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Meat Value Chain Contribution to Territory Sustainability—The Case of Autochthonous Bovine Jarmelista's Breed

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Abstract: In regional contexts and within specific sustainable businesses based on endogenous resources, analysing their value chain is crucial to support the sustainability characteristics and comply with the new consumer's demand. Short supply value chains are also typical for these types of businesses and bring advantages regarding competitive and sustainability claims. Jarmelista Bovine Breed Meat's case study complies with the context and characteristics of a short value chain that is important to define and analyse to support and offer a clear sustainability claim and continue to promote territorial values, namely in the mountain and inland regions. This research, based on case study methodology, aimed to define the Jarmelista meat supply value chain considering perceptions of producers and the other actors of the Jarmelista meat value chain, and as a basis for business improvement in this specific mountain and inland territory, adding value to the meat and contributing to the sustainable values of the meat production to deliver a product that preserves its cultural and sustainable heritage. Based on the results obtained from the interview and surveys conducted, a simple and feasible business orientation for the leading players is suggested, as this points out the focus attributes and relevant issues to be considered along the value chain that, in an integrated approach, can offer to the consumer market a sustainable meat product and contribute to the preservation of the territory sustainability.

Keywords: Jarmelista breed; value chain analysis; supply value chain; sustainability

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1. Introduction

Rural areas are subjected to competition pressure due to globalisation, particularly in regions with products that cannot be offered based on extensive agriculture production regimens [1]. The search for competitive and territorial development is at the essence of the EU's Rural Development Policy [2], alongside the concern to reach sustainability in agribusiness and in the territories. Territory sustainability enhances the ability to maintain and improve the well-being of its current and future generations while preserving the environmental, social, and economic resources within a specific geographic [3].

It is commonly and widely accepted that Short Food Supply Chains (SFSCs) in agribusiness are more sustainable and address consumer's needs and interests [4,5]. Arguments reinforcing the consumer demand for more safe, functional and sustained food products and sustainable production systems are emergent trends that producers and suppliers cannot ignore and must comply with [4,5]. These trends are aligned and reinforced by the global concern with Climate Change that encourages the consumption of locally produced food products delivered by efficient food delivery systems able to minimise food waste, reduce greenhouse gas emissions and maximise food safety [4].

The SFSCs research has already set a set of benefits also highlighted by marketing, related to the advantages for sustainability improvement, and often are determinant to overcome the negative efforts of the conventional food system in the rural context development [5]. Moreover, these type of marketing systems are adequate in markets where consumer loyalty are precarious and where farmers have more difficulty in dealing with consumer knowledge and operational marketing definitions, such as price policy; therefore, they have more difficulty in compensating the production, processing, distribution and selling efforts [5,6]. Even though there is scientific proof that the SFSCs enhance food quality in a more sustainable way, there are questions on how such marketing systems can be implemented. One way to analyse it and answer this question is to use the value chain analysis, which is seen as a network between different economic actors assembled around a product [7]. The value chain analysis, therefore, highlights the chains' structure, actors, and dynamics. This implies that it is necessary to analyse the organisational structure of the chain, how the added value is distributed between the different actors and how the different players do their roles and contribute to the product to be offered in the consumer market. As stated by Michael Porter [8], it is possible to understand the specific value chains of each actor within the value chain analysis and, therefore, the network of the overall value chain of the economic activity. This concept reflects how a company processes its activity and integrates the value it offers to the market. Porter [8] decomposes a company in its strategically relevant activities to understand how the costs of the activity behave (margin difference between the total value and the collective cost of performing the actions) and what potential sources of differentiation can be integrated and that will contribute to the offer of value (different activities in physical and technological terms) to be delivered to the market. According to this author, a company acquires a competitive advantage if it achieves a more economical performance or greater value for the customer compared to the competition.

A company's value chain comprises a set of activities (Primary Activities and Support Activities), defined as a value system [8], which is characterised by the interrelationship between the different value chains of suppliers, distribution channels or other companies, buyers and/or consumers. Consumer preferences govern the value chain through value creation, so it is important to identify opportunities for differentiation of products in the market [9]. Exploring the links between activities requires information or information flows that enable optimisation and coordination, leading to cost reduction and/or differentiation. Thus, it is essential to have information systems that promote the integration of activities [8]. The key to the success of a value chain lies in the sharing of information between the different partners, in a relationship of trust and understanding in collaboration and equitable sharing of risks and benefits [9].

In this sense, a meat value chain can be seen as the meat supply chain or meat production chain, which refers to the entire process involved in bringing meat products from farm to table. It encompasses the various stages and activities required to produce, process, distribute, and sell meat to consumers [10–12]. A beef production chain involves integrated service and material suppliers, processing industries, distribution and marketing of products and by-products, and final consumers [13,14] as well as any production chain that integrates any elements that intervene in a production process to offer products or services to the market. As such, it is necessary to identify weaknesses and capabilities to enhance the competitive factors of each actor. The beef sector has different actors in the journey between meat production and the final consumer, in which the supply of the meat product goes through different stages: animal production, slaughter, conservation and processing of meat (e.g., meat and distribution by different retail and catering companies), until reaching the final consumer, to be prepared or ready to eat.

In Portugal, it is possible to identify different agents involved, and the production chain of bovine products is quite fragmented, with little vertical and/or horizontal integration and reduced downstream participation. In other words, it is perceived that it is its first agent. This producer provides great value to the final product and, with less expression,

the producers of breeding and fattening in relation to other agricultural productions (representing about 7% of the agricultural Groos Value Added - GVA) [9]. The slaughter and processing industry plays an important role in ensuring the hygienic and sanitary conditions of meat supply and is composed of slaughtering units and cutting rooms, although there are companies that only devote themselves to beef carcass cutting. These units are not responsible for meat marketing and, therefore, do not promote the relationship between production and the consumer market. These slaughter and cutting units must comply rigorously with the legislation on screening diseases and creating food safety.

Transport in this business is critical, both for live animals and for meat after slaughter (carcass, cut meat or processed), the activity is also regulated and supervised.

The distributors connect with the final consumer market through wholesalers, retailers (butchers, super and hypermarkets, shops), hotels, restaurants, and catering channels.

In the case of Jarmelista meat, being an autochthonous breed of sustainable production, it is less attractive as a means of production due to its low economic profitability and lower yield. This situation has been identified as a key obstacle in the production phase [15]. The production capacity is small, even at the regional level, and due to low profitability, few producers bet on breeding animals of this breed and/or intend to increase their effectiveness. Those who produce, do not value the characteristics of the biological production of the animal and do not differentiate the value of this type of meat.

