

## Article

# Challenges and Responses of Agri-Food Activities under COVID-19 Pandemic: The Case of the Spanish Territories Producing Wine and Olive Oil

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**Abstract:** The COVID-19 pandemic has deeply affected economic activities worldwide. The challenge for territories and companies has been how to cope with mobility restrictions. Even in the case of essential activities such as agri-food industries, the adaptation has been a challenging issue to deal with. The paper aims to show how the wine and olive oil industries in Spain have restructured their activities in order to respond to the confinement and the new normalcy, using new technologies as a strategic tool, but also making the most of new actions to keep their presence in the national and international markets. The research was carried out mostly through qualitative analysis, using the in-depth interview as a main tool to gain strategic information from managers of companies and local policymakers. Results show that when local policy makers and managers cooperate, despite the different perceptions they could have, the outcome is positive for facing competitive shocks and carving out new local initiatives, making firms and the territory itself more resilient.

**Keywords:** COVID-19; olive oil; wine; endogenous development; local initiatives



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## 1. Introduction

The irruption and rapid global spread of COVID-19 has led the vast majority of countries to face unprecedented challenges in the fields of health and economy. Spain has been one of the most affected countries in the world from both perspectives [1], with one of the highest mortality rates and with a profound economic impact characterized by a major economic contraction, very high unemployment, and an increasingly worrying situation of public finances.

The COVID-19 crisis has severely hit world food production and trade: international logistics problems and a slump in demand—especially during the confinement—via exports, with a strong impact on prices and incomes; rising rigor in health standards (in products and packaging); nationalist pressures on trade agreements; and the boom in online sales, given the collapse of the hotel, restaurant, and catering channel (HORECA) [2,3].

These consequences have been added to the trends challenging agri-food activities (AFA) during the course of the 21st century [4–6]: (a) global population growth, which will require a 50% increase in agricultural production by 2050 [7]; (b) climate change and resource scarcity, which call for greater sustainability; (c) the integration of food supply chains in order to minimize costs and risks in terms of control, safety, and traceability in a growing regulatory context; (d) an accelerated digital transformation, ranging from precision irrigation to high-tech greenhouses, GIS, and GPS mapping on farms, with data analysis or DNA labeling; and (e) changes in food demand. Notwithstanding, increased overall consumption is juxtaposed with higher demands for quality and variety by an increasingly informed consumer.

The pandemic has shown the strategic nature of these activities with regard to food security while at the same time putting a face to the humblest links in the food chain, in their daily, absolutely essential work of production and distribution. Our intention is to show the importance of olive oil and wine activities in Spain from a territorial perspective, demonstrating that local firms adapt their responses in collaboration with public bodies within a territorial institutional framework. The study of olive oil and wine activities is especially interesting because, on the one hand, they tend to generate agglomerative phenomena (clusters) in numerous rural areas, which promote the creation of firms and employment and local development processes involving a symbiosis between product and territory [7–10], and on the other hand, because they are two strategic agri-food branches in which Spain is a world leader, with the consequent repercussions on both the local/regional and national economies, as will be demonstrated in the descriptive analysis.

The academic literature has brought about great efforts to study the effects and consequences of the pandemic on different activities of business worldwide [11–14]. More particularly, some of the papers have highlighted the importance of resilience as a challenging process of responding to the consequences of crisis [15–17]. Furthermore, regarding agri-food activities, researchers have posited the effects of the COVID-19 pandemic on agricultural value chains from different perspectives [18–22], also in the case of the olive oil and wine industries in Spain [23–25]. However, none of these studies adopted a place-based approach [26] which considers economic growth and structural change a territorial process where institutions condition the process of capital accumulation [27–31].

Given the fact that wine and olive oil activities in Spain are of great importance in rural territories as generators of employment and value added, it is worthwhile to ask ourselves, adopting a territorial approach, how the actors involved in the territorial value chains are responding to the challenges of the profound transformations that COVID-19 has brought about. Results will show that cooperation among local actors—who build territorial networks—in innovation processes, as well as product and market diversification, are paramount for making territories more resilient to face current and future challenges.

Therefore, the aim of the paper is, first, to corroborate through fieldwork the consequences of the pandemic in the firms producing wine and olive oil in Spain, and second, to find out the changes implemented in order to face it, the learnings that have been taken in, and the panorama for the future expected by managers and owners.

In order to meet these goals, in Section 2, the paper briefly presents the theoretical background under the territorial approach as well as the description of olive oil and wine activities in Spain. In Section 3, the materials and methods used to gain the strategic information about the firms in their territorial context are reported. Section 4 accounts for the main results of the research. Next, a brief discussion on the theoretical implications of these changes on territorial development is offered. Finally, the paper ends with some final comments for future research.

## 2. Theoretical Background

### 2.1. The Territorial Approach

The territorial approach considers that economic growth and structural change is a territorial phenomenon [31–35]. Institutions condition the relations between firms, encouraging trust between the actors and guaranteeing the formal agreements among firms [36]. In turn, innovations will be hampered to reduce production costs and stimulate the presence of firms in the markets if the institutional system does not stimulate interaction among the actors and collective learning through cooperation and agreements between firms and organizations or if the social and institutional environment does not facilitate the best performance in research and knowledge organizations. Furthermore, hidden external economies in territories thrive when the institutional framework is adequate for the demands of the economic, social, and political actors and when institutions promote cooperation among the actors.

