies are often referred to as ‘farming styles,’ a concept used by researchers to describe the diverse strategies or approaches farmers adopt in managing their farms. These strategies are shaped by factors such as socio-economic conditions, cultural norms, environmental challenges, and market opportunities. Farming styles are generally categorised into broad, diverse groups, including traditional farming, industrial farming, sustainable farming, organic farming, and family farming. To illustrate some of the farming style categories identified by researchers, van der Ploeg (2012) examines the transitions between different farming styles – such as traditional, industrial, and post-productivist – based on studies conducted in both Western and Latin American contexts. Similarly, Schmitzberger et al. (2005) categorise key farming styles in Austria, including yield optimisers, traditionalists, innovators, and support optimisers, while also identifying smaller groups such as idealists, part-time farmers, forced farmers, and social farmers. In another study focusing on European contexts, Fastelli et al. (2017) distinguish between categories like conservative or development-oriented farmers and innovative farmers. However, these categories are not always directly comparable or commensurable with one another. Additionally, specific studies often recognise more refined sub-categories that reflect regional and cultural variations. Despite these variations, it is frequently concluded that the farming styles reflect the underlying values, goals, and identities that guide farmers’ choices.

To deepen the understanding of highly heterogeneous farmer populations, some typologies incorporate social-psychological and personality factors (e.g. Burton and Wilson 2006; Burton et al. 2020), or explore the role of socio-demographic factors such as age and education, personal traits including managerial abilities, and behavioural characteristics such as cognitive, social, and dispositional factors like risk tolerance (e.g. de Krom 2017; Dessart et al. 2019; Cullen et al. 2020). Accordingly, the development of farm and farmer typologies can be based on various combinations of theories, methods, data collection, and analysis approaches, as well as specific research settings and temporal frames, using diverse data and methods. As a result, these empirically-based farmer typologies are diverse, and not commensurable across studies with different objectives, regional contexts, and cultural settings (e.g. Bartkowski and Bartke 2018; Graskemper et al. 2021; Bartkowski et al. 2022; Farstad et al. 2022; Huber et al. 2024).

The farming styles and business strategy categories are closely connected terms. While strategic categorizations do not explicitly use the term ‘typology,’ their goals align with those of typologies in exploring the diversity of decision-making foundations within agricultural holdings by classifying characteristics based on a defined set of criteria. The business strategies in various studies, in a Western context, often include approaches such as enhancing growth and efficiency, maintaining the status quo of current practices, or abandoning goals related to agricultural production and productivity (e.g. Evans 2009; Darnhofer et al. 2010). Additionally, off-farm employment may play a role in the income structure of farm households. Moreover, in Europe the diversification of income structures has been extensively studied as a strategic alternative for farm households (e.g. Pyysiäinen et al. 2011; van der Ploeg 2012; Weltin et al. 2017; Grilli et al. 2024).

Decision-making behaviours in contexts

In addition to empirically-based typologies and categorizations, the influence of various factors on farmers’ decisions has been explored through several behavioural theories, including expected utility theory, prospect theory (which analyzes how farmers’ decisions are influenced by potential gains or losses), the theory of bounded rationality (which suggests that a farmer’s decision-making is constrained by resources such as finances, time, and knowledge), and the theory of planned behaviour (which examines how attitude, subjective norms, and perceived behavioural control affect farmers’ decisions) (Githinji et al. 2024). However, according to Githinji et al. (2024), particularly in the African context, there is a significant need to consider multiple reference groups (both real and imagined) – drawing on Kemper’s status-power theory of relations – as factors that may greatly influence farmers’ decisions (Kemper 2016). In Kemper’s theory, there is no distinction between an individual’s attitude and group norms; rather, an individual’s decision results from a subconscious ‘reference group meeting’ that occurs within the individual’s mind (Githinji et al. 2024).

The influence of social relations on farmers’ decision-making is closely linked to the agricultural transition phase of the surrounding culture and context (regime) in which a farm operates. The impact of agricultural transition phases or regimes on farmers’ actions (Bünger and Schiller 2022; Kuhmonen 2023) has been particularly studied in Western contexts. The dominant regime can also be contested. For example, alternative retail and food systems represent niches that actively challenge the dominant agricultural regime. Other prominent research topics and concepts emerging from the ongoing ecological crisis include regenerative, conservation, climate-smart, and nature-positive agriculture (e.g. Tittonell 2020; Giller et al. 2021).