The aspects related to experience and knowledge of the territorial context, farming activity and relationships with co-operatives and advisory services are crucial factors that characterise the recovery potential and resilience opportunities that small farms can bring to the resilience and sustainability of farming systems at local and regional scales, over time, as proposed by [16] for small farm businesses in Euro-Mediterranean context and aligned with the Jarmelista production system reality. This study also highlights the role of small farms in local food systems and the opportunities that these food systems provide to farms, for example, through short food supply chains. Jarmelista meat production farmers want to add value to the breed and derive meat products from encompassing the conservation of low-income local breeds that is widely recognised by the scientific community, public administration, farmers and the general public as a solid contribution to the development of sustainable agriculture, and the economy of its populations [17]. Simultaneously, maintaining the cultural heritage or identity and regulating services, such as landscape and biodiversity management, will enhance the value of the products connected to this region [15]. However, it is necessary that consumers recognise the value of these meat products and has to be justified by their quality, differentiation assets and territory [15,17]. Therefore, the economic value chain of this meat product must enhance its value and differentiation and, therefore, be analysed, particularly since to the best of our knowledge this is the first research studying the Jarmelista value chain.

In this way, all the different actors of the value chain may contribute to the added value, orient their activity within the same goal and enhance the sustainable arguments and the consumer's perception of the attributes and characteristics of the Jarmelista meat products. As referred by [18] mutual support between local farmers, public administration, and trading circuits is essential to achieve sustainable animal production systems in less-favoured mountain areas, as is the case of Jarmelista production. Thus, the strategic analysis of Jarmelista's meat in the market is crucial to identifying its positioning and responsiveness to consumer needs. In this way, we can define conditions for valuing its post-production chain that will bring to the territory conditions of competitiveness in its production, identification, and valorisation, promoting associated economic activities such as tourism within its gastronomy and culture arguments.

This research aims to understand if producers and the other actors of the Jarmelista meat value chain add value to the meat products, so consumers are more attracted and recognise, with confidence, the sustainable features of this meat. The study also aims to identify how the Jarmelista meat value chain sustains and contributes to the sustainable

values of meat production to deliver a product that preserves its cultural and sustainable heritage.

2. Materials and Methods

The research has a qualitative approach based on the case study methodology [19] that analysed the information collected through semi-structured interviews with the main players associated with Jarmelista production and commercialisation of Jarmelista meat and surveys launched to the main players (producers, slaughterhouses distributors and sellers, see Figure 1) on the market's meat offer of the overall value chain.

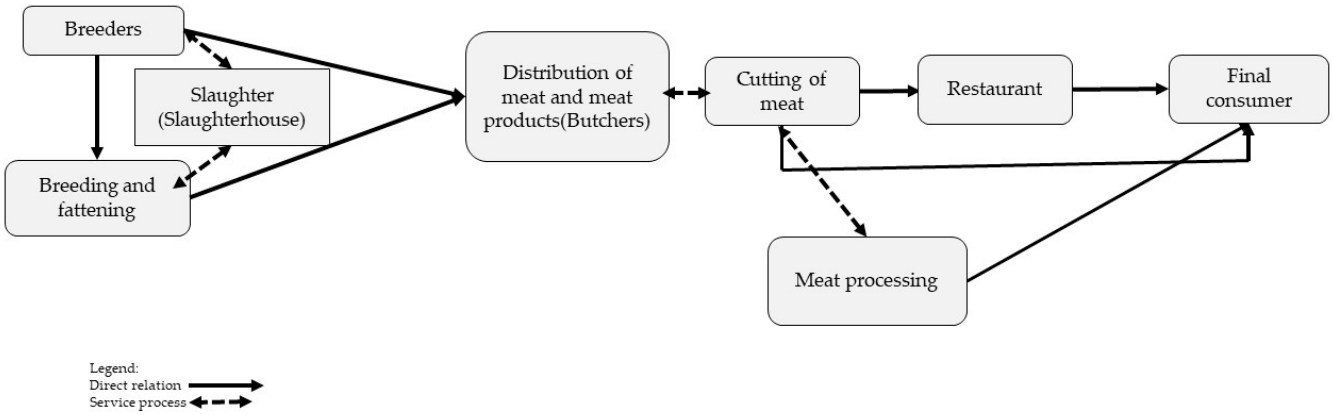

Figure 1. Jarmelista Meat Production Supply Value Chain.

This type of methodology is often used in exploratory analysis, building theory, test theory and in-depth and validate theory [20]. It emphasises contextual understandings without forgetting representativeness [20,21], focusing on understanding the dynamics of the real context [22] and engaging in a deep and exhaustive study of one or a few objects in a way that allows its broad and detailed knowledge [20]. As such, this methodology will allow descriptive and explanatory research and an in-depth and first-hand understanding of the Jarmelista meat value chain and how its main players are able to add value and preserve the sustainable and cultural characteristics of the meat and be able to be competitive and differentiate their product.

To achieve the proposed research results, the study initiated with the value chain description and analysis through secondary sources but in need of further and closest insight. Therefore, a semi-structured interview with the executive director of the main association of Jarmelista autochthonous breeders of the region, ACRIGUARDA, was used to collect pertinent information that allowed a better understanding of the value chain actors and the definition of different surveys launched to the different players of the value chain. These data permitted the overall supply value chain definition and description and the understanding of the interconnection between the specific value chains of the main players and possible added value contribution.

The surveys were designed to understand the main concerns the value chain players had regarding the meat (see Appendices A–C) and if they believed that they were offering the meat product the consumers desired and needed (see Table 1). They report data from the businesses identified as producers (nineteen in total and all answered), distributors (seven commercial companies), and those commercialising Jarmelista meat.

It was also possible, through the questionnaires, to collect the personnel perception of the more relevant attributes offered to final consumers.

Table 1. Survey questions dimensions.

	Producers	Slaughterhouses	Distributors and Sellers
Meat	Meat production	Meat acquisition or slaughter service (whom and how)	Meat acquisitions (whom and how)
Process		Slaughter process	Transformation process
Sales	Transportation; Sales; Clients		
Consumers	Attributes and purchase decision perception		

3. Results

The design of the Jarmelista Value chain (see Figure 1) and its description were developed to define the supply value chain. Not only are there a few producers but also a few distributors who sell directly to the final consumer or through restaurants with Jarmelista meat on their menus. Furthermore, all the players have a close and transparent relationship, which seems to bring clear transactions and contributes to a solid community around Jarmelista Bovine breed production and conservation.

