



We do it our way – small scale farms in business model transformation for sustainability

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ABSTRACT

Value creation is at the core of business model (BM) research, but the link between BM and value creation remains unclear. In this work, empirical data on BM transformation towards sustainable value creation in the agri-food sector, were obtained through case studies. Factors in BM transformation were identified, transformations in different BM segments were analysed and sustainable value created through these transformations was assessed. Factors such as owner-manager mind-set, experiences of sustainability and market pressures were found to drive transformation. All cases performed generic and case-specific transformation activities, with an animal welfare ethos and sustainable solutions for distribution and transport being central for all firms. Differences in strategies and cooperation derived mainly from the geographical and micro-context. While exhibiting innovativeness, the sustainable value created was predominantly within the current time horizon. Holistic integration of sustainability into core business was challenging for the farms, due to lack of knowledge and systemic approach to sustainability. All farms expressed a desire for learning and exchange of knowledge, a gap not met by other institutions in the sector. Six directions for future research on sustainable value creation through BM transformation are suggested.

1. Introduction

The purpose of any business is value creation linked to revenue generation and benefits for the owner(s) (Helfat et al., 2007; Pitelis, 2009). However, firms are increasingly committing to ethical behaviour and compliance with sustainability principles (Morsing and Perrini, 2009). Value creation has expanded to include environmental and social aspects (Laukkanen and Tura, 2020; Peltola et al., 2016). Environmental value considers the impact of a firm on nature (Stubbs and Cocklin, 2008). Social value includes broad societal concerns, such as business responsibility for ethical behaviour, and individual concerns, such as non-discrimination and employee wellbeing (Laukkanen and Tura, 2020; Ouden, 2012). Sustainable business models (SBM) incorporate social and environmental dimensions of value creation. Multiple studies on SBMs call for integration of sustainability principles such as efficiency, consistency and system thinking (Breuer et al., 2018; Geissdoerfer et al., 2018; Neesham et al., 2023; Rauter et al., 2017).

However, making the transition from a more traditional business model (BM) to a SBM includes many challenges that need to be addressed. For example, from a paradox theory perspective it could be

argued that tension will occur and need to be addressed to make the transition successful (Daddi et al., 2019). One of these areas that has been identified include competing demands between the business models, focusing the tension of sustainability and economic value creation that is often described as being incompatible (Endregat and Pennink, 2021). Another area identified focus on the sustainable mind-set as one of the key components to be addressed during the transition (Endregat and Pennink, 2021; Schaltegger et al., 2012).

Understanding of sustainable value creation and its link to BM remains limited and more research is needed on theories, methods and empirical contexts (Lüdeke-Freund et al., 2020). Sustainability in the agri-food sector has long been a research interest (Balaceanu and Apostol, 2014). Apart from ecological and social pressures, firms in the agri-food sector face a competitive market environment (Tell et al., 2016). Globalisation, trade, technology and retailer power have favoured large-scale producers, threatening the survival of small agri-food firms (Howard, 2009; Sexton et al., 2007). Conventional agriculture focusing on economies of scale meets global demand for food but has negative climate and social impacts beyond agriculture (Bowler, 1986; FAO, 2014). Considering the importance of a systemic approach to

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global problems and the agri-food sector's links to basic human needs and nature (Franceschelli et al., 2018), there is a need for BM transformation to enhance sustainable value creation.

Current knowledge on BMs, especially SBMs in the agri-food sector, is limited (Barth et al., 2021; Franceschelli et al., 2018; Tell et al., 2016). The accepted view is that BM change, adaptation and renewal result in sustained value creation (Achtenhagen et al., 2013). But the factors initiating change, ways to effect change with limited resources and the type of value created when a firm adopts SBM are unclear. Current research on BM transformation “has gaps with respect to the identification of antecedent conditions, contingencies, and outcomes” (Foss and Saebi, 2017, p. 200). Previous research on the adoption of agricultural innovations has predominantly focused on socio-economic characteristics as well as production and cost-effective aspects, while neglecting individual factors that shape farmers' behavioural intentions (Timpanaro et al., 2023). The focus on production and profitability can be understood as a necessity in the short perspective, but from a strategical perspective the farmer also needs to be innovative and create sustainable values on different levels (Testa et al., 2022; Barth et al., 2017).

Despite the interest and need of developing sustainable solutions within the agricultural sector, we have limited knowledge of how sustainable business models are developed. Future research agenda emphasize the importance of understanding barriers as well as drivers towards sustainable business model implementation, specifically addressing the potential of uncaptured sustainable values in the small firms with limited resources (Broccardo et al., 2023). In order to develop the research field further, more empirical research is needed that builds upon theories and framework that identifies and integrate sustainable values towards sustainable business model implementation.

This study analysed BM transformations and resulting sustainable value of three small firms in the agri-food sector in Sweden. The aim of the study is to understand how BMs are transformed for sustainability by identifying factors of BM transformation, transformational practices in different BM segments and sustainable value created by these transformations. The research question was: How can a small agricultural company transform its BM to create sustainable value? The overall goal was to provide theoretical perspectives on SBMs based on empirical context-specific evidence, thus bridging a known gap on sustainable value creation (who, what, how) in BM research (Lüdeke-Freund et al., 2020).

2. Theoretical considerations

2.1. Sustainable value

Sustainable value is the combined environmental, social and financial outcome of business activities. The triple-bottom line approach (Elkington, 1998) and stakeholder theory (Freeman, 2010), alone or together, often underpin sustainable value creation research (Lüdeke-Freund et al., 2020). Some sources suggest extending the target of value creation beyond customers and companies to other societal stakeholder groups (Bocken et al., 2015; Pedersen et al., 2018). Including a broader range of stakeholders means accounting for multiple forms of value creation and elements of business performance (Tapaninaho and Kujala, 2019). The diversity that characterises sustainable value concept leads to the debate about what forms of value are created and for whom (e.g. Bocken et al., 2015). The multi-stakeholder view creates an advantage for investigating different perspectives on value and finding its new forms in a variety of contexts.

Within the agri-food context, sustainable value creation includes value categories such as knowledge and innovation; digital transformation; circularity; bioeconomy; inclusiveness; product identity; distribution chain; collaboration; production; and diversification (Sadovska et al., 2020). By acting within and towards these categories, firms can account for tangible and intangible outcomes of value and satisfy current and future interests of various stakeholder groups (ibid.).

Application of this categorization in research allows to map accurately value activities in each category, while attention should be paid to the activities that are not covered by any of these categories. Such broad understanding of value coincides with the SBM perspective that customer value and profit generation should be extended to ecological, social and other types of non-monetary value for a wide variety of stakeholders (Upward and Jones, 2016). Importantly, sustainable value potentially leads to explicit business benefits, such as cost reductions, new sources of revenue (Bocken et al., 2014; Schaltegger et al., 2012), higher organisational resilience (Buliga et al., 2016), positive public image (Homburg et al., 2013) and anticipation of social concerns and future legislation (Schaltegger et al., 2012).

2.2. Business models and sustainable business models

A BM should “exploit business opportunities and create value for the parties involved” (Zott and Amit, 2010, p. 217). The legitimacy and importance of the BM discourse derives from its focus on value and how it is created, offered, delivered and captured (Massa et al., 2017; Upward and Jones, 2016). A BM links strategy and practice (Baden-Fuller and Morgan, 2010), by addressing typical strategy questions of market relevance, customer segments, profit generation and technology application (Verstraete and Jouison-Laffitte, 2011). A BM is a dynamic construct that can be altered by firms taking action for change. The Business Model Canvas (BMC) (Osterwalder and Pigneur, 2010) is a common tool for describing BMs and facilitating decisions on BM development. The BMC consists of seven segments: 1) key resources; 2) actors and partners; and 3) activities (production-side) and 4) customer groups; 5) communication; and 6) distribution (market-side) (Fig. 1). These centre around: 7) a value proposition, and all are connected to cost and revenue streams. Changes in BMs may involve new products and services, new markets and customers, the ways in which value is generated and captured, and changes in key activities, resources and cost structure (Achtenhagen et al., 2013). Though BMC is commonly used in research and practice, its static nature and absence of attention to interconnections between the segments are the shortcomings that should be accounted for during the investigation.

Sustainable BMs can be a source of competitive advantage (Geissdoerfer et al., 2018; Porter and Kramer, 2019). They add social and environmental dimensions to the economic dimension, in a three-layer BM (Joyce and Paquin, 2016). Apart from value capture through financial transactions (Bowman and Ambrosini, 2007), the value of social welfare and the value of preventing negative environmental consequences/promoting environmental benefits of business activities are included in SBMs (Tura et al., 2019). Thus a firm should be able to create sufficient economic value for its functioning, but simultaneously strive to have positive effects on the environment and society.