Decision-making is generally understood to be influenced by a range of factors (Farstad et al. 2022). As a result, farming system research emphasises the contextual nature of agency, where specific farming systems emerge from the co-evolution of farmers’ perceptions and actions within the broader biophysical and socio-economic contexts in which they operate (Darnhofer et al. 2010; Farstad et al. 2022; Kuhmonen 2023; Kuhmonen & Kuhmonen 2023).

Material and methods

Data collection

The interview study comprised thirteen diverse agricultural companies from various regions of Finland (Table 1). The interviewed farmers represented a spectrum of production lines, business strategies, and stages of entrepreneurship, including early-career, mid-career, and near-end entrepreneurs, they were predominantly male, two interviews were given by a farming couple. Prior to the interviews the farmers were informed about the purpose of the study and the research questions. Interviews were conducted between November 2021 and February 2022. The interviews were conducted in an informal, conversational manner with each session lasting between one and two hours. All interviews, except for the two trial interviews, were conducted by the same researcher. All interviews were recorded and transcribed in detail.

The data collection involved soliciting insights from agricultural entrepreneurs regarding key themes concerning their company’s operating environment, developmental trajectory, and strategic decision-making (Vesala and Rantanen 2007; Pyysiäinen 2010). Through semi-structured interviews, agricultural

Table 1. Qualitative features of the interviewed case farm holdings, farmers and their careers and households. The features marked with ‘*’ were not specifically addressed during the theme interviews, but they were considered interesting as some farmers mentioned them actively.

Numbering of farmers		V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13
Location of the farm in Finland	South													
	Middle													
	North													
Farmer's educational level	Basic													
	Middle													
	High													
Stage of career in farming	Early													
	Middle													
	Late													
Relevance of other own business than the farming business	Smallish													
	Considerable													
	Main source of income													
	No other own businesses													
Other business and agriculture	Connected													
	not Connected													
Diversification type of farm business	Added value by including service													
	Machine contracting													
	other type													
Wage work of the farmer	Main source of income													
Work input of the spouse	Fulltime work at the farm													
	Helping at the farm													
	fulltime off-farm													
	Employment													
	not known*													
Work input of members of the family	Business partner													
	considerable													
	Helping													
Hired labour	several fulltime workers													
	One fulltime worker													
	Seasonal													
Field hectares	Over 200													
	100–200													
	Under 100													
Significancy of forestry at the farm	Considerable													
	Some													
	not Mentioned*													
Horizontal specialisation	Grain or grass forage													
	Special plants													
	Milk production													
	Pork or beef													
	Broiler													
Production style	Organic													
	Conventional													

entrepreneurs were provided with the opportunity to articulate changes in their operating environment, personal lives, and business operations that they deemed significant. These insights shed light on the factors influencing their strategic choices and solutions. A key element of discussion themes was the question regarding farm histories, where participants were asked to narrate the story of their farms. Responses were typically structured around distinct periods, marked by ‘triggers’ such as succession or financial challenges, which prompted a shift in the farm’s direction. The goal was to capture the development of both the farm, the farmer household and the farmer over time, exploring the farm’s current state, its origins, significant events along the way, and future aspirations. (Please see Appendix1, The themes of questions and conversations).

Analytical approach

The research is inherently a descriptive case study, characterised by its focus on a small group of research subjects and detailed observation of a large number of their features within their contextual framework. Consequently, it aims not only to provide a thorough description of specific cases but also to elucidate broader phenomena reflected within their context and what insights they offer (Eriksson and Koistinen 2014). The research setup is designed to offer a concise and lucid depiction of the phenomenon under investigation, ensuring the preservation of central information and qualitative variations within the material (Tuomi and Sarajärvi 2009a, 2009b). Accordingly, the approach of social science and the case study method, the basis of the study proliferates rather than narrows the number of explored features. Its best use appears to be for adding to existing experience and improving humanistic understanding (Gomm et al. 2000).

Qualitative social science research is typically analyzed inductively, allowing unexpected findings to surface, even those not directly related to the original research questions. This approach offers the advantage of revealing insights that might otherwise remain unnoticed. Academic scholars frequently use qualitative case study research to explore the social side of management and organisational phenomena. The goal of such research is to generate knowledge that addresses the complexity of empirical phenomena. In the social sciences and humanities, the practical-hermeneutic approach aims to uncover interpretations, the values underlying them. This serves broader social purposes, such as informing public policy. Additionally, intuitive knowledge plays a role in case studies (Eriksson et al. 2021).