In Figure 1, it is possible to observe what is a business transaction between the economic actors and what service is provided. It seems that the Slaughterhouse in the supply chain is a service provider for the producers and intermediaries that focus their activity on breeding and fattening the Jarmelista beef or for the distributors. They add value to the product by slaughtering the animals, but they are not the owners of the product.

In the analysis of the supply value chain of the different actors of Jarmelista's meat production chain, we sought to identify the primary and key support activities that could introduce value in the supply of each of them. Thus, its description is not exhaustive because it highlights these actions of appreciation of the offer.

It is perceived in the value chain of Jarmelista's meat production, Figure 2, that the activities involved in the formation of the differentiating value of meat are its form of biological production and respect for the welfare conditions of animals and their transport, although not fully valued by their stakeholders.

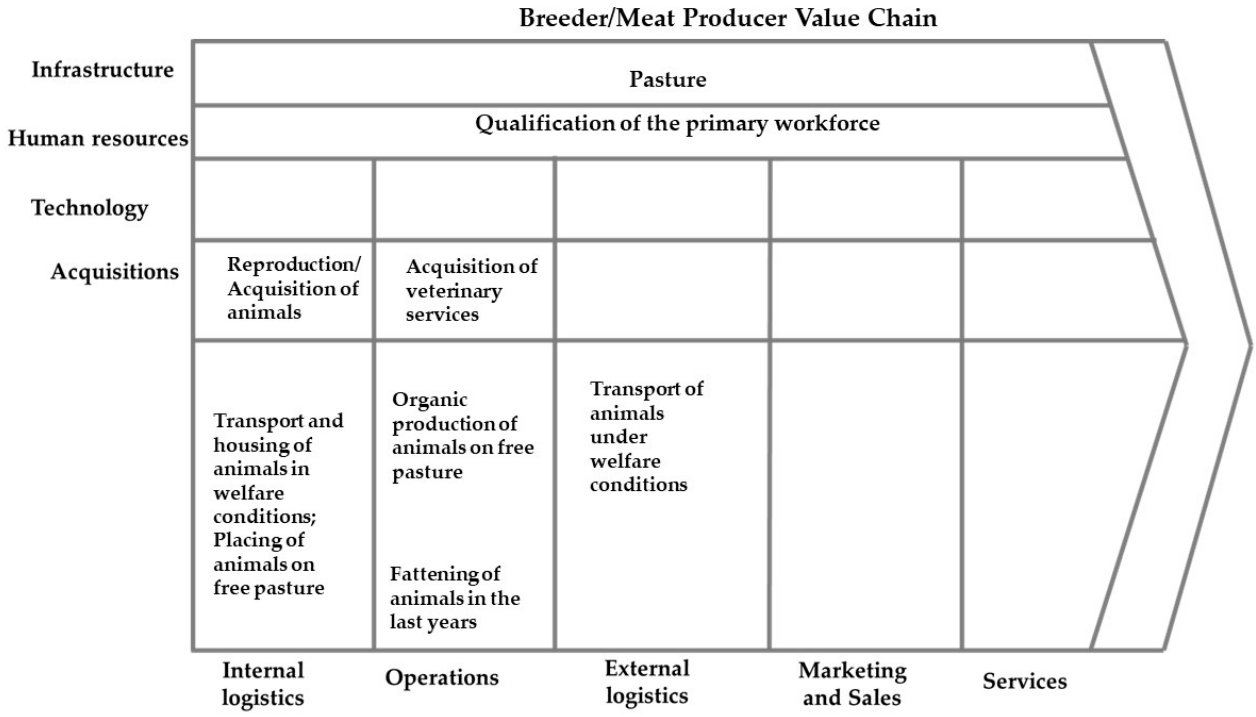

Figure 2. Jarmelista Meat Breeders/Producers Value Chain.

Through the detailed analysis of the economic actors involved in the value chain, understanding what they do, how they do it and what the consequences of their actions are, it is possible to identify points of possible improvements in the activity. With a better understanding of the behaviour of the row and linking the key issues of each economic actor, we can analyse how it is possible to emphasise and enhance the activity of the different economic agents of the row. This allows greater interactivity and consequently, collaboration, resulting in synergistic effects between the elements and offering more competitive products, differentiated and directed to the needs and desires of the market.

Just as there are links between a company's value activities, there are also links between them and those of suppliers and buyers, such as company acquisitions resulting in a supplier's internal logistics activity or the supplier's external logistics activities affecting the company's internal logistics activities. Thus, we can observe the connection between the value chains of the different actors in the Jarmelista meat production and commercial chain in Figure 3.