2.3. Business model transformation

The ability to adapt and change BM is a core organisational competence (Schneider and Spieth, 2013). BM transformation represents a new logic of value creation, delivery and capture to gain competitive advantage (Aspara et al., 2013; Frishammar and Parida, 2019). Transformation is described as “designed, novel, nontrivial changes to the key elements of a firm's BM and/or the architecture linking these elements” (Foss and Saebi, 2017, p. 201). Firms transform their BM in order to cope with customer demands and market



Fig. 1. Conceptualisation.

competition (Johnson et al., 2008), or according to perceived internal and external drivers or threats (Foss and Saebi, 2017; Ulvenblad et al., 2018).

Business model transformation for sustainability implies generation of positive effects on the environment and society by creation, delivery and capture of value (Bocken et al., 2014). Contingency theory (Lawrence and Lorsch, 1967) states that a firm constantly redistributes resources to be compatible with environmental conditions and demands. A firm creates value by reconfiguring existing or constructing new resources in order to realign to environmental change (Demil and Lecocq, 2010; Kortmann and Piller, 2016). Change often requires large capital investment and long-term thinking (Linder and Williander, 2017). Successful collaborations enable and support firms in adapting to sustainability pressures (Lahti et al., 2018), and thus simplify BM transformation. Partners with competence and experience of SBMs can reduce contract costs and help create sustainable value (Domingues et al., 2017). Individual beliefs of decision-makers assist in emergence of SBMs (Ringvold et al., 2022). The resource-based theory (Barney, 1991) suggests that sustainable advantage is achieved by complementing or combining resource portfolios in response to market needs and societal shifts (Sirmon et al., 2007). Entrepreneurship and risk-taking tend to have a positive correlation with BM transformation (Huang et al., 2013), as do innovative organisational culture, organisational learning and corporate social capital (Zhao et al., 2014). The application of different theoretical perspectives assists in understanding of the types and forms of value BM creates and the processes of value creation, but no single theory can fully embrace BM and value creation.

2.4. Agri-food sector and BM research

Research on BMs in the agri-food sector is relatively new and the main topics covered are finance, management technology and ethics (Tell et al., 2016). The most common analytical unit is a company, followed by national, regional and individual levels of analysis (ibid.). The direction of BM research in the agri-food sector is dictated by distinct sector characteristics, where the family-owned and operated firm is a prevailing organisational type, with owners-managers identifying with local communities and landscapes over generations (Nuthall and Old, 2017; Sivertsson and Tell, 2015). Small family-owned firms are characterised by an informal and self-regulatory organisational structure, limited resources including intangibles (e.g. knowledge, competences) and independent decision-making (Spence, 2016). High profitability is often not the main driving factor for such firms (Barth et al., 2017).

Part of the BM research field explores influences on farmers' livelihoods and environmental impacts (Talerngsri-Teerasuwannajak and Pongkijvorasin, 2021); circular BMs for value creation from agro-waste (Donner et al., 2021); how types of agricultural investments affect BMs (Giger et al., 2020); and how BMs evolve in response to organisational capabilities (Velu, 2017). One study concluded that agri-food firms in northern Sweden generally have a high degree of BM innovation and prioritise delivery of social and environmental benefits over profit generation, leading to close integration with the community (Barth et al., 2021). Thus, studying the regional setting could reveal BM elements essential in transition towards sustainable practices. Ulvenblad et al. (2018) identified mind-set as a main barrier to BM innovation and called for more emphasis on cognitive aspects in BM transformation research. Björklund (2018) identified lack of competence and socio-emotional considerations as barriers to sustainable BM transformation. Franceschelli et al. (2018) used the BMC to create SBM innovation for food entrepreneurial companies. Sivertsson and Tell (2015) identified farming culture and mentality and lack of knowledge on how to meet customers' needs as barriers to BM innovation.

3. Conceptual and analytical framework

Based on the described theoretical underpinnings, the conceptual

framework applied in this study follows the structure schematically depicted in Fig. 1. Internal and external drivers and threats induce BM transformation (changes of the BM into a new sustainable BM configuration), leading to sustainable value creation.

Following this logic, the analytical framework further adheres to the theoretical assumption that BM transformations (e.g. in business activities, processes and practices), driven by certain factors, result in creation of sustainable value (Fig. 2). Understanding BM processes and resulting sustainable value answers the "What?" and "How?" questions regarding transformation. The factors initiating BM transformation can be divided into internal and external factors (Foss and Saebi, 2017). Sustainable value can be generated through activities in different BM segments, with the BMC serving as a template to map the transformations in each segment. Tentatively, the process of transformation to sustainability begins with identification of possible new markets and/or products/services as part of a new sustainable strategy. BM transformations thereby affect value creation.

Sustainable value creation can influence the firm internally (e.g. more efficient operations) or externally (e.g. positive environmental effect) in the short or long run (Sadovska et al., 2020). In practice, this means that a firm makes transformations in value creation inside the organisation, throughout the network, and in its value offering and value capturing. This brings sustainability outcomes, both internally and externally, to the firm, with short-term or long-term effects in all sustainability dimensions (Sadovska et al., 2020). Hence, new sustainable value creation manifests transformations in a firm's activities by integrating environmental, social and economic dimensions into its performance. However, the process is not linear. Through learning, experiences and perceived challenges arising from BM changes, the firm continues to alter the business in an iterative process, where several alterations may occur concurrently (Fig. 2).

4. Research design

This study applies a case study methodology, based on real settings. The methodology is renowned for studying processes and phenomena occurring in particular situations or in certain contexts (Yin, 2018). The advantage is that it allows understanding of the phenomena in focus by deriving from a rich description of it, for example on the dynamics that occur in business management (Eisenhardt, 1989; Merriam, 1998). The methodology was selected due to the exploratory nature of the study and to allow integration of practical and theoretical knowledge (Creswell, 2013). Analysis within and across cases makes it possible to compare and contrast findings (Yin, 2018; Baxter and Jack, 2008), improving understanding of complex phenomena (Siggelkow, 2007), enabling deep exploratory analysis (Cousin, 2005) and permitting data collection in real time to avoid retrospective interpretation bias (Alblas and Wortmann, 2014).

A multiple case study method was applied, with three Swedish agri-food firms (A-C) analysed in depth and a three-step procedure was applied (Table 1).

4.1. Selection of cases

Cases were identified through purposive sampling based on access and availability of information and specific requirements (Voss et al., 2002). Selection criteria included: 1) homogeneity in firm size (small/micro-business); 2) homogeneity in sector (agri-food); and 3) representing different geographical regions within Sweden (see case descriptions in Appendix 1). Based on our own knowledge and in consultation with local agricultural advisors, three cases (small agri-food firms representing "best practice" of value creation in their region) were selected. Participants consented in writing to participate and no reason for ethical vetting was found.

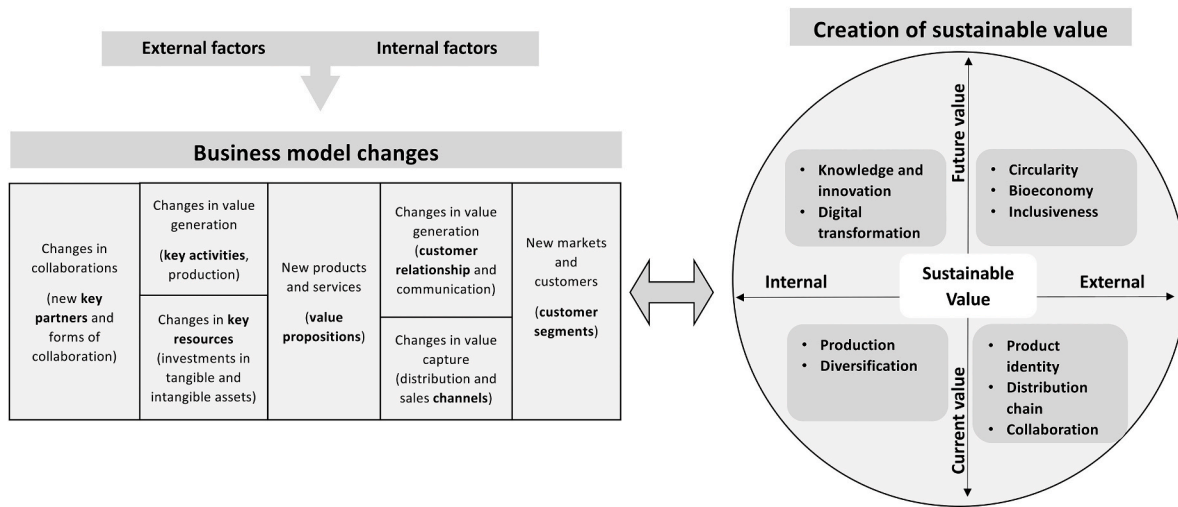


Fig. 2. Analytical framework based on (left) segments of the Business Model Canvas and (right) aspects of sustainable value creation (adapted from Osterwalder and Pigneur, 2010; Achtenhagen et al., 2013; Sadovska et al., 2020).