The interviews were analyzed using the ‘content analysis’ method as outlined by Elo and Kyngäs (2008). Each interview was fully transcribed. All the transcriptions were read multiple times by both researchers. The researcher who did not conduct the interviews began to build data-driven theme categories for each case. In practice, these categories were established using color-coding in the transcribed text files. In the final stage, Excel spreadsheets were used, and the other researcher who conducted the interviews reviewed the themes to check if they aligned with his understanding. Afterward, the final theme categories were agreed upon by both researchers.

The qualitative content analysis encompassed this material-oriented coding and classification of citations, which relied on identifying key content elements within the material. The strategic choices surfaced from the interviewees’ narratives as they recounted the farm’s history and the evolution of their own agricultural entrepreneurship. The objective was to leverage case interviews to gain a deeper understanding of the factors influencing the personal decision-making of agricultural entrepreneurs throughout their careers.

In Table 1 detailed qualitative descriptions of the characteristics of the interviewed farm holdings, farmers, their careers, and households are provided based on qualitative information derived from the interview data.

Results

Reasoning behind the choices of strategic elements

The income structure had been diversified through other business activities, such as contracting or agricultural machinery sales (V1, V2, V5, V8). Work arrangements were organised differently among family members and close relatives; for instance, tasks were carried out collaboratively with the previous generation, who might still manage their own farm (V13), or cooperatively between father and son (V9, V11), with seasonal assistance from the father (V2), between the entrepreneurial couple and other family members (V3, V8, V10), through companies formed by brothers (V5), and by working together as a couple while both being independent agricultural entrepreneurs (V3). In the contracting business, the mother, two brothers, and a sister were involved (V1). The significance of family members representing different generations and genders was emphasised (Please see Table 1).

However, in only a portion of family farms, both spouses relied entirely on agriculture for their livelihoods (Table 1). Often, one spouse supplemented their income through employment outside of farming. For three interviewed farmers, their primary source of income was wage labour (V7, V9, V11). In a few cases, a strategic decision was made during the generational transition: a transition was made to off-farm employment and

part-time farming alongside, as remaining in full-time production would have required substantial investments in modern production facilities and equipment, which the individuals were not willing to undertake (V7, V11).

Specialty crop growers emphasised that, in addition to product pricing and support levels, geographical location (V9) or soil quality (V4) had influenced the choice of the mode of production – and these decisions may have been made by previous generations of farmers. For example, being located at the first growth zone in the very southern part of the state has enabled the cultivation of specialty crops that are not viable in other growth zones in Finland (V9). Conversely, farms located in more northern growth zones achieved the best returns from grass forage cultivation through livestock farming (V10). Specialty crop growers had been able to enhance their profit margins through ancillary services such as transportation and direct sales (V4, V9). They also mentioned investing in energy self-sufficiency as a strategy to improve profitability and address environmental concerns (V4, V9). Among the interviewed farmers, four of them practiced organic farming methods (V2, V3, V8, V11).

Three out of four interviewed organic farmers cited cost reduction in investments and inputs, as well as higher subsidies for organic production, as reasons for transitioning to organic farming (Table 1). One farm had switched to organic cultivation to avoid new production and grain drying capacity investments (V8), another had made the transition due to dissatisfaction with the poor price development of conventionally grown grain (V2), and a third because the farm's yield levels were not particularly good and production targets had been abandoned (V11).

A farm business that had invested in growth or specialty crop cultivation at some point aimed to stabilise its operations and continue them unchanged after significant investments, to utilise and repay the investments made (V13). Both the potato farmer and the broiler producer justified their decision to remain in their chosen production direction by pointing out that the market mechanisms for these products had been functioning reasonably well (V4, V13). A dairy farm holding, on the other hand, had decided not to proceed with a new expansion investment in its robotic barn in the early 2010s, as it did not believe that increasing the number of animals would improve profitability (V6). One interviewee emphasised the significance of support policies in maintaining his or her production direction: a dairy farmer justified his or her decision to continue based on support policy stability (milk production vs. meat production) (V10). Although there was generally dissatisfaction with the formation of grain prices, the reason for continuing grain cultivation was that there were existing markets for grain, and if the quality was not sufficient for bread-making, the grain harvest could be sold as feed (V12). Among the group of agricultural entrepreneurs who had continued their operations unchanged for a long time, there were also those nearing the end of their careers, with no debts, optimising amounts of subsidies received (V6, V7, V12).