The place-based approach shows that the territory is no longer simply a place where resources and economic activities are located. In this process, the territory works as an agent for transformation because local firms and other actors interact in order to develop the economy and society. It is in this way that the territorial approach allows one to understand the process of economic growth and structural change.

## 2.2. Description of Olive Oil and Wine Activities in Spain

The European Union is a world leader in food production and exports. Thus, in 2018, the nearly 295,000 companies that make up its AFA employed more than 4.8 million people and generated a turnover of EUR 1.2 trillion, with an added value of 1.9% of the total for the EU-28. The USD 129 billion obtained from foreign trade represent 18.8% of the world's food and beverage exports, ahead of the United States and China, and the rest of the main exporting countries [5].

Spain recorded higher values than the EU as a whole for the three component areas of the AFA (Table 1): agriculture, industry, and commerce.

**Table 1.** Weight of agri-food activities in the total value added of the economy.

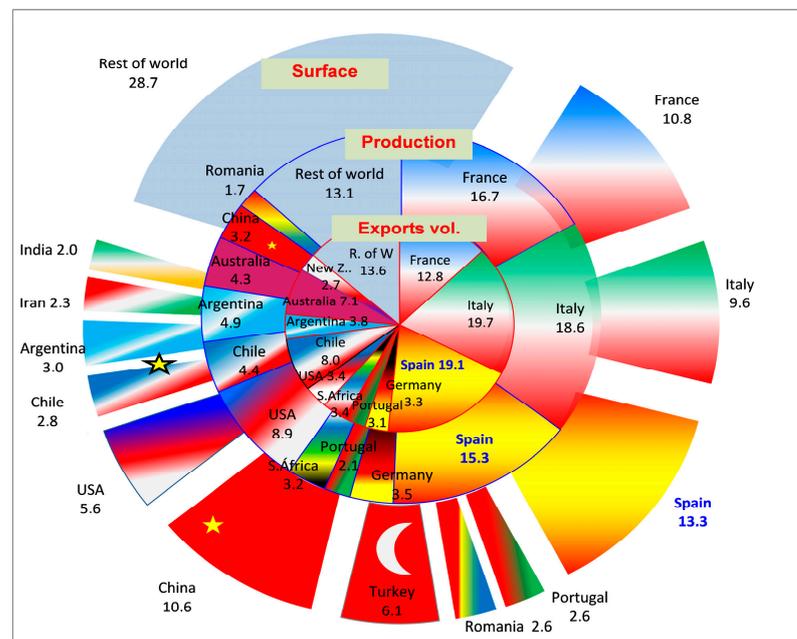
	Spain				EU-28			
	Agriculture	Food, Beverages, and Tobacco	Agri-Food Sector	Expanded Agri-Food Sector	Agriculture	Food, Beverages, and Tobacco	Agri-Food Sector	Expanded Agri-Food Sector
2008	2.6	2.4	5.0	7.9	1.7	2.0	3.7	6.1
2009	2.4	2.4	4.8	7.9	1.6	2.1	3.6	6.2
2010	2.7	2.5	5.1	8.4	1.7	2.0	3.7	6.2
2011	2.6	2.6	5.2	8.6	1.7	2.0	3.7	6.2
2012	2.6	2.6	5.2	8.8	1.7	2.0	3.7	6.3
2013	2.9	2.6	5.5	9.2	1.9	2.1	4.0	6.5
2014	2.8	2.6	5.4	9.0	1.8	2.1	3.9	6.5
2015	3.0	2.5	5.5	9.2	1.8	2.1	3.9	6.4
2016	3.1	2.5	5.6	9.3	1.8	2.1	3.9	6.4
2017	3.1	2.4	5.5	9.3	1.9	2.1	3.9	6.5
2018	3.1	2.3	5.4	9.0	1.8	2.0	3.8	6.4
2019	2.9	2.4	5.3	8.9	1.8	2.0	3.8	6.3
2020	3.4	2.4	5.8	9.7	1.9	1.9	3.8	6.5

Source: [37].

Spain presents an intense specialization in the AFA, with that sector emerging as a powerful engine of economic growth and employment, as it is particularly resilient in periods of crisis. However, its role goes beyond this: As the pandemic has shown, it is an essential sector for supplying the food necessary for life, as well as a valuable instrument for territorial development that promotes the rural environment [38,39].