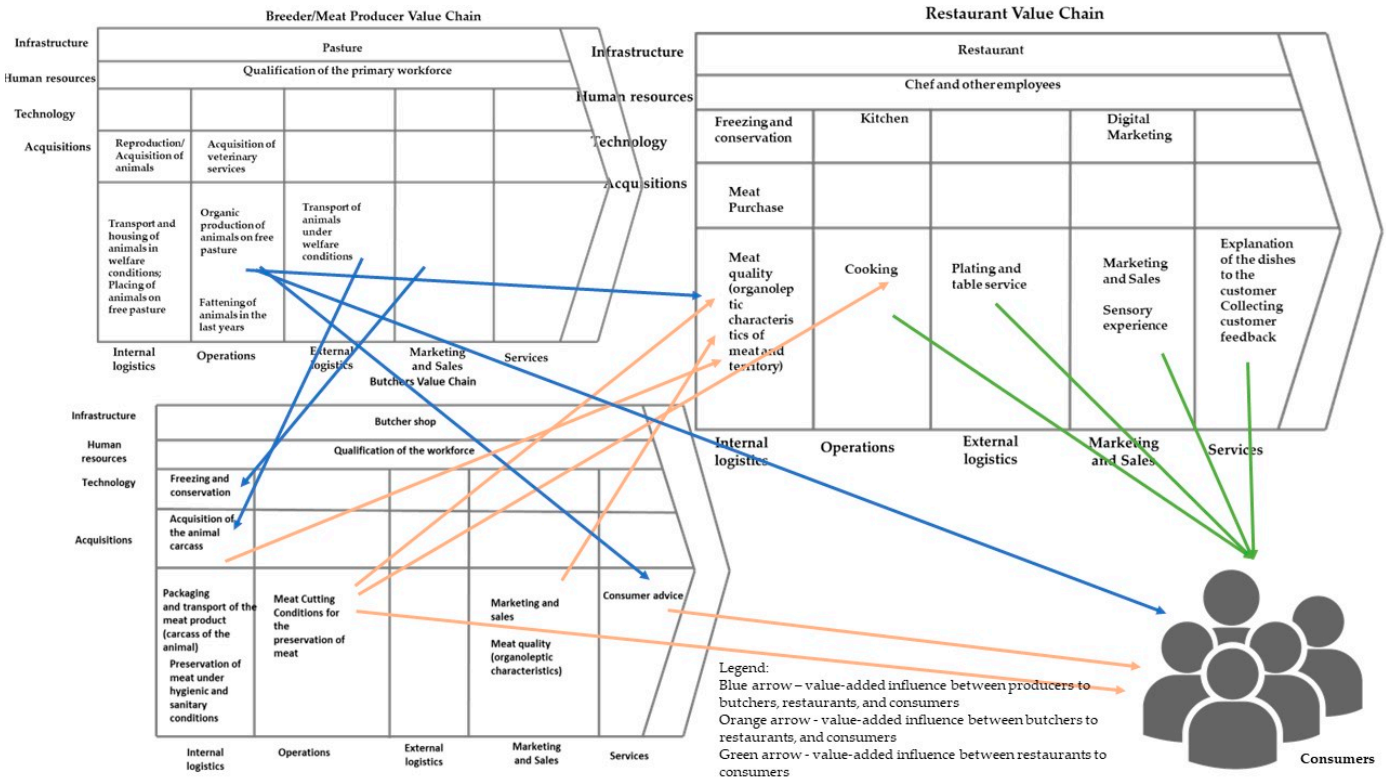

Figure 3. Integration of Jarmelista's Supply Value Chains.

So, we can identify and analyse the key issues of the production chain focusing on the organic/sustainable production of animals, which translate into specific organoleptic characteristics, and their conditions of transport and slaughter, which continue to comply with the hygiene and sanitary conditions of preservation in the different intermediaries up to the final consumer. The slaughterhouse service provider, even if merely a legal intervener for the slaughter of animals and consequent marketing of meat, must comply with important hygienic and sanitary rules for the maintenance of meat quality. However, it is the animals rearing under biological conditions that identify the distinctive characteristics of meat of origin in the Jarmelista breed that provide differentiation for butchers and restaurants in their offer to the final consumer. Although there is no direct link between producers and end consumers, the characteristics of organic/sustainable production of Jarmelista bovine breed have an impact on their consumption by the sensory differentiation they potentially provide.

Uncertainty about the availability of Jarmelista beef is seen as a problem. Thus, there are several economic constraints for the market. The undifferentiated supply of the general meat market does not help consumers choose the type of meat they buy and consume. At the end of the value chain, in the marketing approach, there is much to do.

The consumer is the last element that makes up this value chain of a business and its satisfaction. Talking about a value chain in the agri-food sector, this satisfaction encompasses a set of sensory, safety, transportation, and food convenience attributes so that food comes from practices that respect the environment and provide health and well-being [9,17].

Having already haracterized the producers, distributors and sellers, we tried to understand what their perception was of how the final consumers evaluate the Jarmelista meat they buy and how they make their purchasing decisions. Jarmelista producers were interviewed, and 19 valid responses were obtained, which corresponds to 95% of the registered producers.

The results showed that the producers, although they value all the attributes listed, consider that the final consumers seek Jarmelista meat for its flavour (84.2% consider "very important"), freshness (63.2% consider "very important"), succulence (63.2% consider "very important") and texture (63.2% consider "very important"). For purchasing decision-making, producers consider that the most influencing factors are the amount of visible fat from the meat, its appearance, cut, expiration date and packaging (see Figure 4).

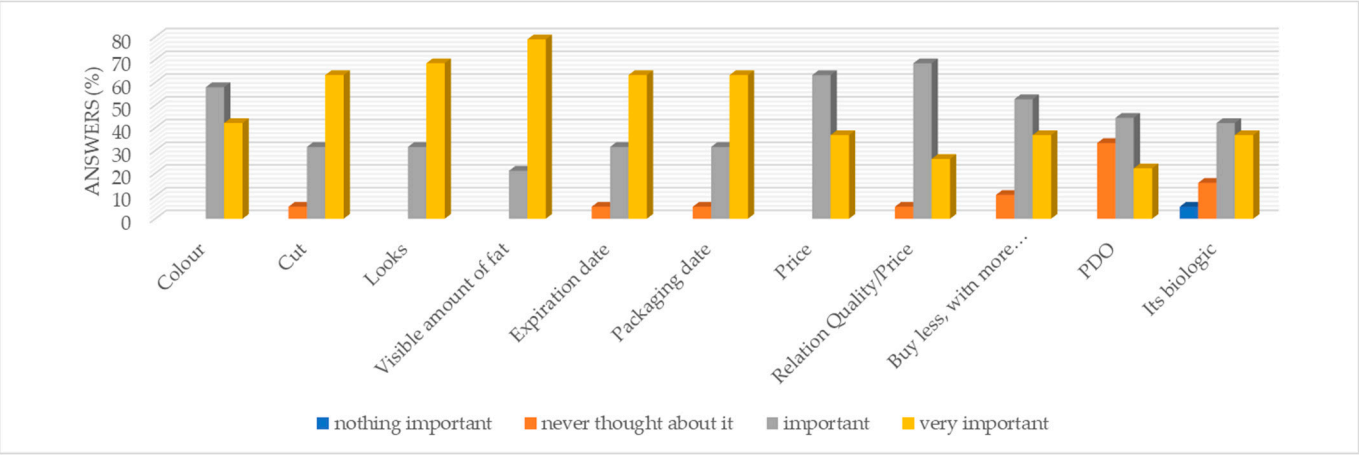

Figure 4. Factors influencing the purchase of Jarmelista Meat from the perspective of the Producers.

The factors that influence the purchase decision identified are factors that are not related to the production regimen or with the responsibility of distributors and slaughter conditions, transport of animal carcasses and hygiene and safety throughout the slaughter and marketing process.

On the other hand, all distributors purchase from individual producers, mostly once or twice a week, meat carcases, with the responsibility of their transportation in most situations, and the sale is carried out without packaging. These intermediaries claim that they buy Jarmelista's meat because the consumer values it and also because they consider it important for their business (see Figure 5).

It should be noted that it was previously identified that consumer buys Jarmelista's meat, mainly considering the organoleptic characteristics, price or price/quality ratio, cut and appearance [17]. However, they believe that the consumer attaches less importance to the expiration date and packaging because it is based on the trust established between the end customer and the butcher and considering that the sale does not include packaging. Biological characteristics and the possibility of being Product Denomination Origin (PDO) are not considered relevant to some of the distributors (43%). These agents, even if they are concerned about sustainability issues, do not consider it important to share this type of information. By analysing the information obtained, it was possible to identify the

introduction of value in the final product to the consumer by the different actors in the production chain, elaborating the respective value chains.