Once the company no longer had significant debts, yield targets were abandoned, and efforts were made to optimise subsidies (V7). Efforts were made to reduce input costs, for instance, there was a readiness to compromise on investing in production (V6, V7, V12). When the company was debt-free, the agricultural entrepreneur was nearing the end of their career, and no successor was in sight, the foundation for a growth strategy, as seen in earlier career stages, no longer existed (V6, V12).

Cross-tabulation of some features of farm holdings, farm households and farmers

To illustrate how the expressed core values, certain aspects of the farm household's income structure, managerial ownership of holdings and the education level of farmers intersect with the stage of their career, Table 2 was created.

Almost every interviewed farmer, particularly those in the earlier and middle stages of their careers, emphasised that profitability, outcomes, and the high quality of operations on their farms are the primary guiding values for their farming endeavours. The exceptions were a few farmers (V7, V12) who had previously placed strong emphasis on these issues but no longer did. Additionally, a couple of farmers at later stages of their careers (V2, V3) did not emphasise these aspects as strongly, similarly to a farmer who viewed farming more as a hobby (V11). Notably, in the data, only three farmers from different career stages expressed values related to the continuity of family farming (V3, V9, V10).

Table 2. The qualitative cross-tabulation in this table depicts the expressed core values, certain aspects of farm household income structures, as well as managerial ownership and education levels of farmers, juxtaposed with the stages of their careers. Dark-colored cells in the grid indicate issues raised in the interview data. X-marks denote instances where the interviewer mentioned that certain factors were applicable earlier in the farmer's career but are no longer relevant at present.

State of career		Earlier state of career				Middle state of career				Later state of career				
		V1	V9	V11	V13	V4	V5	V7	V8	V10	V2	V3	V6	V12
Main values of farming	Profitability, outcome							X						X
	High-quality operation							X						X
	Livelihood mentioned													
	Continuity of family farm mentioned													
	Likes farming work													
Educational level	basic													
	middle													
	high													
Ownership	Nuclear family farm													
	Farm consortium													
Current income combination	Direct marketing of special products													
	Main income from the other own business													
	Income from the other business													
	Main income: wage work off-farm													
	Organic farming													
	Forestry important or mentioned													
	Spouse fulltime on-farm work													
	Animal husbandry													

In addition, a significant change can be observed in the management ownership of farms: although nuclear family-based management and ownership structures were prevalent among farmers in the later stages of their careers, consortium-based management ownership structures have become much more common among early-career farmers.

The current income distribution among the farms and households analyzed in this case study does not visually correlate with the stage of the farmer's career in a qualitative sense; rather, diverse income structures are dispersed among different stages (see Table 2). Instead, clear correlations are observed among certain features themselves, particularly among four animal husbandry farm holdings (V8, V10, V3, V6), where the farmer's spouse was also employed full-time on the farm and where the significance of forestry in the holdings' incomes was mentioned.

Cross-tabulation of the strategic elements of the plans and farmers career states

Table 3 illustrates the qualitative strategic elements that farmers expressed planning to implement – in the near term – on their farm holdings or households, juxtaposed with the stage of the farmer's career.

The qualitative strategic elements in Table 3 are arranged beginning with growth and investments required, followed by quality and income diversification oriented operational elements, and concluding with downshifting and exit strategies from farming.

Table 3 reveals that growth strategies are most prevalent among farmers in the earlier and middle stages of their careers. These farmers plan to implement new cultivation methods and improve growing conditions in their fields. Animal husbandry farmers, in particular, are intending to make additional investments to enhance the welfare of their animals. Moreover, many of them are considering investing in on-farm energy production to work towards achieving carbon neutrality for their farm holdings.

Naturally, most farmers in the later stages of their careers were contemplating various exit strategies from farming, while one farmer in their mid-career was already beginning to downshift, particularly in terms of costs, investments, and yield targets. Table 3 nicely shows how strategic elements expressed by farms change along the farmer's career stage – as part of adaptive cycles.

Table 3. The strategic elements anticipated for implementation – in the near term – by farm households are visualised in the qualitative cross-tabulation with the stage of farmers' careers. Dark-colored cells in the grid indicate elements that emerged from the interview data.