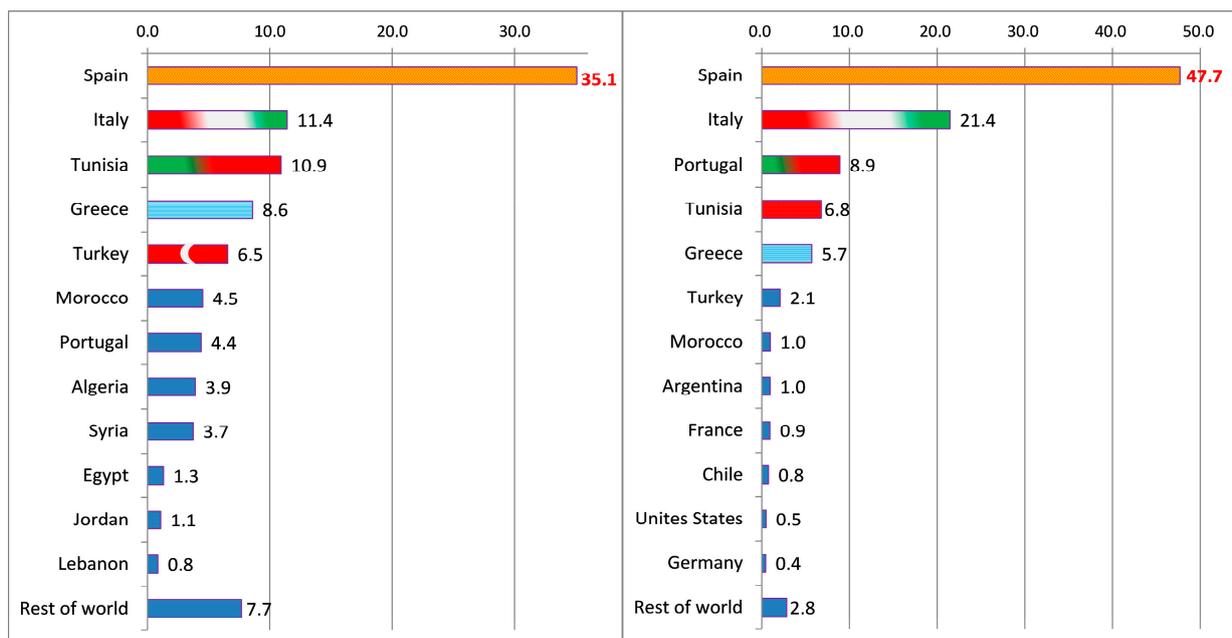
Moreover, the AFA's mixed location patterns—proximity to raw materials and to the market—translate, in Spain, into a broad territorial projection on a municipal scale, typifying the industry of many small or medium-sized towns, based on modest-sized firms, and with territorial brands gaining importance, especially in meat, fruit, and vegetable products, and wines and olive oils, among others [40,41].

Indeed, as shown in Figure 1, Spain is, with almost one million hectares, the world's leading country in vineyard surface area, accounting for around 13.3% of the world surface in 2018, followed by France, Italy, and China [42]. It is also one of the main wine producers; with around 44.9 million hectoliters in 2018 (15.3% of the world's production), it ranks third after Italy and France. It is also, together with Italy, the leader in wine exports by volume (accounting for 19.1% of the world in that year), well ahead of the following countries in the ranking: France, Chile, and Australia.



**Figure 1.** Top wine-producing countries (% of world total) (\*). \* Surface and production: 2018; Exports: 2020. Source: own elaboration from the data provided by [43].

Regarding olive oil, Spain undoubtedly leads the world ranking as a producer and exporter (Figure 2). With 1.12 million tons in the 2019–2020 campaign, it produced 35.1% of the world’s volume, tripling the shares of Italy and Tunisia, the second and third largest producers, respectively. Exports in 2019 amounted to USD 3.3 billion—almost half of the world exports in that year—far exceeding the other major exporters: Italy, Portugal, Tunisia, and Greece. Spain is also the world’s largest consumer. In the 2019–2020 season, 528,100 tons were consumed, 16.3% of the world consumption, a figure higher than those of more populous countries such as Italy (490,000) and the United States (399,500).

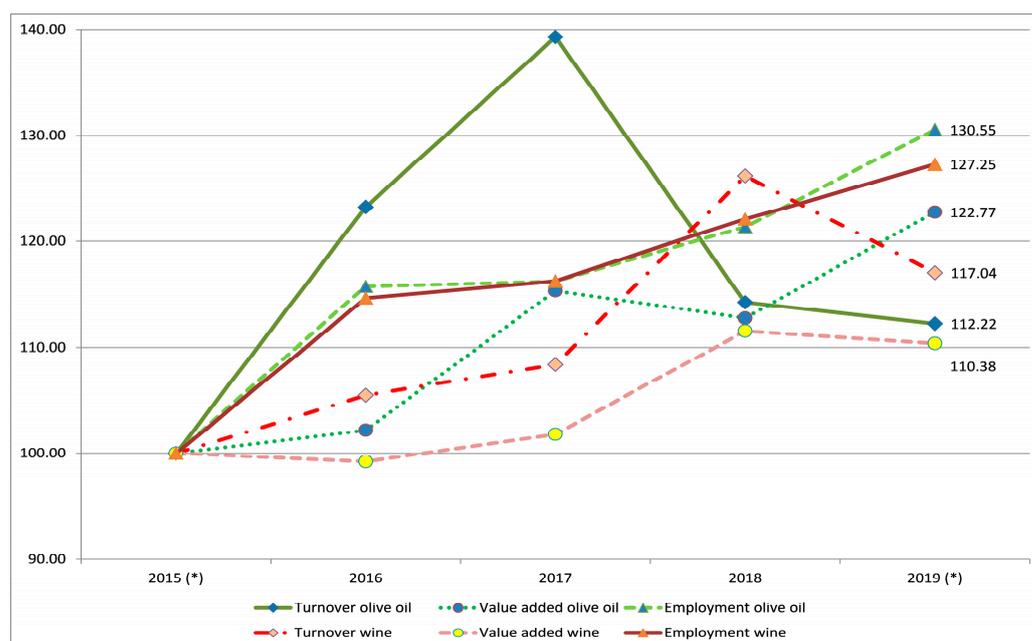


**Figure 2.** Main olive oil producing and exporting countries (% of the world production) \*. \* Production: 2020; exports: 2019. Source: own elaboration from data provided by the International Olive Council (IOC) [44].