Table 1
Steps followed in multiple case study analysis.

Step	Objective	Actions
1	Identification and selection of cases	Setting criteria for selecting cases Analysing characteristics of the agri-food sector in Sweden Searching for “best practices” examples from the sector
2	Data collection	Design of data collection protocol Identification of cases and interviewees Interviews and recording Interview transcription Secondary sources (e.g. financial reports, social media etc.)
3	Data analysis	Coding of interview material Case and cross-case analysis Triangulation with secondary sources

4.2. Data collection

Empirical data were collected mainly in in-depth interviews. For each case, the owner-manager was interviewed for 2–3 h at the farmhouse and a site visit was made to farm facilities, including a ‘walk-and-talk’ around the facilities. In total one interview per case was conducted. In case A, a neighbour was present during the interview with the owner-manager and in cases B and C spouses were present. Brief follow-up calls were made to clarify income and cost statements.

A semi-structured BMC-based interview guide was used (Appendix 2). It covered value creation by the firms and the process of transformation towards their new BM. A BMC diagram was used during the interviews as a tool to depict and visualise the current BM and changes to it. The interviews were recorded and transcribed. A 4–6 pages summary was made of each case and sent to the interviewees for verification and to allow for further comments or retraction of statements. A full report was then written and sent to the interviewees for a final audit.

4.3. Data analysis

Qualitative thematic analysis (Boyatzis, 1998; Knight et al., 2007; Denzin and Lincoln, 2011) was performed on the interview transcripts and observation notes, using the NVivo 12 software (QSR International) for theme coding. The rich-text transcripts were analysed for examples of factors affecting BM transformation activities and to theme-code the value created.

Table 2
Four design criteria and their application in case study research (Adapted from Yin, 2018).

Criteria	Case study tactics	Application in general	Application in this study
Construct validity	<ul style="list-style-type: none"> Using multiple sources of sources Establish a chain of evidence Letting key-informants read through the report draft 	Data collection Data analysis and written report	<ul style="list-style-type: none"> Multiple interviews and documents, assessment of result/balance sheets and follow-up conversation Structuring of data Report reviewed by interviewees
Internal validity	<ul style="list-style-type: none"> Pattern matching Explanation-building Address rival explanation Use logical models 	Data analysis	<ul style="list-style-type: none"> Analysis of data material (coding and cataloguing), Cross-case analysis
External validity	<ul style="list-style-type: none"> Use the replication logic with multiple cases 	Research design	<ul style="list-style-type: none"> Multiple cases used Sampling procedure
Reliability	<ul style="list-style-type: none"> Use a case study protocol Develop case study database 	Data collection	<ul style="list-style-type: none"> Pre-discussion with reference group in developing the interview protocol Documentation of case studies based on transcribed material and other available materials

Firstly, factors affecting BM transformation were classified into internal and external drivers or threats (Foss and Saebi, 2017; Ulvenblad et al., 2018). During the analytical process, codes illustrating these drivers and threats were developed openly and unconditional (i.e. inductively), and interpreted into the transformational factors summarised in Table 3.

Secondly, BM transformation activities were mapped according to the BMC and these were pointed out during the interviews while filling in a blank BMC (Osterwalder and Pigneur, 2010). The BMC, and BM changes, were completed accordingly when all interviews were summarised. In a following step, the Achtenhagen et al. (2013) framework of BM transformation into sustainable business models were adhered to, as illustrated in Table 4.

Table 3
Summary of factors affecting business model transformation.

	Drivers	Threats
External	<ul style="list-style-type: none"> • Increased demand for value-added products • Customer acceptance of product price • Increased market prices for Swedish produce • Favourable geographical location • Variety of available sales channels • Presence of various customer segments • Low competition with other small-scale food producers • Decreasing profits in conventional value chain • High competition from large-scale producers 	<ul style="list-style-type: none"> • Low negotiating power with suppliers • Insufficient advisory service • Geographical location • State regulations and rules • Distribution and logistics • Complicated public procurement system
Internal	<ul style="list-style-type: none"> • Ability to adapt products to different customer segments • Understanding customer requirements • Desire to gain control over value chain • Willingness to keep firm size small and stay profitable • Desire to produce exclusive/niche products • Owner-manager personal belief in sustainability principles • Entrepreneurial organisational culture • Motivation to stay competitive • Care for animal welfare 	<ul style="list-style-type: none"> • Low level of learning and new knowledge acceptance • Insufficient knowledge on business development

Thirdly, the codes for value creation topics departed from the 23 identified in the agricultural business literature (Sadovska et al., 2020, p. 7) (i.e. deductively), while additional codes were generated inductively from the data. Nineteen codes for value creation topics (15 based on Sadovska et al. (2020) and four additional) were supported by the empirical data (see Appendix 3).

Finally, the cases were compared and contrasted, exploring each firm's BM, transformation activities and resulting sustainable value creation. Specific transformations in value creation activities were set in the BMC context, to pinpoint sustainable value created as a result of BM transformation in adoption of a sustainable business orientation. The additional coding categories covered perceived drivers and threats to BM transformation according to the interviewees. This made it possible to identify relevant phenomena, collect examples and analyse commonalities, differences and structure patterns (Saldana, 2015). The analysis was supported by a review of grey literature, such as company reports and online presence (e.g. farm financial reports, websites and social media pages). The codes for value creation topics were then clustered into segments of a new framework for sustainable value creation in the agriculture sector (Sadovska et al., 2020), for code generalisation and application of a sustainability perspective on value creation.

4.4. Validity and reliability

Four conditions, or criteria, pertaining the case study design to ensure validity and reliability has been applied (Table 2). Based on the transcribed material, summaries (noted as individual case reports) of approximately four pages were written and sent to the interviewee for verification, allowing for complementary notes and to check for eventual misinterpretations.

5. Results and discussion

5.1. Factors influencing business model transformation

The data revealed several factors affecting BM transformation. Antecedents of BM transformation can be categorised as external (macro) or internal (firm) (Ulvenblad et al., 2018; Foss and Saebi, 2017). This study generated data on drivers/threats of BM transformation as perceived by the interviewees (firm owners/managers) (Table 3).

The participants were aware of the market environment, including trends in consumer demand, competition level and industry trends at national level. Most considered their ability to identify customer requirements and satisfy these requirements as a strength of their business. This emerged as a strong driving force for BM transformation: *"Being able to deliver something and people are satisfied, and you get a lot of praise for what you do"* (Owner, Firm A).

An important factor for success in BM transformation was acceptance of the new value proposition by customers. The owners-managers interviewed were satisfied with their customer acceptance: *"Yes, we receive enough payment, I think. Our meat is much more expensive than anyone else's"* (Owner, Firm C). The conventional value chain is perceived as unsuitable for business due to decreasing profitability, less control over own products, unsatisfactory personal wellbeing and high competition with large corporations. These reasons prompted the firms to search for alternatives, resulting in BM transformation. Both examples are well in line with the notion that market aspects are the driving force to change elements in BM (Foss and Saebi, 2017; Ulvenblad et al., 2018).

An external barrier to successful BM transformation was low power in relationships with suppliers. Unlike the customer side, where the firms felt they had control over their value proposition, the supplier side of the BM was regarded as more difficult to transform. Suppliers and partners essential for production (e.g., animal feed suppliers, abattoirs) are large actors in the industry who dictate the price for their product or service. Talking about their feed supplier, one interviewee stated *"They press us a bit too hard They think we make a good profit [and] that is why we should probably not call directly to order feed. They see the prices for our meat in the shop and want to get (extra) money for the feed"* (Owner, Firm C).

National regulations governing agriculture were seen as numerous, limiting and strict, with: *"an insane number of rules around this"*. Some farmers expressed willingness to supply public organizations (schools, retirement homes, and municipalities), but faced barriers: *"We have tried. But it was no good. We are wrong for them. We may be a little too expensive and they have too complicated a system"* (Owner, Firm C). Unsupportive external networks of actors and undeveloped eco-systems have been identified previously as barriers to BM change for agri-food firms (Björklund, 2018; Blay-Palmer and Donald, 2006).

Internal factors seen as hindering BM transformation were insufficient knowledge and low learning capacity. One farmer called for external sources of knowledge: *"If we were to invest and develop the product more, then you are never perfect, there is a lot to do. ... Then you might want to look at bringing in external advice"* (Owner, Firm C). Another farmer reported addressing questions on product development to a neighbouring farmer, due to lack of own expertise. The competence of existing advisors was questioned and they were not seen as an important source of knowledge, with a perception that they do not contribute to development of the sector or of individual firms. Lack of knowledge and competence on organisational management, technological solutions (Çetindamar and Laage-Hellman, 2003) and production (Bitzer and Bijman, 2014; Björklund, 2018) have been identified previously as barriers to sustainable BM transformation by small firms. A related challenge is the ability to learn, gain skills and accept new knowledge. Chesbrough (2010) linked lack of skills with resistance to change operational processes and BM. In a systematic literature review, Ulvenblad et al. (2018, p. 313) identified "mind-set, perceptions values, and behavior" as barriers to sustainable BM change and noted a lack of

Table 4
New sustainable business models in the three cases (categories from Achtenhagen et al., 2013).