Strategic elements of the plans in near future	State of career of farmer	Earlier state of career				Middle state of career					Later stage of career			
	Numbering of farmers	V1	V9	V11	V13	V4	V5	V7	V8	V10	V2	V3	V6	V12
Growth of agriculture	Growing the scale of farm production													
	Become fulltime farmer													
	Hire more staff													
Invest in field crop farming methods	Usage of new type of cultivation methods													
	Improve field growth condition													
Invest or develop value-add for animal well-being	Invests in animal welfare													
	Develop new value-adding product													
Invests carbon neutrality & on-farm energy	Striving for carbon neutrality of farm													
	Invests in on-farm energy production													
Add income from off-farm	Growth of the other own business													
	Prepare possibly to turn to wage work													
Preparing strategies to exit from farming	Downshifting costs and investments													
	Optimisation of supports over yield													
	Prepare to in-family successor change													
Exit from farming strategies	Continue unchanged until retirement age													
	On pension: field cultivation only													
	Prepare to sell farm off-family													

Discussion

Farm typologies

Typologies are typically based on specific points in time within particular contexts. A key aspect of data collection is considering the temporal dimensions, which are intricately linked to the surrounding space and culture (e.g. Huber et al. 2024). As such, typologies established in particular contexts cannot easily be applied to predict the decision-making of individual farms, even when they share similar characteristics. While farm typologies are valuable tools for evaluating economic performance and informing EU policy development, relying exclusively on economically-driven typologies may fail to provide sufficient insights into why farms with comparable physical structures and economic profiles make vastly different strategic decisions.

The aim of this study was to select companies employing strategically diverse business models and typologies as research subjects in order to better understand their decision-making processes. The farms were spread across various regions of Finland, as shown in Table 1. Some farms were solely engaged in primary production, while others were involved in additional business activities, whether related to agriculture or not. The significance of these activities to the farming family's income ranged from highly significant to minimal. Similarly, the level of family member involvement varied, as did the composition of decision-makers within the companies and the extent of external labour employed. The types of primary production and production methods also differed. However, all the case studies in the research can be considered to represent what might be termed successful farmers, based on a broad qualitative assessment within their own cultural context. This general evaluation was made by the researchers who selected the subjects. Since the research was qualitative and the number of cases was relatively small, there were few significant similarities within the typological groups (efficient primary production, added value in primary production, income diversification) that had been constructed based on preliminary assumptions.

While typologies may represent different farming styles or responses, they lack a mechanism to explain the transition from one path or typology to another. The static nature of typologies restricts their ability to describe the process by which farmers move between categories in response to different triggers (e.g. Sutherland et al. 2012). As Kostrowicki (1977) noted in the 1970s, a typology constructed at a particular moment is like a static snapshot of a situation. However, this snapshot can evolve into a dynamic portrayal, similar to how a series of frames in a film creates movement when snapshots are taken repeatedly.

Cycles of change

Farm transition trajectories are often observed to follow relatively linear patterns over short periods, with minimal or no changes in management decisions. However, these linear phases are frequently interrupted by sudden, sometimes dramatic shifts in direction. Wilson (2008) emphasises the variability in developmental trajectories across different types of farms, highlighting the significance of ‘nodal points’ that can profoundly alter these paths. Similarly, Sutherland et al. (2012) argue that substantial changes in farming practices typically arise in response to ‘trigger events,’ which prompt farm managers to reassess available options and potentially adopt new strategies. Consequently, transitions at the farm household level are non-linear, heterogeneous, and complex, making them inherently unpredictable (Wilson 2008; Sutherland et al. 2012).

Upon analysis, the selected cases did not form distinct strategic groups, as initially assumed by the original selection hypothesis (efficient primary production, value addition in primary production, income diversification), which expected clear similarities based on key characteristics. Instead, when asked about their short-term strategic plans, the strategic choices were clearly grouped by the stage of the farmer’s career, as shown in Table 3. Although this case study represents only a single point in time, even with a small sample, it is possible to observe how the phase of a farmer’s career cycle influences strategic decisions. A farmer’s career cycle is closely tied to the broader farm cycle, which can span multiple phases over several decades, as different generations assume control. Similarly, the farming family’s cycle – ranging from raising children to aging – follows a comparable pattern. The farm cycle may also come to an end if there is no successor to take over. Particularly in the later stages of a farmer’s career, but even earlier, decisions are often shaped by strong anticipation of the farm’s next phase (see Table 3).