According to INE [45], the wine industry in 2019 had just over 4000 companies, 31,500 jobs, a turnover of EUR 7.8 billion, and an added value of EUR 1.9 billion. In the olive oil branch, 1541 firms employed almost 11,800 workers, with EUR 7.5 billion in sales and almost 600 million in added value. Both branches had a size of just over 7.5 workers per firm, half of the AFA, and a lower unitary labor cost than those from the sector as a whole.

This modest size in Spain is, for wine, the result of a large number of wineries (33.7% of those existing in the EU-27), and generates 27.2% of total EU employment in the subsector, above France and Italy [46]. Furthermore, the analysis of the relative weight of the wine branch within each national AFA places Spain as the second most specialized country after Portugal. For olive oil, Spain's average annual production over the last 10 seasons (1.31 million tons) represents 43.7% of European production, the most of which is virgin oils, the result of pressing the olives by solely mechanical means. According to Eurostat data [46], taking EU food and beverage production as a reference, Spain is the most specialized country in the EU-27.

The recent evolution of both activities in the pre-COVID-19 scenario is generally positive. Sales and value added rose between 2015 and 2019. This trend—most marked in turnover for wine (17%) and in value added for oil (22.7%)—has had a visible impact on employment, with an increase over the period of more than 25% in both cases (Figure 3).

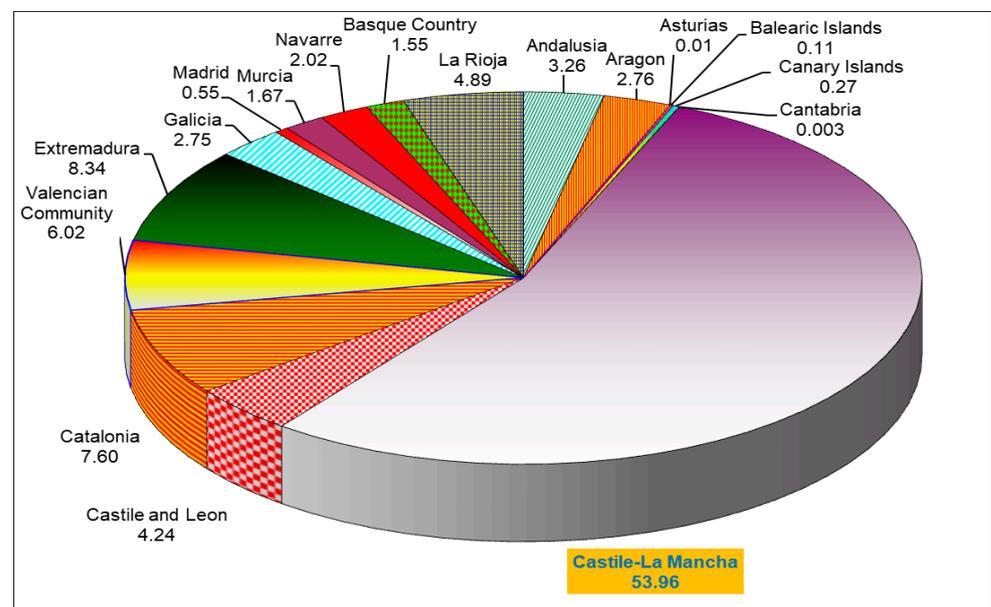


**Figure 3.** Recent evolution of the Spanish wine and olive oil sectors, 2015–2019. Source: own elaboration. Data from [45]. \* Estimated data.

On the demand side, some aspects should be indicated for both branches in Spain. In the case of wine, retail distribution and expenditure in bars and restaurants are crucial; both channels account for 66.8% of consumption by volume, with table wine predominating at home (34.6%) due to its low price (EUR 1.41/liter). Per capita consumption is rather modest (23.9 L per year), much lower than in the main producing countries, and particularly high among the over-50s. Olive oil accounts for 60% of total oil purchases in volume and 81% in value in hypermarkets, supermarkets, and independent channels (with a prevalence of virgin oils, especially extra virgin) and for 66.1% in household consumption (compared to 31.6% for sunflower oil), with refined oil being the most consumed per capita due to its lower price (EUR 3.12/kg) [47]. Foreign consumption is very important for both activities, since Spain is in the trio of the world's largest wine exporters, along with France and Italy. However, unlike them and other major producers, it registers a low average export price

(EUR 1.26/liter), due to the importance of bulk sales. The number of exporting wineries ranges between 3500 and 4000, with Germany, the United States, the United Kingdom, and France as the main clients, absorbing 42% of the exported value. In olive oil exports, Spain is the world leader, selling 1.2 million tons the year before the pandemic (61% extra virgin) for EUR 3.158 billion (63.4% of world exports in volume and 56% in value) to 162 countries, with Italy, the United States, and Portugal standing out [46].