		Business model transformations		
<i>New products and services</i>	Similarities	<ul style="list-style-type: none"> • Emphasis on meat quality • Local production • Exceptional taste of meat • “No-antibiotics” meat 		
	Differences	<p>Firm A</p> <ul style="list-style-type: none"> • Meat boxes • Free-range animals • Information on specific origin and meat production process 	<p>Firm B</p> <ul style="list-style-type: none"> • Mini-meat boxes for households • Processed meat products (e.g. sausages) charcuterie, cold cut) • Special cuts • Incineration of small animals, mostly pets 	<p>Firm C</p> <ul style="list-style-type: none"> • Retailing meat products • Gluten- and soya-free meat products • Climate certification • Special cattle breeds • Processed frozen meat products • Free-range animals • Wooden pallet production
<i>New markets and customers</i>	Similarities	<ul style="list-style-type: none"> • Customers valuing quality products • High-end customers • Restaurants • Meat shops in the region 		
	Differences	<p>Firm A</p> <ul style="list-style-type: none"> • Local customers in nearby villages • Health-conscious customers • Middle-class families with children • Spring and summer tourists • Annual farmers’ market 	<p>Firm B</p> <ul style="list-style-type: none"> • Urban citizens living in apartments • Owners of pets • Veterinary clinics 	<p>Firm C</p> <ul style="list-style-type: none"> • Regular retail stores • Local farmers’ market • Customers with certain food allergies • Health-conscious customers • Environment-conscious customers
<i>Changes in value generation (production side)</i>	Similarities	<ul style="list-style-type: none"> • Full control over the meat production process • High level of animal wellbeing and health • Production of own feed • Processing of meat at a farm site • New product development 		
	Differences	<p>Firm A</p> <ul style="list-style-type: none"> • Investments in more efficient machinery • Investing in livestock shed • Own cattle breeding 	<p>Firm B</p> <ul style="list-style-type: none"> • Construction of own slaughterhouse • Construction of incinerator for small animals • Construction of livestock shed 	<p>Firm C</p> <ul style="list-style-type: none"> • Construction of new storage facilities • Buying waste vegetables for feed from the local producers
<i>Changes in value generation (market side)</i>	Similarities	<ul style="list-style-type: none"> • Personal contacts with customers • Partnership with restaurant chefs • Partnership with local meat shop • Social media as marketing channel 		
	Differences	<p>Firm A</p> <ul style="list-style-type: none"> • Establishment of own brand name • Organising annual festival activities (cow release in spring) • Marketing through printed media 	<p>Firm B</p> <p>n.a.</p>	<p>Firm C</p> <ul style="list-style-type: none"> • Own brands of meat “Simigus”, “Ejmunds” • Labelling of products under concept “Taste of Gotland” • Climate certification • Storytelling to create brand image • Marketing at mass events • Sponsorship
<i>Changes in value capture</i>	Similarities	<ul style="list-style-type: none"> • Sales directly to customers • Development of innovative products • Above-market prices for products 		
	Differences	<p>Firm A</p> <ul style="list-style-type: none"> • Some indirectly sold meat is branded “Limousin meat” • Personal delivery of meat boxes to customers 	<p>Firm B</p> <ul style="list-style-type: none"> • Flexibility in the way meat is cut • About 30% of animals are slaughtered on-farm • Incinerator provides additional income • Plan to open a farm shop 	<p>Firm C</p> <ul style="list-style-type: none"> • Farm shop • Price premium though own brands • Outsourcing of sales to external organisation
<i>Changes in key resources</i>	Similarities	<ul style="list-style-type: none"> • Knowledge on production and marketing 		
	Differences	<p>Firm A</p> <ul style="list-style-type: none"> • Spacious livestock shed • Knowledge exchange with a neighbour • Knowledge on breeding 	<p>Firm B</p> <ul style="list-style-type: none"> • Private slaughterhouse • Slaughtering techniques • Incinerator for small animals 	<p>Firm C</p> <ul style="list-style-type: none"> • Establishment of network for learning and knowledge exchange • Education on farm management

research on such internal individual barriers. The identified gaps in the BM literature included lack of understanding of the antecedent conditions and factors initiating BM change (Foss and Saebi, 2017). The findings from the cases highlighted pressing external threats such as weak negotiating position and complicated governmental regulations combined with insufficient knowledge as factors of change. To contribute to the same gap, this study identified a number of driving forces toward SBMs. Among them customer interest in sustainable agricultural products, control over own value chain by the firm owner and ability to be flexible to address to consumer wishes. These findings shift the theoretical focus from economic value creation towards interest

to the uncaptured aspects of sustainable value among small firms.

5.2. Firms in transition towards new SBM

In all cases, the firms were transitioning towards creation of sustainable value. Typically, they were conventional farms functioning in the large-scale food system, using conventional processing and sales channels (abattoirs, retailers). In all cases, the owner-managers had a strong motive to adopt a sustainability strategy, combined with a market view where the owner-managers spotted an opportunity to alter their BM and create new types of value.

Firm A was previously a conventional cattle farm. The owner, attached to his animals, believed that the animals were not valued enough by the conventional channel. He found a small-scale local abattoir and, encouraged by a neighbour with experience in marketing, began sending his animals there and selling boxes of meat locally. He built a customer base through social media and contacts, delivering the boxes himself. His first experience of direct delivery was positive, strengthening his motivation to continue transforming the business:

It was really an aha-moment when I delivered to friends and contacts the first time. I thought [...] how could this ever be better? [...] I was very positively received, and after a while I felt safe and secure with it. I got very much positive feedback, inspiring me to continue developing (Owner, Firm A).

The BM in that case has since evolved to include collaborations with restaurants and a specialist food shop in a large city. A factor in transition has been development of a personal brand and promotion of local origin.

Firm B was formerly a large-scale pig farm. Profitability was low and the owners looked for an alternative BM. After an inspirational study trip to another region, the owners realised they could have their own farm abattoir and process meat themselves, adding value. Animal welfare is a centrepiece of the owners' vision. Working creatively with new products, markets and process proved very positive for the family:

[Through the new BM] you can influence what you do in another way, you are not dependent on someone, but you can try new ideas, come up with new types of products, it simply adds value [to your own life, and to your products] (Owner, Firm B).

Managing the animals in a more sustainable way, focusing on animal welfare, also gives the owners a sense of comfort and wellbeing.

Firm C is a fairly large cattle farm. The basic concept is to produce high-quality meat with high animal welfare standards, specialist breeds and high environmental sustainability standards. The animals are free-range and all feed is locally supplied and organic. The farm was first in Sweden to receive climate certification for cattle production. In the past, the farm managed the sales of all meat, with animals slaughtered at a conventional abattoir. Due to the high costs associated with own marketing and distribution it has returned to selling to the local abattoir, but still maintains its brand and communication channels with customers. The BM is constantly changing and undergoing transformation. Just recently the focus was mainly on the marketing side, but in parallel with changing the distribution channel the focus moved to production and improving animal welfare:

We are now back to focusing on our farm. We are a small actor, but I still believe we can influence the whole market. [...] We have always cared about rearing the animals well and giving them the best possible environment: Deep litter beds, free range, natural pasture and such things. [...] We are also climate certified (Owner, Firm C).

These cases revealed a range of transformation practices for creation of sustainable value, some evident in all cases, others specific to a certain case (Table 4). All segments of BM were affected, with transformations for value creation occurring on both the production and market side. Sales channels were transformed to meet the needs and requirements of new customer segments. The cases can be considered to display a high degree of innovativeness.

The animal welfare ethos is a central element for all firms, which have acted to improve production from an animal and human perspective. In the 'value generation' segment, all showed transformation by gaining full control over production and investment in tangible assets (e. g. livestock houses, machinery, facilities) and collaborating with network partners to mobilise resources. Basing the BM on a network approach increased community involvement. This contributes to long-term success of firms (Tell et al., 2016). Another transformation was minimisation of transportation and sales to local clients through

personal communications. Lacoste (2016) discovered that companies communicate sustainability to their clients by co-creating value in close contact.

In larger firms, shareholders' short-term economic vision and organisational inertia are key factors preventing transformation (Lahti et al., 2018). Small firms appear not to have these constraints, as owners-managers have the power to initiate and implement transformation. However, sustainability-related BM transformation is capital-intensive and risky (ibid.) and small firms are disadvantaged in terms of resources and may require insurance against possible failures.