Researchers have long recognised that the development of farm holdings over the long term follows a cyclical pattern, with farmers’ goals, material well-being, and physical and mental health fluctuating according to the evolving circumstances of the farm family (e.g. Gasson et al. 1988; Burton and Otte 2022), as well as the opportunities and constraints arising from policies or markets (Darnhofer et al. 2016). For example, succession cycles drive the continuous co-evolution of the farm and its successor’s identity (Fischer and Burton 2014), while ‘triggering change cycles’ involve the farm’s adaptation to key events such as succession, illness, or divorce, leading from phases of experimentation to consolidation (Sutherland et al. 2012). This process can be framed within the concept of the farm family life cycle, which encompasses the farm’s business development through various stages (expansion, consolidation, contraction, exit), and its connection to generational transitions within the farm family (e.g. Barnes 2023). As part of resilience research, adaptive cycles and the resilience of farms have been extensively studied (e.g. Darnhofer 2014; Darnhofer et al. 2010; Darnhofer et al. 2016; Kuhmonen 2023; Kuhmonen & Kuhmonen 2023). When new actions are implemented, the farm system enters a period of instability as these practices take hold. If successful in achieving their intended goals, these practices eventually lead to another phase of path dependency.

Farm as a ‘micro’ decision-making context

In family businesses, such as family farms, the same individuals are often responsible for both strategic planning as entrepreneurs and for implementing these plans as managers and workers (Väre et al. 2021). Strategic decisions are made alongside the farm’s daily operational tasks. Family farms may rely solely on the immediate or extended family for labour, or they may hire external workers, while solo farmers may operate independently or seek additional help (Rantamäki-Lahtinen et al. 2022). The amount of hired labour is significantly influenced by the farm’s operational scale or other business-related factors. Studies have shown that when family farms hire external labour, it is often associated with greater business

efficiency. In such cases, family labour is seen primarily as a flexible resource to manage short-term shocks (Trnková and Žáková Kroupová 2020; Barnes 2023). On the other hand, Addo and Salhofer (2022) found that farms that primarily rely on family labour are better equipped to manage poor years compared to those that also use external labour. Ultimately, it is clear that various factors related to the farm, the farmer, and their family and household influence these outcomes. In any case, understanding the division of labour on the farm requires considering off-farm labour and other household income sources (e.g. Gasson et al. 1988; Hardesty and Harmon 1994; Burton 2006).

In this cross-sectional case study, as shown in Table 2, it can be seen that at the time of the study, early-stage farmers typically worked on consortium farms, indicating a shift where newer farm businesses may not operate as often as family-run farms. In contrast, cases representing later stages of the career reflect older farmers, for whom the nuclear family farm model has been more common. This naturally influences decision-making processes. While quantitative studies in agriculture often assume that family businesses are managed by a single decision-maker, typically a male, who holds financial and administrative power over the farm unit, this is rarely the case (Burton 2006). Instead, decisions regarding the management of family farms are influenced not only by the farm's or farmer's characteristics but also by the goals and priorities of the farmer's family and household.

Overall, it has become increasingly evident that the entire household and the farmer's family situation must be considered when examining the farm business. Typically, the income sources of a farm household arise from decisions made within the household (as shown in Table 1). These issues highlight the need for an interdisciplinary approach, which has led to growing attention to the family development cycle, inheritance and generational transition processes, the roles of farmers' spouses, and the dynamics of multi-job farm families (e.g. Hayden et al. 2021). As Table 2 shows, almost all case farms prioritise profitability and successful outcomes, at least at certain stages of their careers. This is closely linked to the cultural and social context in which the farms operate. In the European context, successful farm businesses are those that perform well financially and are managed with goals associated with good entrepreneurship. Furthermore, in agricultural productivity research, it can be useful to consider whether farm diversification or off-farm work is truly part of the agricultural strategy or, in fact, a household income generation strategy. This is important because if farming is financed by an unrelated business or wage labour, the farming operation itself may not be a profitable enterprise.

Farm holdings do not respond uniformly to identified opportunities or constraints. The resources and priorities of farmers (and farming families) vary significantly. Darnhofer et al. (2010) found that while daily farm management is shaped by economic frameworks, social norms, local agroecosystems, and material farm structures, it is also influenced by dispositional factors, such as the farmer's (or farming family's) perceptions, preferences, and willingness to take risks. Cognitive factors, such as the farmer's (or farming family's) understanding of the practical benefits, costs, resources, skills, and risks associated with a particular practice, also play a significant role (Dessart et al. 2019). Furthermore, within these diverse material, cultural, and subjective frameworks, Darnhofer et al. (2010, 194) emphasise that farm business decisions are not based solely on rational or scientific considerations; they are also shaped by the farmer's (or farming family's) goals, values, and perceptions of potential opportunities and challenges. In this context, intuition plays a central role for farmers (Nuthall and Old 2018). Different interpretations of opportunities and constraints lead to varied responses.