From a geographical perspective, the industry is located close to raw materials. In wine, the 950,079 hectares planted with grapes for winemaking are distributed unevenly across all regions according to climatic, soil, and orographic conditions. Castilla-La Mancha stands out, with 47.8% of the national vineyard area. It is followed by Castilla y León (8.6%), Extremadura (8.3%), the Valencian Community (6.2%), Catalonia (5.9%), and La Rioja (5%), with residual cultivation in Asturias and Cantabria [48], which is reflected in wine production (Figure 4).



**Figure 4.** Regional distribution of Spanish wine production, average in 2000–2020. Source: own elaboration from [49].

The territorial distribution of olive oil is less dispersed, given the particular environmental, climatic, and soil requirements of the olive tree. Of the nearly 11.5 million hectares of olive groves in the world, 2.6 million are in Spain: 167,000 are dedicated to producing table olives and bulk, and 2,435,000 hectares are dedicated to olive oil. Andalusia, with more than 1.5 million hectares, gathers 63.2% of Spain's olive groves for oil production, with Jaén and Córdoba as the most important provinces, representing 24.1% and 14.8% of the national surface area, respectively. The second region is Castilla-La Mancha, which contributes 15.3%, followed by Extremadura (8%). The three regions account for 86.5% of the total cultivated area [49].

In line with the above, Figure 5 shows, with data from the 2019–2020 campaign, the very strong geographical concentration of production, as well as of the stocks in warehouses at the end of the season, where Andalucía stands out overwhelmingly with 84.8% of the total stock. In fact, Jaén and Córdoba by themselves account for 52.9% of national production and 28.1% of oil mills, whose enormous activity exceeds, on average, that of entire countries.

Table 2 shows data on the 20 largest wine Protected Designations of Origin (PDOs) (of the 95 existing ones) ordered by number of registered wineries, which represent 78.9% of the area dedicated to PDO vineyards, 75.7% of the number of winegrowers, 81% of the



Olive oil also has PDOs in 29 territories. They cover an area of 709,500 hectares, spread over 9 regions, employing 128,800 farmers, and accounting for 361 oil mills and 370 bottling and/or marketing firms. Table 3 collects data on the 20 most important in terms of economic value, representing 98.7% of the turnover, which amounted to EUR 134.9 million in 2019.

**Table 3.** Main indicators of the 20 largest olive oil PDOs by economic value, 2019.

Designation of Origin	Surface Hectares	Number Farmers	Number of Mills	Packaging	Total Tons	Production	Trade	Exports	Av. Price	Economic
				Trading Firms	Production	Protect. POD	Protect. POD	Value %	EUR/kg	Value (th. EUR)
Baena	60,000	8078	17	30	52,041	52,041	6938	55.2	5.50	38,160
Priego de Córdoba	29,628	6537	13	12	17,665	7066	2163	33.1	6.80	14,710
Siurana	9173	4922	29	29	2361	2356	2356	9.8	4.38	10,320
Sierra de Cazorla	37,700	11,200	10	20	6000	5000	3500	14.3	2.60	9100
Les Garrigues	16,107	2661	17	22	3286	3286	1606	1.7	5.24	8420
Estepa	40,039	4148	17	2	12,500	3159	3129	44.1	2.60	8140
Aceite Bajo Aragón	21,177	3289	33	5	7550	2098	2098	2.5	3.50	7340
Montes de Toledo	35,000	8500	29	29	23,000	15,000	1100	55.0	6.50	7150
Sierra Mágina	60,000	11,652	23	20	11,265	10,125	2140	2.7	3.10	6640
Sierra de Segura	35,064	9817	21	21	4654	4654	816	1.6	6.04	4930
Aceite de Mallorca	3872	994	13	22	464	252	293	16.1	11.85	3470
Aceite de la Rioja	688	1290	13	45	425	302	301	6.1	10.35	3120
Campo de Montiel	28,986	6690	11	8	3657	2717	875	45.4	3.00	2620
Aceite de Terra Alta	3320	1312	7	19	527	502	502	1.8	4.50	2260
Antequera	42,509	4934	13	2	2856	918	780	16.7	2.36	1840
Sierra de Cádiz	28,000	2160	4	4	3266	543	399	0.0	3.65	1460
Aceite de L'Empordà	800	303	5	2	182	182	182	0.0	5.58	1010
Baix Ebre-Montsià	12,111	3300	11	5	179	179	179	6.8	5.54	990
Poniente de Granada	27,013	5700	13	21	28,831	1065	318	0.0	2.60	830
Aceite de la Alcarria	28,335	543	4	4	1180	146	127	0.9	5.18	650
Top 20 by Econ. Value Wineries	519,522	98,030	303	322	181,888	111,590	29,801	26.9	4.47	133,160
Total Spain	709,501	128,834	361	370	255,767	112,758	30,318	26.5	4.45	134,950
Top 20/Total Spain (%)	73.22	76.09	83.93	87.03	71.11	98.96	98.30	99.9	-	98.67

Source: own elaboration from the data provided by [52].