Differences in BM transformation were indicated by the different products of each firm. Some deepened their narrow differentiation strategy (Porter, 1980) through e.g. gluten- and soya-free products for customers with allergies. Others targeted a broader customer base with meat boxes, processed products, free range animals and local-origin meat. These new products attracted different customer segments. On the marketing side, two firms have created their own brand and actively use product packaging (certificates, labels, information panels) to communicate environmental qualities, local origin or exceptional taste. Labels and certificates are seen as either creating barriers for BM transformation (Ulvenblad et al., 2018) or being important for economic sustainability (Campbell and Doherty, 2013). In the cases, labels were important when there was no direct personal contact with the customer (retail trade).

BM transformations can be explained by the firms' context. All firms operate under the same national regulations, all are meat producers who share similar mind-set, and all are small firms with short supply chains. Ulvenblad et al. (2018) identified government, infrastructure, technological development, organisational culture and individual mind-set as factors in BM transformation in the agri-food sector. However, each firm operates in a unique micro-context. Geographically, the cases represent north, central and southern Sweden, with differences in climate. Firm B (northern Sweden) has brought almost all meat value chain on-site, with a private slaughterhouse and distribution of almost all meat directly to customers. Firm B is also active on social media and flexible to customer demand. According to Barth et al. (2021), a harsh climate, lack of infrastructure and low population density give a higher level of organisational innovation in northern Sweden than in central and southern regions. The commonly held belief of people in northern Sweden that nature should be protected leads to development of sustainable solutions that benefit society and environment (Barth et al., 2021).

Access to information, education and knowledge through formal and informal channels affected BM transformation and its scope. The owner-manager of firm A has formal education in agriculture, acquires knowledge on marketing from a neighbour and collaborates with university researchers to develop new products. Firms A and C participate in seminars and study trips. Bitzer and Bijman (2014) linked lack of knowledge on farm management with unwillingness to innovate, and Chesbrough (2010) identified shortage of skills and information as barriers to BM transformation. Availability of information and sources of knowledge may facilitate transformation and widen its scope, but the content of information is significant: greater awareness of sustainability aspects can transform BMs into SBMs.

These findings are relevant to address the literature gaps about the role of individual factors and mind-set in the BM change (Endregat and Pennink, 2021; Schaltegger et al., 2012). As the study demonstrated, importance of animal welfare for the owner, lesser focus on profit generation and attention to collaborative relationships are the individual behaviour factors that initiated and helped to sustain transformation to a SBM. While paradox theory predicts tensions between economic and sustainable business logic, the cases are the examples of alignment between two perspectives where economic viability is an underlying element of sustainable business.

5.3. Sustainable value created

Value-creating activities were found in all four segments of the framework for sustainable value creation in the agri-food sector (Table 5). However, there was no empirical evidence for some topics in the original framework and several new topics emerged. Actual BM transformations identified in the previous section are linked thematically to sustainable value-creating topics in Table 5.

5.3.1. Internal-current value segment

Production and product quality topics were found in all three cases. Regarding production, participants mentioned value-creating activities such as full control over the production process, increased animal welfare due to changes in production and transportation; own processing of meat; cost reductions related to logistics; and price increases for premium-quality and exceptional-taste products. These transformations enabled the farmers to sell products at above-market prices and capture value with higher profits. Regarding diversification, there were value-creating activities such as engagement in other food and non-food related business activities, providing stable income for the firms and access to resources when needed (Table 5). This topic is closely related to technology, because funding allows investment in modern and efficient machinery and farm buildings. Policies/regulations were perceived as both value and a burden. High standards of animal welfare and environment-related regulations were viewed positively, but bureaucracy in e.g. getting building permits or food handling permits was seen as complicating the business.

5.3.2. External-current value segment

For value creation directed towards external stakeholders, the cases showed activities in product identity, marketing, communication, certification, collaboration and distribution (Table 4). Product identity was based on local/niche products and communicated externally through marketing activities. The cases used branding, advertising and storytelling to convey information about their products to potential customers. In addition, all cases had established strong contact with existing customers, directly by face-to-face communication and

feedback and indirectly through social media and product packaging. Such contacts built trust between producer and consumer (Caiazza and Bigliardi, 2020) and strengthen the brand. Certification was less used by the cases, with only one having voluntary climate certification, as the owners-managers felt it would not add value to their business.

Following BM transformation, all three cases now distribute their products through direct sales to end-customers, commonly through direct sales of meat boxes (including delivery), farm shops and restaurants. Collaboration is exemplified by partnerships with different actors, for different purposes, including production, marketing, sales, knowledge acquisition and skills development. The collaborating actors are farmers' associations, restaurants, banks, other agricultural producers and neighbours. Strong ties are built with customers, sometimes leading to collaboration on product development.

A range of sales channels and an ability to adapt to different channels were the main factors allowing the cases to capture more economic value. It can be assumed that social value is generated by this adaptability, as social groups of customers ignored by conventional producers can have their needs met.

5.3.3. Internal-future value segment

The topics in this segment provide opportunities for sustainable long-term value creation. Regarding knowledge, the cases mainly had knowledge relating to production and product development (new meat cutting techniques, new processed products, breeding, livestock management) (Table 5). The cases also had more knowledge of marketing than conventional farms in their region. Their knowledge came from previous generations of farm owners, informal contacts with neighbours and advisory services and farmers associations. However, the participants had insufficient knowledge of strategic and operational planning and marketing, and their education and skills mainly related to agricultural production.

5.3.4. External-future value segment

There was little empirical evidence for the topics in this segment (Table 5). One case uses waste vegetables for animal feed, meeting the principles of circularity. Another case addresses the needs of diverse

Table 5
Sustainable value creation topics.

Segment	Value-creating topic	Corresponding business model transformations
<i>Internal-current</i>	Production	Meat boxes, free-range animals, special cattle breeds; full control over production; high level of animal wellbeing and health; production of own feed; processing of meat at a farm site
	Product quality	Emphasis on meat quality, exceptional taste of meat, "no-antibiotics" meat
	Diversification	Incineration of small animals for pet owners and veterinary clinics
	Funding	Access to funds for capital investment
	Technology	Acquisition of more efficient machinery; construction of livestock houses, storage facilities, slaughterhouse, incinerator for small animals
<i>External-current</i>	Policies	Animal welfare regulations
	Product identity	Local production, niche products
	Marketing	Targeting customers who value quality, high-end customers, customers in nearby villages, health-conscious customers, middle-class families with children (urban and rural), tourists, customers with certain food allergies, environment-conscious customers; own brand; advertising in printed press, social media, local mass events; organising annual festival activities; sponsorship; storytelling to create a brand
	Communication	Information on specific origin of meat and production process; social media presence; labelling of products with "Taste of Gotland"
	Certification	Climate certification
<i>Internal-future</i>	Collaboration and relationships	Partnerships with restaurant chefs, local meat shops
	Distribution and sales channels	Retail trade in meat products; restaurants; meat-shops in the region; annual farmers' markets; sales directly to customers, including delivery; farm shop; some sales through external organisation
	Knowledge	Development of new products; adoption of innovative production methods; advanced marketing techniques; cattle breeding
	Information access and exchange	Exchange of information with neighbours; use of advisory services; creation of a network for exchange of information on farm management
	Education and skills	Basic agricultural education; additional vocational education; taking courses to improve certain skills (slaughtering techniques)
<i>External-future</i>	Product development	Processed meat products, special cuts; processed frozen meat products; flexibility in the way meat is cut
	Inclusiveness	Mini-meat boxes for small households; gluten- and soya-free meat products; adaptation to customer requests
	Trust	Personal contacts with customers and long-term relationships built on trust
	Circularity	Buying waste vegetables from other farmers to use as animal feed

types of customers, demonstrating incisiveness. The trust topic was mentioned more often, with trustful relationships with customers and partners increasing the wellbeing of the owners-managers. Regarding sustainable farm development, the owners-managers relied on their individual beliefs and understandings.