Structures and systems as 'meso' decision-making context

The decision-making processes on farms, such as choices related to farming styles, are influenced by a range of socio-economic and ecological factors. Research on social-ecological systems (SES) seeks to capture the complex interconnections within farming decision-making contexts. These studies emphasise the dynamic relationships between social and ecological systems. Ecologically, farmers' behaviour is closely linked to the specific conditions of their farms, including land, climate, and growing conditions. The structural aspects of the ecosystem include physical, geochemical (soil, water, air), and biological elements, along with biodiversity, which encompasses both domesticated and wild species. Functionally, the ecosystem encompasses biophysical processes, such as soil, water, and nutrient cycles, as well as biological processes that impact individuals and populations. From a social system perspective, the focus is on the diversity of stakeholders, organisations, and institutions that facilitate interaction among various entities.

The functional component, meanwhile, is aligned with diverse socio-economic processes, shaped by social norms and motives that are influenced by the broader social context and by what farmers perceive others expect of them (Dessart et al. 2019). Lescourret et al. (2015) note that socio-economic and ecological factors are often treated unevenly, and reciprocity between these two systems is not always evident in studies of farmers' behaviours and decision-making.

The territorial location of a case farm has a significant influence on both its ecological and socio-economic conditions. For example, the cultivation of specialty crops is primarily feasible in the southern parts of the country (see Table 1). In contrast, in the northern regions, grass cultivation for livestock feed and its processing into dairy products might be the only viable alternative, as growing staple grains is not possible there. The best opportunities for machinery contracts are found in the southern part of the country, where the majority of potential farms are located. Additionally, the conditions for wage labour are generally more favourable in southern regions. To varying degrees, most Finnish farms also engage in forestry, with this activity extending from the south to the north.

Farmers' agency, or decision-making power, arises from the interaction between individual behaviour and the relational and cultural contexts, including institutional structures. While the relational and structural context does not directly dictate farm decisions, it plays a significant role in shaping them. This means that decisions are not influenced solely by individual values, attitudes, or worldviews. Instead, agency is more than a collection of individual choices – it is deeply influenced by the complexity of relational and institutional systems. Agency reflects the degree of control individuals have over their circumstances. Power serves as a link between agency and structure. The ability to access or use resources within a system is tied to the power dynamics of the actors, which reflect their roles within that system. Agency can either strengthen or challenge existing structural systems. In the context of food security, agency can be understood at multiple levels, ranging from individual and household scales to local communities, national frameworks, and global systems (Kuhmonen 2023).

Regime as 'macro' context for decision-making

To understand farmers' agency, Kuhmonen (2023) suggests it is crucial to consider the specific structural context of the time and the prevailing regime, which is shaped by norms, routines, technologies, politics, and regulation. Regimes are sustained by institutional rules that define what is considered 'acceptable' or profitable within the system. According to Bünger and Schiller (2022), a regime represents the predominant way in which production systems are organised within a specific industry at a particular time, emphasising optimisation over radical change. Moreover, due to the persistence of dominant structures, conventions, and routines, regimes can be viewed as established centers of power (Bünger and Schiller 2022).

Since this study was conducted in an EU member state in Western Europe, the prevailing regime – particularly for farms that rely heavily on agriculture for their livelihood – places significant constraints on the operations of farms within the dominant food chain system. In this study, the dominant regime defined the focus on farmers in the top tier of entrepreneurship, whose discourse reflected the prevailing regime's concept of good farming and entrepreneurial activity.

As Kuhmonen (2023) argues, in the EU context, the prevailing regime and its incentives often encourage and compel specialisation and growth, particularly for farms that heavily depend on agriculture for their livelihood. Given the significant constraints imposed by the prevailing regime, transformative agency cannot typically be expected from most farmers. Financial incentives and costs remain central to decision-making, especially for full-time farmers (Wittstock et al. 2022). Potential change agents among agri-food producers may be classified as either hybrid or niche actors, as Bünger and Schiller (2022) suggest. They argue that actors who distance themselves from the regime's mainstream practices are known as hybrid actors, who tend to be more innovative. The niche level, in contrast, is somewhat isolated from the regime, shaped by cognitive, social, and spatial distance. Actors at this level are more likely to develop alternative structures compared to those within the regime, although their assertiveness tends to be limited. Alternative food systems are one such niche challenging the dominant regime in EU contexts.