In the case of both wine and olive oil, these territorially embedded designations have an unquestionable socio-economic value for rural areas in a context in constant transformation. Their broad spatial projection generates activity, employment, and territorial image in usually very modest municipalities (especially in the case of wine), together with the impact of complementary activities such as enotourism and oleotourism, with a long way to go in the coming years. The PDOs and PGIs have contributed in many cases to shaping local production systems, as well as to maintaining the population and diversifying production, which are key to any process of integral local development.

This narrative has highlighted the territorial relevance of wine and olive oil activities in rural towns in Spain. In order to accomplish the objectives of the study, and given the fact that agri-food activities are profoundly embedded within territories, we proposed a qualitative method of research that is very useful for interpreting territorial reactions to context changes. In the next section, the paper explains the process, materials, and methods carried out in the research.

### 3. Materials and Methods

The research was designed to analyze the responses of Spanish wine and olive oil territories to dealing with the challenges that the COVID-19 pandemic has imposed on their productive and commercial activities. To this end, the study was carried out in different parts of the regions of Andalucía and Castilla y León, where olive oil and wine are the most prominent agri-food activities. Public bodies and local stakeholders took part as key informants and, for the sake of diversity, companies of various types of capital and sizes, and with different economic dynamics and corporate structures, were interviewed [53]. Available quantitative data on sectoral reports were used to assess the relative weight of wine and olive oil activities in the selected regions [54].

A qualitative research design was created to investigate the actions taken by companies and supported by public bodies and entrepreneurial associations. All of them were analyzed using an interpretivist framework [55], which allows the exploration of subjective values that individuals create to form their own reality, interacting with others [56]. Qualitative research is a systematic and subjective approach to highlight and explain daily life experiences and give them meaning [57]. Conceptually, individuals perceive the world differently because of their own experiences and perceptions in different contexts [58].

In-depth semi-structured interviews with the heads of firms of different types, such as co-operatives, limited companies, and public and private associations, permitted us to study how these territories are changing their way of working. Interviewee recruitment was conducted using web pages, mass media advertising, technical magazines in the wine and olive oil fields, and the information accumulated in previous research by the authors [7,59–63], as well as informal and non-codified information spread out in the professional environment of wine in Castilla y León and olive oil in Andalucía. Twenty people were identified (see Table 4 for demographic data) and interviewed face to face for at least 60 min [64]. Although a research limitation could be the small size of the sample, the decision about when to stop conducting more interviews was made once responses became redundant, i.e., when they seemed have reached the point of saturation [65]. This number was sufficient given the homogeneous nature of the cultural, institutional, and economic environment in which the research was carried out: Castilla y León for wine and Andalucía for olive oil.

**Table 4.** Demographic data of the respondents.

Attribute	Modality	Percentage
Gender	Male	62.5
	Female	37.5
Age	≥50	43.75
	41–44	37.5
	≤40	18.75
Job position	Top manager	68.75
	Middle manager	31.25
Experience in the activity	≥10 years	62.5
	6–9 years	25
	≤5 years	12.5
Academic background	Doctoral studies	12.5
	Bachelor's	68.75
	Secondary	18.75

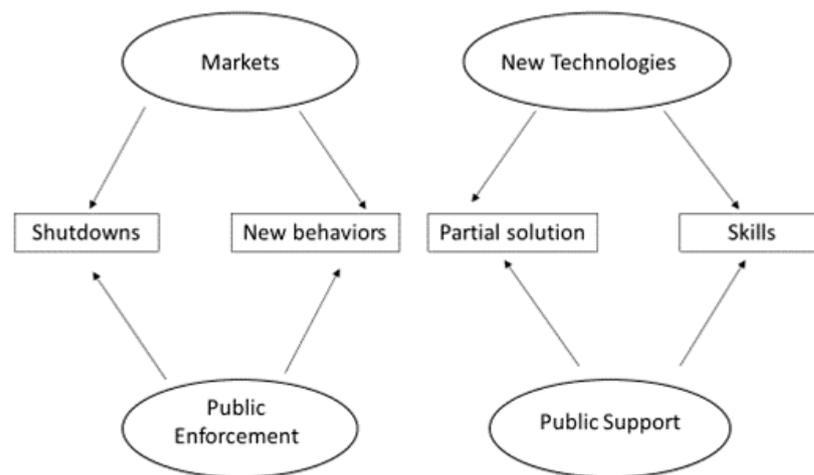
Source: own elaboration.

The interviewees were asked to present a strategic situation of their organization under the pandemic situation. They described in detail the most notable innovative initiatives being pursued, including a description of them, the nature of the changes, the goals achieved, the resistance encountered, and the most important lessons learned so far from the process. The information extracted from entrepreneurs, stakeholders, and public leaders permitted us to forecast the potential that the actions implemented offer for the company and the territory in order to increase their capacity to respond to challenges in the future.