5.4. Implications for research and practice for value creation through BM transformation

Further research on BM transformation and creation of sustainable value in the agri-food context is required in six areas. First, the agri-food literature pays insufficient attention to the theoretical foundations of sustainable value creation (Baregheh et al., 2014), unlike generic management literature (Lüdeke-Freund et al., 2020). A stronger research emphasis on theory development, operationalisation and empirical testing of sustainable value creation in the agri-food context is required, with policy implications. Second, the data revealed well-developed knowledge on production, but knowledge gaps on management and marketing. Björklund (2018, p. 80) identified lack of knowledge of "strategic management, organization, and self-leadership" as an internal barrier for sustainable BMI. Systemic knowledge on agricultural sustainability and practical implementation of sustainability principles was also lacking in the cases. Research on engagement of farmers in new learning could promote transformation for sustainability. Third, in micro- and small-sized firms the owner-manager is the main decision-maker on business strategy and activities (Spence, 2016) and personal qualities are significant in promoting sustainability behaviour in business (Rauter et al., 2017). Micro-level analysis of individual beliefs and motivations can enhance understanding of commitment to sustainability principles. Fourth, in a sustainability transition perspective successful cases of BM transformation for sustainability can be studied as niches with shared meanings, activities, objects and ideas (Pesch, 2015), which can facilitate sustainability transition (Geels, 2011). The organisation of successful niches is well-studied (Schot and Geels, 2008), but not the process of scaling-up niche successes (Smith et al., 2014). Fifth, small-sized agri-food firms sometimes rely on partner networks in order to overcome size-related disadvantages but stay independent (Brinkmann et al., 2014). More research using a network approach (Tell et al., 2016) is needed to understand how networks create sustainable value. Sixth, as companies transform their BM to integrate sustainability, existing BM archetypes may not cover all sustainability-related notions. Sustainable activities are present in a variety of business areas (Bocken et al., 2014) and new BM segments might be needed to accommodate social and environmental business goals. Theoretical discussions on the structure of sustainable BMs would benefit from more contextual research.

6. Conclusions

The empirical data obtained on BM transformation towards sustainable value creation in the agri-food sector revealed multiple sustainability-related pressures and market challenges. These pressures drove changes that are of significant novelty for the farms. Mapping of BM transformations showed that each segment contained some generic activities performed by all cases. Transformations in value creation occurred on both the production and market side, indicating transformations in how value is captured. Sales channels were transformed to target new customer segments. A welfare ethos was central for all cases, with actions taken to improve animal and human welfare. Another strong feature was sustainable solutions for distribution and transport, especially in rural areas.

Case-specific activities comprised different strategies and partnerships relating to the geographical and micro-context, e.g. a firm in northern Sweden expanded its boundaries upstream and downstream due to lack of cooperation and high transport costs. A rural context, combined with a mind-set targeting sustainable values, seemed to be a strong driver towards sustainable solutions.

The data indicated more value creation activities in the current timeframe than in the future timeframe of the framework for sustainable value creation. Small firms operating under limited resources and market pressures face challenges in integrating environmental and social concerns into their core business. Attempts at integration, motivated by individual beliefs of owners-managers, are often not holistic, due to lack of knowledge of sustainability principles and of the systemic approach to environmental work. All cases reported a desire for learning and exchange of knowledge and cited areas where knowledge is not supplied by e.g. advisory companies, farmers' associations or government authorities. Based on the results, six directions for future empirical research on value creation through BM transformation were identified.

6.1. Recommendations for practice and policy

The present analysis of value and identification of sustainable value creation topics provide contributions for practitioners who design BMs and policy makers who want to promote transformations. This study systematizes value creation process. Systematic implementation of the framework for sustainable value creation by organizations can help practitioners to develop strategic approach to sustainability that generates value in different time horizons.

The study demonstrated shortcomings in the existing knowledge system to support BM change for sustainability and pointed at the weaknesses of the existing institutional arrangements. These shortcomings can be addressed by the popularizations of the framework not only among the farmers, but also among agricultural advisers and governmental authorities with an aim to establish new institutional practices to generate knowledge for sustainable value creation.

Similarly, to translate individual beliefs into holistic business transformation, knowledge on the principles of sustainable business should become accessible to the farmers. What starts as a BM transformation can potentially lead fundamental system transition. The role of policy instruments in this scenario is to stimulate various groups of stakeholders to act together towards sustainable agri-food sector.

Further, to support the implementation of SBMs in agriculture, the network nature of BMs should be considered. New business opportunities for sustainable value creation can be utilised through the engagement of multiple stakeholders in the network. The acknowledgment of the advantages of network perspective opens access to resources, skills and knowledge not available in an isolated firm. Managers and policy makers can gain new business opportunities by strategically working towards collaborations and creating space for joint business activities.

6.2. Limitations and future studies

This study was based on only three case studies explored using qualitative approach. This limited the scope for generalisation and conclusions, and more research is needed to explain contextual differences. However, it provides insights for farmers, business advisers and local authorities on sustainable value creation. The results from the application of the framework for sustainable value creation in different geographical contexts and with firms of different sizes is a promising direction for future empirical studies.

This study opened a unique view on the internal transformation processes for sustainability in small scale-farms. The framework of value-creating topics presented here can be a useful instrument to facilitate transition to a sustainable agri-food sector. Development of systemic knowledge on sustainability, progressive education and multi-stakeholder learning networks are key actions to alter the mind-set of actors in the agri-food sector.

Author contributions

Use this form to specify the contribution of each author of your

manuscript. A distinction is made between five types of contributions: Conceived and designed the analysis; Collected the data; Contributed data or analysis tools; Performed the analysis; Wrote the paper.

For each author of your manuscript, please indicate the types of contributions the author has made. An author may have made more than one type of contribution. Optionally, for each contribution type, you may specify the contribution of an author in more detail by providing a one-sentence statement in which the contribution is summarised. In the case of an author who contributed to performing the analysis, the author's contribution for instance could be specified in more detail as 'Performed the computer simulations', 'Performed the statistical analysis', or 'Performed the text mining analysis'.

If an author has made a contribution that is not covered by the five pre-defined contribution types, then please choose 'Other contribution' and provide a one-sentence statement summarizing the author's contribution.

Vera Sadovska: Conceived and designed the analysis; Collected the data; Contributed data or analysis tools; Performed the analysis; Wrote the paper; Fredrik Fernqvist: Conceived and designed the analysis; Collected the data; Contributed data or analysis tools; Performed the analysis; Wrote the paper; Henrik Barth: Contributed data or analysis tools; Wrote the paper.

Data availability

Data will be made available on request.

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Appendix 1. Case descriptions

Case A is a farm located in southern Sweden, close to a town with 6500 inhabitants and a 1-h drive from the regional capital with 350,000 inhabitants. The farm has been in the family for generations, and the owner took it over a couple of years ago. He has a higher education (bachelor's degree) in agricultural management and has been working actively with animal breeding before taking over the farm. The farm rears cattle for beef and produces 60 calves each year in a free-range system, with the cattle staying outdoors for half the year and indoors during the cold period. The cattle are of a special breed, 'Limousine', famous for its high quality. Mature animals are transported by the owner to the nearest abattoir and the cut meat is re-purchased in 25-kg boxes to be delivered to the customers. The owner sells these meat boxes direct to customers under the farm's own brand. Customers are recruited via social media and word-of-mouth. The main emphasis for the produce is on meat quality and taste, while animal welfare and ethical farming practices are high priorities. There is no formal certification of the farm's products, but the owner means that through the direct sales, his customer trusts him, and the farm is open to visit. The price is higher than 'ordinary meat' but the customers are also of higher income, and in the summertime, the area attracts many tourists. Marketing is among the largest challenges, according to the owner, but also time management, as the owner does most of the work himself, including driving to the abattoir with the animals, and driving the packaged meat to the customers some 60–80 km away. The economic results, as shown in Table A1 has improved over the years. With a planned expansion with a new stable, the owner counts on reaching even better profitability coming years.

Table A1

Economic data, last 4 years (numbers in Swedish Crowns, SEK. Years not specified due to secrecy).

Case A	Year 1	Year 2	Year 3	Year 4
Revenues (SEK)	1,281,811	1,376,145	1,594,674	1,385,362
Profit/Loss	−141,531	−92,910	4950	20,452
Profit margin	−11%	−7%	0%	1%

Case B is a family farm in northern Sweden. The farm is located quite far from the nearest city, and is rather small, with some 20 ha of natural pastureland and 50 ha of forest. The closest medium-sized city is a 2-h drive, while small villages are located nearby. The farm produces around 700 pigs a year and have some cattle of the 'Highland Cattle' bred. Changes to the business in recent years include building a farm abattoir to manage the slaughter and cutting of around 200 pigs annually, while the rest are sold to a local abattoir. Through this, the owner has reduced the number of animals to better focus on improving animal welfare, and improve the meat quality through the own handling of slaughter and cutting of meat. The inspiration to change the business came after having participated in a farm excursion with the local farmers' association to another region where they looked at local artisan food businesses. A local agricultural advisor also inspired the owners to take the step to develop their business. The produce is sold in meat boxes to private customers and through local retailers. The meat boxes are sold through social media (or by phone) and delivered to the nearest city where the customers can pick it up. Through this exchange, close relations are built with the customers and it is also an opportunity to talk about the products and get a feeling of the customers wants. The owners' emphasis is on environmental aspects of production, animal welfare and high-quality products.