Decision-making regarding agricultural practices in the EU is largely shaped by the instruments of the prevailing regime, such as regulations and payments. However, these tools have become increasingly complex, and their ability to steer outcomes toward desired goals is often contradictory. Nevertheless, they

significantly restrict farmers' autonomy in decision-making. Additionally, these governance mechanisms create tensions and contribute to feelings of inequality. In terms of power dynamics within the western food chain, farmers are positioned as the least privileged, with their decisions being heavily constrained by the dominant regulatory framework (e.g. Kaljonen et al. 2021; Maluf et al. 2022; Wittstock et al. 2022).

Conclusion

The socio-cultural impacts of the globalised food system have contributed to the homogenisation of food cultures and the physical and cultural separation of consumers from producers. This disconnection can lead to a diminished appreciation for food and a loss of a 'sense of food.' In the absence of this awareness, consumers are often unaware that their choices also influence how, and which agricultural products are produced. Farmers represent the smallest actor in terms of both quantity and power at the beginning of the food chain. Both food processors, who follow farmers in the chain, and consumers, the largest actor in the chain, are caught in the pressures between wholesale and retail trade, which hold the greatest decision-making power in areas such as the origin, quality, and pricing of food products available in grocery stores. However, the influence of consumer choices, particularly their expressed demands, should not be underestimated.

In Western countries, consumer behaviour in food markets and the prevailing food production system partially regulate agricultural production and, consequently, farm decision-making. When examining farmers' behaviour in isolation from the broader cultural context and the structural dynamics of the food chain (the dominant system), the perspective will shape whether the ecological sustainability transition is viewed primarily as a matter of the will and personal characteristics of a single professional group: farmers. This approach can easily lead to blame and finger-pointing, which is especially burdensome for the professional group with the least power in the food chain and its transformation.

Given that numerous factors and contextual levels discussed in this article influence farm decision-making – where both small and large choices are made that impact the individual, household, or farm business in diverse ways – it is not feasible to classify the values potentially influencing these decisions into opposing categories such as instrumental or relational values. Similarly, assessing the relationship between agriculture and nature solely through the extremes of two value perspectives, such as instrumentalism and intrinsic value, overlooks the complex structures in which farms operate and make decisions. Nonetheless, it is encouraging that the emphasis on relational values towards nature is increasingly gaining prominence in high-level international discussions. In this context, relational values towards nature may serve as a more substantial leverage in shaping natural resource policies in Europe, ultimately fostering regenerative systemic changes.

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Data availability statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request and with permission from the project funder.

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Appendix 1. Framework of Farmer Interviews

1. Nature, Background, and Development of the Farm Operation
 - A. Background and Organisation of the Farm Operation:
 - What is the history of the farm, and how and when did the current form of operation begin?
 - What was the farm's history before it was transferred to you?
 - Through what arrangements did the farm come into your ownership?
 - What activities does the farm currently involve?
 - What is the size of your farm (in hectares and/or number of animals)?
 - In addition to primary production, is there any other business activity or paid employment connected to the farm?
 - Who is involved in the farm's operation overall (including any additional business activity or paid employment)?
 - What kind of education and skills do the people involved in the management of the farm have?
 - B. Motivation and Decision-Making:
 - What were the key factors influencing your decision to start operating the farm in its current form?
 - What have been the important objectives or concrete goals guiding the farm's operation? How successful have you been in achieving them?
 - What has been the most important principle or value guiding your farm operation?
 - C. Decision-Making and Practical Realities:
 - Has the form or nature of the farm's operation been significantly changed or redirected at some point?
 - If so, what were the key factors influencing the decision to redirect the operation?
 - Have the desired goals and results been achieved through the redirection? Why or why not?
 - If the nature of the operation has not been significantly changed, what key factors have supported maintaining the chosen course?
2. Future Plans and Adaptation to Changing Conditions:
 - What are the key development or adaptation needs for your farm in the near future?
 - What is driving these development or adaptation needs; what are their causes?
 - What are the most important goals and areas of development related to these in the near future?
 - What plans do you have in relation to these issues?