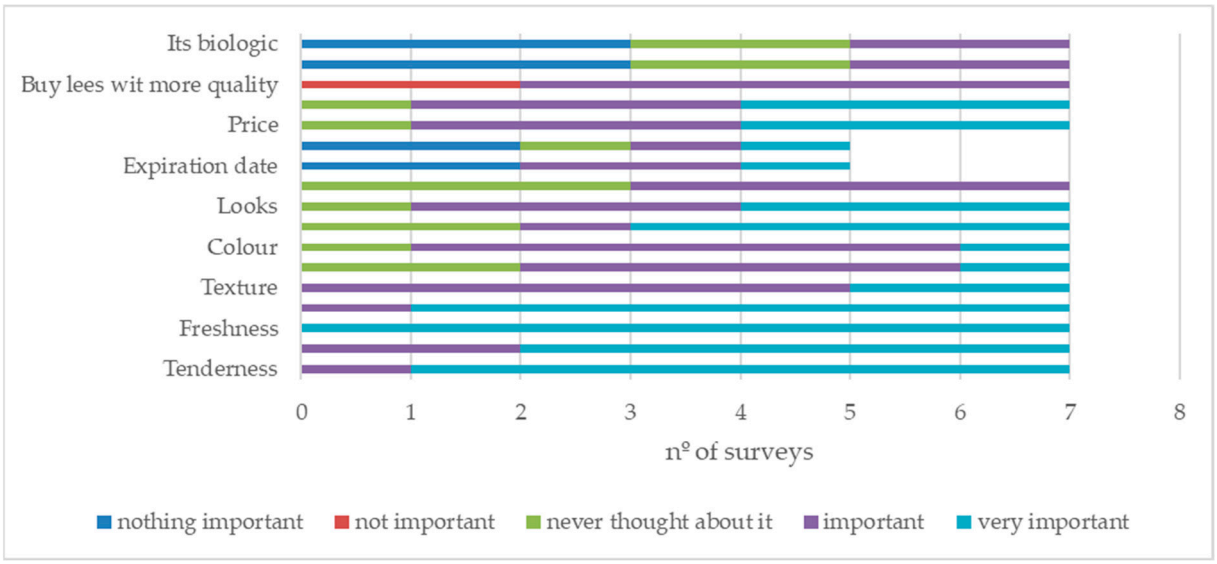

Figure 5. Factors influencing the purchase of Meat from Jarmelista from the perspective of Distributors.

4. Discussion

The research presented allowed the definition of the supply value chain of Jarme-lista's meat, its description and understanding of the interconnection between its main players, and possible added value contribution. This supply value chain has the characteristics of an SFSC in its three main areas (economic, environmental, and social) [4], as it is composed of a reduced number of intermediaries with reduced transaction costs among participants. It operates in a close and transparent relationship, based on a sustainable production focused on ecosystem preservation and territory valorisation in a mountain inland region.

Surpassing the few intervenients in the Jarmelista value chain, it is possible to understand that not only the producers incorporate value in the mat through the sustainable production mode and transportation with respect to the animals, but also the distributors and restaurants seek to add value to the meat through different product transformation process continuing to enhance the sustainable meat characteristics and trying to provide organoleptic's conditions to satisfy the consumer desires. There is evidence that Portuguese meat consumers still do not reflect their sustainable concern in their meat products acquisition [17], but it seems that if this food consumer trend [23] becomes stronger, the main players of the Jarmelista value chain will be able to reach the market needs. The importance of quality schemes as a means to strengthen the position of Jarmelista producers in the supply chain was outlined in this study. The emergent and conscious interest of consumers in sustainable, organic and mountain products is a factor that can stimulate the spread of its use and is of utmost relevance in the definition of collective and participative approaches among European producers [24].

Developing economic activity in mountain regions presents several challenges, namely regarding land fragmentation, lack of technical support to local farmers and promoting local production through local origin labels [25]. In the case of Jarmelista bovine breed production, the existence of the producer's association (ACRIGUARDA), which also provides technical support, is an example of how the local policy is involved in the promotion and preservation of this autochthonous breed. However, as outlined by these authors, the creation of networks with local communities and devoted tools such as quality/origin labels can play an important role in sustaining Jarmelista livestock activity.

In terms of the social dimension, it should be enhanced that all the intermediaries do not seem to have a consumer knowledgeable-oriented activity, although they believe

they are delivering what the consumers want and need. It seems that some improvements should be made to enhance the consumer recognition of the product attributes, such as better connection between producers and consumers, creating a trustful and proud sense of community. For that reason, Jarmelista meat is recognised as a PDO. It is widely recognised that PDO products, namely Mediterranean PDO products, are particularly good entry points to combine the ecological and socio-economic aspects of sustainable landscape management and are considered helpful tools for holistic rural development policies [26]. The PDO labelling can offer additional income opportunities for the Jarmelista producers, supporting the economic viability and simultaneously contributing to the sustainable management of the cultural landscapes to become profitable for current and future generations.

Providing consumers with information on meat characteristics and the production system allows them to make conscious choices and identify and differentiate the types of meat market positioning [27,28]. This can allow consumers to better understand, how to translate their ecological concerns into meat consumption. Furthermore, in previous studies, it has been reported that the consumer's highest willingness to pay is associated with the EU Mountain Product term, but communication strategies and public information provision are needed to enhance consumers' overall knowledge [29,30]. Moreover, these are also attributes considered by mountain tourists, namely regarding the perception of ecosystem services, such as the maintenance of pastures and grazing, biodiversity conservation, and regulation of hydrogeological assets [31].

In this sense, both the claims of meat quality and the origin of sustainable production of a mountain autochthonous breed should be considered as key attributes to be conveyed to consumers. This identification of the potential and contribution aligns with the European Green Deal [32,33], as the Jarmelista breed has sustainable conditions and therefore a lower impact on the climate change consequences. European Union policy for Mountain products, through a possible mountain label can enhance product valorisation and contribute to a local sustainable economy [34], maybe also through a PDO, as stated.