The owner and his family are interested in working with food and educate themselves through various courses to develop their skills in cutting and food processing. The farm processes some meat into e.g. award-winning high-quality sausages and innovative cuttings, and besides receiving price for their quality, they have also received media attention. As shown in Table A2, the economic results have been good, although the last year, when a home-moving family member started to work in the business, there was a significant change in the results.

Table A2

Economic data, last 3 years. Years not specified due to secrecy.

Case B	Year 1	Year 2	Year 3*
Revenues (SEK)	2,373,581	2,713,128	2,772,197
Profit/Loss	250,873	284,574	−84,103
Profit margin	11%	10%	−3%

* 3rd year, increased costs when a family member moved home and started to work in the business.

Case C is a relatively large farm in central Sweden, located in Gotland, a large island in the Baltic sea. It has 175 ha for feed production and 300 ha of natural pasture and rearing up to 800 beef cattle per year. The daughter of the former owner took over the farm just a couple of years ago together with her husband. The system is free-range and the farm was the first in Sweden to receive climate certification. The animals are of the breeds 'Hereford', 'Limousine' and 'Charolais', but also cross-breeds between 'Simmental' and 'Angus', which are sold under the name 'Simigus', all are renowned for their high meat quality and superior sensory properties. Products include meat sold under the local brand "Taste of Gotland" and frozen, processed meat products (e.g. hamburgers and meatballs) are sold under the farm's own brand through local retailers and the farm shop. Previously, the firm managed all the sales of the meat, mainly to restaurants and shops in the Stockholm region, but due to the high costs, the owners have now let another sales organisation handle the sales. But still, the owners are very active in marketing the meat through social and traditional media, trade fairs, meetings with retailers and other events. The emphasis is on local, high-quality produce, with active engagement in social media and 'storytelling' to promote the brand. The owners are also active in retrieving education and information regarding their business. They participate in research projects and are involved in the regional agricultural education centre. Besides having an 'ethical philosophy' with animal welfare, environment and climate as core concerns, they also think that a hard legislation as regards these issues are important for Swedish farmers to maintain a high quality and competitive advantage over imports. Economically, as shown in Table A3, the farm has reached profitability, although previous year, when the farm was purchased from the parents, there was also a shift of capital from the firm.

Table A3
Economic data, last 3 years. Years not specified due to secrecy.

Case C	Year 1	Year 2*	Year 3
Revenues (SEK)	15,007,676	13,729,215	16,829,407
Profit/Loss	37,669	-2,518,832*	520,444
Profit margin	0%	-18%	3%

* 2 nd year, generational shift (farm was purchased from the older generation).

Appendix 2. Interview guide

Part 1. Introduction

- Presentation
- Explain the project and procedure
- Ask for consent to record the interview
- Explain the procedure of summarizing the interview in writing and the need for interviewee approval
- Inform interviewees that they can withdraw from the study at any time
- Inform interviewees that they will receive a preliminary report for checking for any misinterpretations and final approval, before a final report is made.

Part 2. Describing the firm

- How would you describe the enterprise?
- Describe your background
- What does the firm do? What do you produce?

What has been changed over time?

Part 3. Business Model Canvas

Researcher and interviewee go through each segment of the BMC (no specific questions, but continuous discussion).

- The value proposition
- Customer segments
- Customer relationships
- Sales channels
- Key partners
- Key resources and knowledge
- Key activities/Describe the value flow (from input to output)
- Financial aspects (cost and revenue streams)

Part 4. Describe the firm's direction and strategic considerations

- Personal vision/goals
- Vision and goals of the firm
- The plan to reach the goals
- Drivers and motivations

Part 5. External analysis/market environment

- Experiences of competition
- Experiences with large-scale system actors
- Ways to keep updated on the business
- Role of national legislation and local government

Part 6. Conclusions

- Summarise the findings
- Summarise the BM
- Repeat the procedure
- Return with other questions if necessary
- Ask the interviews about issues not mentioned spontaneously

After the interview (researcher group)

- List individual reflections from the interviews and discuss these
- Transcribe the interviews
- Make a written summary of each interview
- Telephone interviewees to clarify the annual financial statement
- Send the summary to interviewees for review
- Make corrections to the summary
- Write preliminary report written and send to interviewees for review
- Produce final report

Appendix 3. Value creation topics

Table A4

Value creation topics, with sample quotes and observer notes

Code	Description	Illustrative quotes and observations from empirical data
<i>Current-internal cluster</i>		
Production	All methods and practices used for production	<p>“An added value in production is to have happy animals, I would say [...] We have always had this philosophy when it comes to the animals and breeding, that they should have the best possible [environment]” (Firm C)</p> <p>“The animals are not stressed before slaughter [at our own farm abattoir], which means that we get a better product. This is also mentioned by our customers, who say there is a big difference. [...] Also, we never use antibiotics. That is also an added value.” (Firm B)</p> <p>“It is important that everything is done on the farm. The animals are born and raised on the farm, the feed is mainly produced on the farm, and the animals are slaughtered nearby at the farm abattoir [...] It is important that the animals feel well all year round, including in wintertime. They should be allowed to roam around freely [...]” (Firm A)</p>
Product quality	Qualities related to the final product	<p>“We focus more on exclusive food and have an interest in promoting the quality of Swedish meat” (Firm C)</p> <p>“Those buying our meat say there is such a difference [a better product] [...] It tastes better [they say]” (Firm B)</p> <p>“We work on the quality of the meat [...] We have this breed Limousin, which is famous for having good meat texture [...] We get much praise for the quality of our meat, and we can maintain this over time” (Firm A)</p>
Diversification	Agriculture- or non-agriculture-related business differing from the initial activities	<p>All three farms have some form of diversification (a subsidiary producing wooden pallets, animal cremation, livestock breeding).</p> <p>“We started with small animal cremation, pets. [...] It was a very good idea economically” (Firm B)</p> <p>“[Selling animals for livestock breeding] may be an opportunity” (Firm A)</p>
Funding	Availability of capital, enabling investment	<p>Firm A mentioned good relations with the bank, subsidies for the new farm building and a good relationship with the Swedish Board of Agriculture, which oversees the subsidy.</p>
Technology	Advanced equipment	<p>Noticed during observations: equipment to reduce workload, new animal houses advanced production machinery</p>
Policies	Government rules/regulations on different levels	<p>“[Following the rules on animal welfare and food security] gives a certain added value for us” (Firm B)</p> <p>“there are these regulations on animal wellbeing and they are really good because they mean that Swedish meat gets added value [...]. You see that in everything, on the market, with antibiotics and such” (Firm C)</p> <p>“The cows walk outdoors anyway. We built a shelter [for protection, as the regulations demand]. It had no walls and it worked for five years. We never had such healthy animals as we had right then. But the authority said that we had to add walls to the shelter, they felt sorry for the animals if there was rain and wind, or snow [...] but the animals can handle it and they are really fine” (Firm C)</p>
<i>Current-external cluster</i>		

(continued on next page)

Table A4 (continued)