The fieldwork was carried out during the last quarter of 2020 and the first quarter of 2021, including visits and direct contact and web platforms such as Meet, Teams, and Skype, as well as telephone conversations to contrast possible misleading data. The notes taken during the interviews, as well as the transcriptions of the conversations, were grouped the-

matically, guaranteeing the anonymity of the data. The use of content analysis allowed us to analyze and contrast them with theoretical arguments and empirical evidence, as is usually done in qualitative studies [66–68]. Mayring [69] defined this as a text analysis method empirically and methodologically controlled within the context of communication. Following thematic analytical rules and a step-by-step process without rash quantification and the use of a deductive approach allowed us to process the data to identify different categories.

The step-by-step process [70] is a useful method to find themes from the raw data. In our research it involved 6 phases of analysis: transcription of the data from the recorded interviews and revision of the written notes, code generation from the data set in order to identify possible topics, the search for links among them, the identification of themes, final generation of the thematic map (see Figure 6), and the production of the final report of the field work. (An example of the process: (1) raw data: “Some of our employees have been moved from production to the new department of online sales we have opened”; (2) coding for “reorganization,” “new technologies,” and “new markets”; (3) finding links among possible topics: “qualifications,” “new strategies,” “shutdown,” “public aid” etc.; (4) generating different thematic maps (see the final map in the text); (5) producing the final report, and (6) producing the paper.).



**Figure 6.** Final thematic map. Source: own elaboration.

The method used to identify territorial responses led by wine and olive oil companies, stakeholders, and public local bodies tested the managerial, technical, and organizational innovations identified and, afterward, explored whether they had provoked a change in rural societies on habits, routines, ways of thinking, ideas, or myths. In short, the research contrasted the innovative responses incorporated in olive oil and wine firms in the rural milieu facing a once-in-a-century challenge.

#### 4. Results

The thematic analysis permitted us to identify key content from the data set. The outcome was grouped into four clusters using a territorial approach to build our narrative. The results show that cooperation between actors depends on the shared institutions, but motivations could differ.

##### 4.1. Spanish Wine and Oil Activities in the Face of the COVID-19 Crisis: The Effects of the Confinement

During the years before the pandemic, world wine consumption was stable at around 240–245 million hl per year, in a context where the extra-Mediterranean countries increased their demand and the Mediterranean ones reduced it. In line with agri-food activities, the possible impact of the pandemic in 2020 was only 2.9%, although there was a trend of reduction in global consumption after 2019 (See Table 5).

**Table 5.** Evolution of wine consumption share in the main consuming countries (\*).

Countries	2001	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Cons.pc
France	14.9	11.7	11.5	11.5	11.4	11.2	11.6	11.6	10.6	10.3	10.6	46.0
Italy	13.3	9.1	8.9	8.6	8.1	8.8	9.2	9.2	9.2	9.5	10.5	46.6
Germany	8.8	8.1	8.3	8.4	8.4	8.4	8.3	8.0	8.2	8.2	8.5	27.5
Spain	6.3	4.1	4.1	4.0	4.1	4.0	4.1	4.3	4.5	4.3	4.1	23.9
Portugal	2.1	2.0	2.1	1.7	1.8	2.0	1.9	2.1	2.1	1.9	2.0	51.9
Romania	2.1	1.7	1.8	1.9	1.9	1.6	1.6	1.7	1.6	1.6	1.6	23.5
The Netherlands	1.5	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	24.2
Belgium	1.1	1.2	1.2	1.2	1.1	1.2	1.1	1.1	1.1	1.1	1.1	26.9
Austria	1.0	1.0	1.1	1.2	1.2	1.0	1.0	1.0	1.0	1.0	1.0	29.9
Sweden	0.6	0.9	0.9	1.0	1.0	0.9	1.0	0.9	0.9	1.0	0.9	27.0
Czechia	0.4	0.9	0.7	0.7	0.7	0.8	0.9	0.9	0.9	0.9	0.9	23.2
Others EU-27	6.7	6.9	6.7	7.6	6.8	5.6	6.7	6.0	4.7	6.8	5.3	-
EU-27	58.6	49.0	48.7	49.1	47.8	47.2	48.7	48.4	46.2	47.9	47.9	22.1
United Kingdom	4.5	5.3	5.3	5.2	5.2	5.2	5.3	5.3	5.3	5.4	5.7	23.8
Switzerland	1.4	1.2	1.1	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	35.7
Russia	2.7	5.2	4.6	4.3	4.6	4.4	4.1	4.2	4.1	4.2	4.4	8.6
United States	9.3	12.0	12.3	12.7	12.7	12.7	12.8	12.8	13.3	13.7	14.1	12.2
Canada	1.2	1.9	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.0	1.9	13.9
Argentina	5.3	4.0	4.1	4.3	4.1	4.2	3.8	3.6	3.4	3.7	4.0	27.6
Brazil	1.4	1.5	1.3	1.4	1.3	1.4	1.3	1.3	1.4	1.5	1.8	2.6
China	4.8	6.8	7.6	7.7	7.2	7.5	7.9	7.9	7.2	6.2	5.3	1.0
Japan	1.2	1.1	1.3	1.4	1.5	1.4	1.4	1.4	1.4	1.5	1.5	3.1
Australia	1.7	2.2	2.2	2.2	2.2	2.3	2.2	2.4	2.5	2.4	2.4	27.8
South Africa	1.7	1.5	1.5	1.5	1.7	1.8	1.8	1.8	1.8	1.6	1.3	7.4
Rest of the world	6.1	8.2	8.0	6.7	8.6	8.8	7.5	7.6	10.6	8.8	8.5	-
World Total (%)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	-
World (million hl.)	227.5	242.5	243.5	242.0	241.2	242.9	244.4	245.5	244.4	240.9	233.9	-

(\*) Cons.Pc = consumption per capita. Source: own elaboration from the data provided by [37].