5. Conclusions

This paper proposes to study the Jarmelista meat value chain, a typical SFC, and understand how its players added value to the product, particularly if this value was in tune with the emerging consumer trend of sustainable food and, in doing so, also, contributed to the territorial heritage of tradition and sustainability preservation. Therefore, the research could contribute to the scientific knowledge by identifying the Jarmelista value chain, characterising its interconnections and contributions, and enlightening the need to enhance the sustainable value of the Jarmelista meat in the market. In doing so, the management contribution is also relevant since it shows how and where the economic agents should act to add value to each operation. It is clear that the marketing impact is yet to be fulfilled and engage wider market shares.

The research is limited to the number of economic players in the Jarmelista meat trade, understanding that the impact on the market could improve entrepreneurial opportunities, not only in meat production and commercialisation but also in tourism. Consequently, future research about Jarmelista meat should be around the market valorisation of the product and contributions to tourism allegations.

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Institutional Review Board Statement: Not applicable for studies not involving humans or animals.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to respect of privacy rules.

Conflicts of Interest: The authors declare no conflict of interest, and the funders had no role in the design of the study, in the collection, analyses, or interpretation of data, in the writing of the manuscript, or in the decision to publish the results.

Appendix A. Survey of Producers of Jarmelo Beef-Perceptions and Trends on Beef Consumption

The aim of this study is to assess the attributes that producers consider in the Jarmelo beef produced by them and what their consumers consider in the act of buying the meat.

1. Point out the importance that you consider that the beef of Jarmelo holds:

(1—nothing important; 2—not important; 3—never thought of it; 4—important; 5—very important)

a) Quality attributes in beef.

Tenderness	1	2	3	4	5
Flavour	1	2	3	4	5
Freshness	1	2	3	4	5
Succulence	1	2	3	4	5
Texture	1	2	3	4	5
Origin	1	2	3	4	5

b) How do they think consumers decide to buy beef?

Pay attention to the Colour	1	2	3	4	5
Pay attention to the Cut	1	2	3	4	5
Pay attention to the Look	1	2	3	4	5
Pay attention to the amount of visible fat	1	2	3	4	5
Pay attention to the Expiration Date	1	2	3	4	5
Pay attention to the Packing Date	1	2	3	4	5
Pay attention to the Price	1	2	3	4	5
Pay attention to the Perception of the quality/price ratio	1	2	3	4	5
Prefer to buy less, but with more quality	1	2	3	4	5
Pay attention to If it has D.O.P.	1	2	3	4	5
Pay attention to if it's biological	1	2	3	4	5

2. Consider that before buying and/or consuming, customers are concerned with:

The way the animal was created	1	2	3	4	5
The conditions of transport of the animal	1	2	3	4	5
The place and method of slaughter of the animal	1	2	3	4	5
The health and safety conditions of the production, slaughter and marketing process	1	2	3	4	5
The type of feeding of the animal	1	2	3	4	5
Compares prices between places of purchase	1	2	3	4	5
Compares prices between types and cuts of meat	1	2	3	4	5

Characterisation of the Farm.

	Live	**For Slaughter**
Number of total animals sold		
Total number of Jarmelist animals sold		
Total sales volume of animals		
Sales volume of Jarmelist animals		

Appendix B. Slaughter and Processing Industry Survey

The aim of this study is to collect information on the functioning of the value chain of the production and marketing of Jarmelista beef, namely on the slaughter and processing companies that intervene between production, marketing and consumption.

1. Slaughter of bovine animals

1.1. Your company performs:

☐ Provision of services
☐ Purchase of animals for subsequent slaughter and Sales
☐ Both

1.2. Of the total Jarmelista beef and veal it operates, what percentage is intended for:

Provision of services _____%
Sales _____ %

2. Provision of services

2.1. To whom is the Jarmelista beef resulting from the provision of services?

Cutting rooms	_____%
Wholesalers	_____%
Restaurants, Cafes and Snack bars	_____%
Butchers	_____%
Stores	_____%
Super and hypermarkets	_____%

2.2. How is Jarmelista beef and veal resulting from service provision disposed of?

Carcases	_____%
Half carcasses	_____%
A quarter of carcasses	_____%
Cut	_____%

If you do not purchase animals for slaughter and subsequent marketing, proceed to question 4

3. Purchase of animals

3.1. What is your cattle supplier?

Producers individuals_____%

Producer organisations_____%

3.2. To whom do you sell the beef of the Jarmelista breed?

Cutting rooms	_____%
Wholesalers	_____%
Restaurants, Cafes and Snack bars	_____%
Butchers	_____%
Stores	_____%
Super and hypermarkets	_____%

3.3. How is Jarmelista beef sold?

Carcases	_____%
Half carcasses	_____%
A quarter of carcasses	_____%
Cut	_____%

If you do not have a cutting room in your company, proceed to question 5

4. Cutting rooms

4.1. To whom do you sell the beef of the Jarmelista breed?

Cutting rooms	_____%
Wholesalers	_____%
Restaurants, Cafes and Snack bars	_____%
Butchers	_____%
Stores	_____%
Super and hypermarkets	_____%

4.2. Do you produce meat products and meat preparations with Jarmelista beef? If so, which?

☐ Yes Which:_____

☐ No

5. Transport

5.1. Your company is responsible for transporting Jarmelista beef to marketing and sales?

☐ Yes

☐ No

6. Consumer

6.1. In your opinion, what is the importance that the following attributes of beef of Jarmelista breed have for Portuguese consumers?

Tenderness	1	2	3	4	5
Flavour	1	2	3	4	5
Freshness	1	2	3	4	5
Succulence	1	2	3	4	5
Texture	1	2	3	4	5
Origin	1	2	3	4	5

6.2. How do you consider consumers to decide on their purchase of Jarmelista beef?

Pay attention to the Colour	1	2	3	4	5
Pay attention to the Cut	1	2	3	4	5
Pay attention to the Look	1	2	3	4	5
Pay attention to the amount of visible fat	1	2	3	4	5
Pay attention to the Expiration Date	1	2	3	4	5
Pay attention to the Packing Date	1	2	3	4	5
Pay attention to the Price	1	2	3	4	5
Pay attention to the Perception of the quality/price ratio	1	2	3	4	5
Prefer to buy less, but with more quality	1	2	3	4	5
Pay attention to If it has D.O.P.	1	2	3	4	5
Pay attention to if it's biological	1	2	3	4	5

6.3. Regarding the environment, please indicate the degree of agreement with the following statements:

We collect and monitor information affecting the environmental impact of our activity (e.g., energy use)

1_____2_____3_____4_____5

Totally Disagree | Disagree | Don't Agree or disagree | Agree | Totally Agree

We share information about the environmental impact of our activity with other agents.