Code	Description	Illustrative quotes and observations from empirical data
Product identity	Product from a marketing perspective	<p>“[since it is produced on-farm] we don’t need to transport our animals, so they are not stressed before slaughter [...] and we make sure [it is like that] and can get reasonably paid [...] and people do not seem to have any problems with that as they get good things” (Firm B)</p> <p>“The meat that the customer buys is produced here, entirely on-farm, they [the animals] are born and raised here, and [the animals] are slaughtered here at the farm abattoir. [...] That it is local [produce] is a type of certification, you could say [...] and it is a stamp for that in the marketing [...]” (Firm A)</p>
Marketing	Activities to promote/sell the product or service	<p>“He [the owner’s father, who began the transformation of the business] is really good at storytelling, and my mother was very early with it too. She got a prize early with this, because they had this newsletter on mail very early. There was also a webpage, I believe, but primarily the newsletter every month. [...] I continued with this when we took over [...] We were early on Facebook, but then also Instagram came, so that became more natural for us to use than the [old] newsletter.” (Firm C)</p> <p>“We could probably be even larger if we devoted more time to marketing, marketing hasn’t been allowed to cost [too much]. We have sponsored some events, we have given demonstrations in shops. It sells fantastically well and gives credibility to our brand[...] we have been to food fairs [...]” (Firm C)</p> <p>“[With Facebook] you have almost 2000 followers, so you can compare that with having just a small ad in the local newspaper, which costs money. And you can also purchase lists, for example on Facebook [...] so that you choose who you want to reach and where you want to market yourself” (Firm B)</p> <p>“If you look at the website, we have this picture of [the farmer] walking with a basket and twenty cows walking behind in a row to the meadow [...] this is really the actual brand, this caring about the animals and the local [production]. The whole website is based on images of the meadows around here, with cows, traditional stone walls and emblematic trees [...] so this is the brand, you could say, and we symbolise it also through our logo.” (Firm A)</p> <p>“But also, when the customers come here and can see and meet you [...]. That relationship is more important for many of them [the customers] than [...] things like certification and such.” (Firm A)</p> <p>“Suddenly, the whole region is crowded with city people from Stockholm and [...] they want to buy meat, and look for something exclusive (...). Not to belittle the local residents, but they [city people] are more accustomed to paying more for things they want” (Firm A)</p>
Communication	A way of presenting a firm	<p>“The relationship with customers, it is both very pleasant and feels important [...] When I deliver the meat boxes, and it’s the first time, I always end up in their [the customers] kitchen talking about the different cuts, how it has been treated [...] You feel that you get a relationship that is very positive.” (Firm A)</p> <p>“Social media is fantastic, good, Facebook, Instagram, it is there we put up [information] and where we advertise ourselves. [...] there are positive comments from people who have purchased, and they tell others, and yes [...] They can educate themselves, they can come here and look, they need ... not necessarily come here, but they get a relationship [...]” (Firm B)</p>
Certification	Written assurance that the product meets certain standards	<p>“We have climate certification. It has been enough [for us]. We were first in Sweden to be climate-certified for cattle. It is based on the certification for ‘organic’ [KRAV in Sweden] [...] We got the opportunity to work with it. [...] But really, it doesn’t matter so much for us whether it is certified ‘organic’ or with the climate label [...] it is important for us to be audited by a third party. We have certification” (Firm C)</p> <p>“We have IP [integrated production] certification, as requested by one of our larger buyers [the abattoir]. [We also] have appropriate certificates for processing food [...] but other customers don’t ask for these” (Firm B)</p> <p>“I am not certified. [...] It is like [...] you have so much to do so it has really not been on the top of the agenda [...] It could be valuable [...] a customer may ask if it is ‘organic’, but when we begin talking you realise that doesn’t matter so much [...] and actually, animal welfare is more important [for the customer] than organic. [...] They [the customers] can also come here and visit, and purchase directly on the farm [...] and when they see the production, and that [the animals] are slaughtered at the local abattoir [...] it is like a quality indicator and certification in a way ... [...]. The larger conventional abattoir does not pay enough to justify ‘organic’ certification” [...] and it is a complicated process to be certified. (Firm A)</p>
Collaboration and relationships	Partnerships in which a firm engages for various purposes (e.g. knowledge exchange, common use of resources, etc.). Can be short- or long-term	<p>“We have an external board, which has been fantastic for us, they have different backgrounds” (Firm C)</p> <p>“We get [information and tips] for example from the restaurant, and from a farmer we collaborate with, and they have given us ideas” (Firm B)</p> <p>“We deliver to a couple of restaurants and we are experimenting with a neighbour making hamburgers and another neighbour making processed meats [...] we have these little things and experiment” (Firm A)</p> <p>“We attend the food fairs. We meet with managers for larger supermarket chains. When they are in our region visiting they come here and they see everything. They are delighted and so we can sell to even more stores. We are ourselves and don’t make up a false picture, we do it because we like what we are doing, and the animals have a really good life [...]. We are good at telling people about it and we are fortunate that we have got good contacts and a good network” (Firm C)</p> <p>“We want people to return to us. We achieve that by having good products, being nice, accommodating. And if something isn’t right, we immediately make it right. So,</p>

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Table A4 (continued)

Code	Description	Illustrative quotes and observations from empirical data
		we have no complaints really [...] and they [the customers] really get to meet us, who raise and take care of the animals, and know that we slaughter the animals, and that is an added value both for them and for us" (Firm B)
Distribution chain and sales	A chain of production and sales of a product or service	<p>"Well, it is like the customer relationship, it is both fun and feels so important, like when I drive and deliver the meat boxes [...] and I get into their kitchen and I can always recommend what to put in the refrigerator', how the meat is treated to get tender, and you show the different meat pieces [...] You get like this relationship, which is very positive, and I feel that the customers are likely to return, that it's easy to contact me ..." (Firm A)</p> <p>"We have also invited buyers from the large retailers [...] and when they visit us they are very impressed, so we sell to even more stores [of one large retailer] after that [...]" (Firm C)</p> <p>"[The distribution] of our meat balls [processed products] is challenging, maybe because we are so small. The transportation. [...] we can send a whole pallet, but not smaller cardboard boxes with frozen products. That's too expensive. [...] It is a challenge because we are too small to be everywhere in the country. Therefore, the collaboration with one of the larger national retailers has been so good, because they purchase from us centrally" (Firm C)</p> <p>"We deliver some animals directly to a larger abattoir, and then we don't know where it goes [...] but otherwise we mostly have our private customers. They are more aware of what they eat [...] and we deliver [directly] to some smaller retail stores [...] and a few restaurants. [...] We sell mostly meat boxes to our private customers. [...] We earn more on processing our products ourselves [...] and the restaurants we deliver to want high-quality meat and care less about the price" (Firm B).</p> <p>"We slaughter at the local farm abattoir [...] I drive the animals there myself, and they are slaughtered and hung, cut and then vacuum packed, and then I drive and deliver these meat boxes directly to the consumer, and we deliver some meat also to a local retailer [...] and then we sell some at our own farm shop and deliver to a couple of restaurants [...]" (Firm A)</p>
<i>Future-internal cluster</i>		
Knowledge	Understanding and knowledge of facts gained through experience	<p>One interviewee mentioned using marketing techniques - online sales on their website.</p> <p>Observations showed that all firms have adopted new technology and practices for farm management, new buildings etc., a farm abattoir (Firm B), new farm building (Firm A), and ability to meet climate certification requirements (Firm C).</p>
Information access and exchange	Availability of the sources of information	<p>"We met with a meat researcher from the agricultural university [...] and she tested the meat and helped us find the most tender parts, which are not usually sold in the shop, which would otherwise become minced meat" (Firm C)</p> <p>"We participate in many activities, food fairs and seminars and in the supermarkets, and we meet with our customers groups ..." (Firm C)</p> <p>"It began when we were at a study trip arranged by the farmers' advisory organisation. We visited different places, both large and small abattoirs, and saw that people actually did this [...], and we got ideas" (Firm B)</p> <p>"I think it is a comfort [with meeting the customers] that you get to know how they think, and it does not always coincide with what the farmers' trade press say. They live in their world [...]" (Firm A)</p> <p>"[We get knowledge and experience] from our contacts and the advisory service, actually. We don't stand in the kitchen and make new forms of hamburgers ourselves" (Firm C)</p> <p>"We participated in a study arranged by the Agricultural Societies (a national advisory organization). It was the decisive factor that made us decide [to change our firm]" (Firm B)</p>
Education and skills	Access to knowledge through formal learning activities	<p>"It was quite easy [for us to take over the farm]. The farmers' association consultancy service made the arrangements." (Firm A)</p> <p>"We took a distance course in slaughtering [...]. I learned a lot. I have worked with animals my whole life and know how they behave, but now I really understood more" (Firm B)</p> <p>"You took that 40-week course [woman says to her husband]. It was good with an agricultural education. My father had his education from the 1970s, and a lot has happened since then even if he also updated his knowledge. It felt like one of us [the farming couple] needed to know more about this" (Firm C)</p> <p>"I have a Bachelor's degree in agriculture and have also worked as a teacher at an agricultural college [...] and I also worked a couple of years as an animal inspector." (Firm A).</p>
Product development	Techniques and activities to develop new products	<p>"We heard about cutting "flat-iron steak". Originally, only the butcher knew about it and saved it for himself ..." (Firm C)</p> <p>"We are about to develop a smokery and a climate room, where we plan to air-dry products [...]" (Firm B)</p> <p>"We also heard about this special cut, the 'secreto', there was a customer that wanted that particular cut and we had no idea what it was at the beginning" (Firm B)</p> <p>"Besides our simple sales on-farm and delivering to a couple of restaurants. [...] we elaborate a little with a neighbour with whom we make hamburgers, and we have this person processing meat and making some sausages, smoking [...] we make these small things [...]" (Firm A)</p>
<i>Future-external cluster</i>		

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Table A4 (continued)

Code	Description	Illustrative quotes and observations from empirical data
Trust	Belief in reliability built in collaborative relationship or achieved through marketing	“[relationships] lead to trust. It almost like a close relationship you get into ...” (Firm A) “When we are in the supermarkets [for demonstrations], that sells really well. It gives trustworthiness to our brand, and I think many appreciate that. We are not just ordinary, they can meet us, the farmers, and we have our own meatballs” (Firm C) “When they [the customers] meet us in person, when they pick up their meat box, you create trust” (Firm B)
Inclusiveness	Consideration of the perspectives of different stakeholders	From observations: Mini-meat boxes for small households; gluten- and soya-free meat products for customers with allergies; meeting a variety of customer requests
Circularity	Practices aimed at re-using materials and products	“We have no waste [from meat production]” (Firm B) From observations: Firm B buys waste vegetables from other farmers to use as animal feed

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