1_____2_____3_____4_____5

Totally Disagree | Disagree | Don't Agree or disagree | Agree | Totally Agree

Appendix C. Distribution and Marketing, Sales Survey

The aim of this study is to collect information on the functioning of the value chain of the production and marketing of Jarmelista beef, namely on the distribution and commercial companies that intervene between production and consumption.

1. Operations

1.1. Your company performs:

	Yes	No
The cutting of carcasses		
The cutting of meat		
Processed products		
Meat packaging		

2. Purchase of beef of the Jarmelista breed

2.1. To whom do you buy beef of the Jarmelista breed?

☐ Individual producers
☐ Producer organisations
☐ Slaughterhouses
☐ Cutting rooms
☐ Wholesalers
☐ Importers

2.2. With regard to the quantities of beef of the Jarmelista breed which it markets, in its view it has:

☐ Many suppliers
☐ Few suppliers

2.3. How often do you buy beef of the Jarmelista breed?

☐ 1 time per week
☐ 2 times a week
☐ 1 to 2 times a month
☐ Almost every day
☐ Every day

2.4. How do you buy beef?

Carcasses	_____%
Half carcasses	_____%
Quarter of carcasses	_____%
Butcher's Parts	_____%
In cuvette	_____%

3. Transport of Jarmelista beef

3.1. Which agents are responsible for transporting the supplier's Jarmelista beef to your shop?

☐ The supplier
☐ My company
☐ Other

3.2. Who bears the costs of transporting Jarmelista beef ?

☐ The supplier
☐ My company
☐ Other

4. Sale of beef of the Jarmelista breed

4.1. How the sale of beef of the Jarmelista breed is carried out?

☐ Packed
☐ Not packed
☐ Processed products

4.2. The valorisation of beef products of the Jarmelista breed results:

☐ Because I consider it important for my company
☐ Because the consumer values it and demands it

4.3. Which meat parameters do you consider to be of greatest value:

☐ Territory/origin
☐ Sustainability of the production method
☐ Tradition
☐ Organoleptic characteristics (taste, texture, colour, juiciness, freshness)

5. Consumer

5.1. In your opinion, what is the importance of the following beef attributes for Portuguese consumers?

Tenderness	1	2	3	4	5
Flavour	1	2	3	4	5
Freshness	1	2	3	4	5
Succulence	1	2	3	4	5
Texture	1	2	3	4	5
Origin	1	2	3	4	5

5.2. How they consider consumers to decide their purchase of beef?

Pay attention to the Colour	1	2	3	4	5
Pay attention to the Cut	1	2	3	4	5
Pay attention to the Look	1	2	3	4	5
Pay attention to the amount of visible fat	1	2	3	4	5
Pay attention to the Expiration Date	1	2	3	4	5
Pay attention to the Packing Date	1	2	3	4	5
Pay attention to the Price	1	2	3	4	5
Pay attention to the Perception of the quality/price ratio	1	2	3	4	5
Prefer to buy less, but with more quality	1	2	3	4	5
Pay attention to If it has D.O.P.	1	2	3	4	5
Pay attention to if it's biological	1	2	3	4	5

5.3. With regard to the environment, please indicate the degree of agreement with the following statements:

We collect and monitor information affecting the environmental impact of our activity (e.g., energy use)

1_____2_____3_____4_____5

Totally Disagree — Disagree — Don't Agree or disagree — Agree — Totally Agree

We share information about the environmental impact of our activity with other agents.

1_____2_____3_____4_____5

Totally Disagree — Disagree — Don't Agree or disagree — Agree — Totally Agree

References

1. Scaramuzzi, S.; Belletti, G.; Biagioni, P. Integrated Supply Chain Projects and multifunctional local development: The creation of a Perfume Valley in Tuscany. *Agric. Food Econ.* **2020**, *8*, 5. [CrossRef]
2. European Commission. CAP Srategy Plan 2023–2027. 2023. Available online: https://agriculture.ec.europa.eu/system/files/2023-06/approved-28-cap-strategic-plans-2023-27.pdf (accessed on 1 July 2023).
3. Borrelli, I.P. Territorial Sustainability and Multifunctional Agriculture: A Case Study. *Agric. Agric. Sci. Procedia* **2016**, *8*, 467–474. [CrossRef]
4. Jarzębowski, S.; Bourlakis, M.; Bezat-Jarzębowska, A. Short food supply chains (SFSC) as local and sustainable systems. *Sustainability* **2020**, *12*, 4715. [CrossRef]
5. Mundler, P.; Laughrea, S. The contributions of short food supply chains to territorial development: A study of three Quebec territories. *J. Rural. Stud.* **2016**, *45*, 218–229. [CrossRef]
6. Taylor, D.H. Value chain analysis: An approach to supply chain improvement in agri-food chains. *Int. J. Phys. Distrib. Logist. Manag.* **2005**, *35*, 744–761. [CrossRef]
7. Pérez-Akaki, P.; Vega-Vera, N.V.; Enríquez-Caballero, Y.P.; Velázquez-Salazar, M. Designation of origin distillates in Mexico: Value chains and territorial development. *Sustainability* **2021**, *13*, 5496. [CrossRef]
8. Porter, M. *Técnicas Para Análise de Técnicas Para Análise de Indústrias e da Concorrência*; Editora Campus: Rio de Janeiro, Brazil, 1986. Available online: https://scholar.google.pt/scholar?hl=pt-PT&as_sdt=0%2C5&q=Porter%2C+M.+%281986%29+T%C3%A9cnicas+para+an%C3%A1lise+de+ind%C3%BAstrias+e+da+concorr%C3%AAncia.+Rio+de+Janeiro%3A+Editora+Campus.&btnG= (accessed on 10 May 2023).
9. Riso, A.M.A.M. Contributo para a Análise da Cadeia de Valor da Carne de Bovino em Portugal. Ph.D. Thesis, Universidade de Lisboa, Lisbon, Portugal, 2014. Available online: https://scholar.google.pt/scholar?hl=pt-PT&as_sdt=0%2C5&q=Contributo+para+a+an%C3%A1lise+da+cadeia+de+valor+da+carne+de+bovino+em+Portugal+&btnG= (accessed on 6 August 2023).
10. Spies, D.C. *Analysis and Quantification of the South African Red Meat Value Chain*; University of the Free State: Bloemfontein, South Africa, 2011. Available online: https://scholar.ufs.ac.za/bitstream/handle/11660/1901/SpiesDC.pdf?sequence=1&isAllowed=y (accessed on 24 June 2023).
11. Ranaei, V.; Pilevar, Z.; Esfandiari, C.; Khaneghah, A.M.; Dhakal, R.; Vargas-Bello-Pérez, E.; Hosseini, H. Meat value chain losses in Iran. *Korean J. Food Sci. Anim. Resour.* **2021**, *41*, 16–33. [CrossRef]
12. Sosnicki, A.A.; Newman, S. The support of meat value chains by genetic technologies. *Meat Sci.* **2010**, *86*, 129–137. [CrossRef]

13. Nunes, T.R.; da Silva, J.A. Análise da cadeia produtiva da carne bovina no Município de Dianópolis, Tocantins. *Res. Soc. Dev.* **2021**, *10*, e7610311545. [CrossRef]
14. Novaković, B.; Grujić, R.; Vujadinović, D. Value Chain Analysis for Meat and Meat Products. *J. Hyg. Eng. Des.* **2015**, *1*, 93–102. Available online: https://keypublishing.org/jhed/wp-content/uploads/2020/07/01.-Brane-Novakovi%C4%87.pdf (accessed on 6 August 2023).
15. Coutinho, P.; Simões, M.; Pereira, C.; Paiva, T. Sustainable local exploitation and innovation on meat products based on the autochthonous bovine breed jarmelista. *Sustainability* **2021**, *13*, 2515. [CrossRef]
16. Prosperi, P.; Galli, F.; Moreno-Pérez, O.M.; Chiffoleau, Y.; Grando, S.; Karanikolas, P.; Rivera, M.; Goussios, G.; Pinto-Correia, T.; Brunori, G. Disentangling the diversity of small farm business models in Euro-Mediterranean contexts: A resilience perspective. *Sociol. Rural.* **2022**, *63*, 89–116. [CrossRef]
17. Paiva, T.; Jacinto, T.A.; Sarraguça, M.C.; Coutinho, P. Beef Consumers Behaviour and Preferences—The Case of Portugal. *Sustainability* **2022**, *14*, 2358. [CrossRef]
18. Celaya, R.; Ferreira, L.M.M.; Lorenzo, J.M.; Echegaray, N.; Crecente, S.; Serrano, E.; Busqué, J. Livestock Management for the Delivery of Ecosystem Services in Fire-Prone Shrublands of Atlantic Iberia. *Sustainability* **2022**, *14*, 2775. [CrossRef]
19. Yin, R. *The Case Study Anthology*; Sage: Thousand Oaks, CA, USA, 2004. Available online: https://www.google.com/books?hl=pt-PT&lr=&id=cVcWlg-4NCcC&oi=fnd&pg=PR7&dq=Yin,+R.+K.+(2004).+The+case+study+anthology.+Sage&ots=9ORLKG6Nkk&sig=84aQ4JTViKqe6ZGeWxGTwJ_pf7I (accessed on 6 August 2023).
20. Piekkari, R.; Welch, C. *The Case Study in Management Research: Beyond the Positivist Legacy of Eisenhardt and Yin*; Handbook of qualitative, and undefined 2018; Sage: Thousand Oaks, CA, USA, 2018.
21. Llewellyn, S.; Northcott, D. The "Singular View" in Management Case Studies. *Qual. Res. Organ. Manag. Int. J.* **2007**, *2*, 179–193. Available online: https://www.emerald.com/insight/content/doi/10.1108/17465640710835355/full/html?casa_token=kHc9YaCOG8IAAAAA:z2dvGErQD5Tmj0aS1A0oy46oyzMB24630gfTFXv6CXuSnpuqiO48swAqOtX-5qxPvMbO1oFJ_pJQOCXJwG7OiTN5yJ4XFVNVTiu2JXILtNoqYfl8pA (accessed on 6 April 2023). [CrossRef]
22. Eisenhardt, K.M. Building Theories from Case Study Research. *Acad. Manag. Rev.* **1989**, *14*, 532–550. [CrossRef]
23. Hoehnel, A.; Zannini, E.; Arendt, E.K. Targeted formulation of plant-based protein-foods: Supporting the food system's transformation in the context of human health, environmental sustainability and consumer trends. *Trends Food Sci. Technol.* **2022**, *128*, 238–252. [CrossRef]
24. Pagliacci, F.; Cei, L.; Defrancesco, E.; Gatto, P. The EU Mountain Product Voluntary Quality Term as a Valorization Tool for Livestock Farms: Challenges and Opportunities in an Alpine Context. *Sustainability* **2022**, *14*, 3292. [CrossRef]
25. Duglio, S.; Salotti, G.; Mascadri, G. Conditions for Operating in Marginal Mountain Areas: The Local Farmer's Perspective. *Societies* **2023**, *13*, 107. [CrossRef]
26. Flinzberger, L.; Cebrián-Piqueras, M.A.; Peppler-Lisbach, C.; Zinngrebe, Y. Why Geographical Indications Can Support Sustainable Development in European Agri-Food Landscapes. *Front. Conserv. Sci.* **2021**, *2*, 752377. [CrossRef]
27. Genovese, D.; Culasso, F.; Giacosa, E.; Battaglini, L.M. Can livestock farming and tourism coexist in mountain regions? A new business model for sustainability. *Sustainability* **2017**, *9*, 2021. [CrossRef]
28. Resano, H.; Sanjuán, A.I. Exploring the role of mountain origin and autochthonous breed on urban consumers' acceptability'. *Sustainability* **2018**, *10*, 4423. [CrossRef]
29. Cei, L.; Defrancesco, E.; Gatto, P.; Pagliacci, F. Pay more for me, I'm from the mountains! The role of the EU Mountain Product term and other credence attributes in consumers' valuation of lamb meat. *Agric. Food Econ.* **2023**, *11*, 12. [CrossRef]
30. Staffolani, G.; Bentivoglio, D.; Finco, A. 'Consumers' Purchasing Determinants towards Mountain Food Products. *Sustainability* **2022**, *14*, 8282. [CrossRef]
31. Mazzocchi, C.; Sali, G. 'Tourists' Perception of Ecosystem Services Provided by Mountain Agriculture. *Sustainability* **2022**, *14*, 12171. [CrossRef]
32. Ejdys, J.; Szpilko, D. European green deal—Research directions. A systematic literature review. *Wydaw. Ekon. Srodowisko* **2022**, *81*, 8–38. [CrossRef]
33. Fetting, C. The European Green Deal. 2020. Available online: https://www.esdn.eu/fileadmin/ESDN_Reports/ESDN_Report_2_2020.pdf (accessed on 24 June 2023).
34. Mazzocchi, C.; Sali, G. Supporting mountain agriculture through "mountain product" label: A choice experiment approach. *Environ. Dev. Sustain.* **2021**, *24*, 701–723. [CrossRef]