Likewise, olive oil consumption is growing and the participation of the main consumers, such as Italy and Spain, is decreasing in favor of some extra-European countries, notably the USA (see Table 6). The high and medium-high income consumers demand olive oil despite its highest prices in relation to other vegetable substitutes, such as sunflower or soy oils, thanks to their benefits for health [71].

**Table 6.** Evolution of olive oil consumption share in the main consuming countries (\*).

Countries	2001–2002	2011–2012	2012–2013	2013–2014	2014–2015	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
Spain	24.2	18.6	16.3	17.1	16.9	16.6	16.2	15.7	16.2	16.3	17.0
Italy	28.2	19.8	18.4	20.8	19.6	20.1	16.1	19.1	14.8	15.2	16.0
France	3.6	3.6	3.8	3.6	3.6	3.8	4.0	3.4	4.5	3.7	3.7
Greece	10.4	6.5	6.0	4.6	4.5	4.7	3.9	4.3	3.9	3.6	3.6
Portugal	2.4	2.5	2.5	2.4	2.4	2.3	2.6	2.5	1.8	2.5	2.5
Germany	1.5	2.0	2.0	2.1	2.2	2.1	2.2	2.0	2.1	1.7	1.8
Others EU-27	1.8	3.3	3.4	3.6	3.7	3.9	3.9	3.5	3.8	3.3	3.8
EU-27	72.1	56.3	52.4	54.3	52.9	53.5	48.9	50.4	47.2	46.3	48.5
United States	7.2	9.7	9.6	9.8	10.1	10.8	11.6	10.4	11.5	12.4	11.2
Turkey	2.1	4.9	5.0	3.4	4.3	3.9	5.5	5.8	5.3	5.4	5.3
Morocco	2.3	4.0	4.3	3.9	4.1	4.0	4.4	3.9	4.9	4.3	4.4
Brazil	0.9	2.2	2.4	2.4	2.3	1.7	2.2	2.5	2.8	3.2	3.0
Syria	3.3	4.4	5.4	5.5	4.3	3.5	3.6	2.6	2.5	2.8	2.7
Algeria	1.0	1.4	2.0	1.6	2.2	2.7	2.5	2.7	3.0	3.9	2.7

Table 6. Cont.

Countries	2001–2002	2011–2012	2012–2013	2013–2014	2014–2015	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
Japan	1.2	1.4	1.7	1.8	2.0	1.8	2.0	1.8	2.3	2.1	2.4
China	0.0	1.3	1.3	1.0	1.1	1.3	1.6	1.4	1.7	1.8	2.1
Australia	1.1	1.3	1.2	1.2	1.3	1.4	1.7	1.6	1.6	1.6	1.6
United Kingdom	1.0	1.9	2.1	2.0	2.2	2.2	2.6	2.1	2.2	0.7	1.6
Canada	0.9	1.3	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.8	1.5
Egypt	0.1	0.2	0.4	0.6	0.7	0.6	0.8	1.3	1.5	1.2	1.3
Tunisia	1.1	1.1	1.3	1.2	1.0	1.2	0.8	1.3	1.3	1.5	1.1
Saudi Arabia	0.2	0.5	0.7	0.7	0.9	0.8	1.0	1.1	1.2	1.2	1.1
Israel	0.6	0.5	0.7	0.7	0.7	0.7	0.8	0.7	0.8	0.9	0.9
Jordan	0.8	0.6	0.7	0.8	0.8	1.0	0.7	0.7	0.7	0.9	0.8
Russia	0.2	0.8	0.9	1.0	0.7	0.7	0.7	0.7	0.8	0.8	0.7
Rest of the world	4.2	6.3	6.6	6.8	7.2	7.0	7.4	7.3	7.3	7.2	7.2
World Total (%)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
World (1.000 tn)	2606.5	3085.5	2989.0	3075.5	2916.0	2979.5	2726.0	3039.0	3057.0	3234.0	3185.5

(\*) Cyprus, Poland (2001–2002), and Croatia (2001–2013) included in EU-27. Poland's data for 2001–2002 is from 2003–2004. Source: own elaboration from the data provided by [44].

The measures adopted by governments worldwide in order to contain the spread of SARS-CoV-2 dramatically conditioned the bottom line of firms devoted to delivering products to be offered in the hospitality business. The shutdown of restaurants, bars, and cafés deeply affected the wine and olive oil sectors, although in the latter case only in the highest segments of the market. Furthermore, in the first moments of the crisis the national and international value chains were broken down, which gave rise to a stop in the marketing process. As a consequence, the stocks soared, leading to a plummet in prices. As one interviewee stated,

“Our firm sold a lot in restaurants. Now they are closed. It's frustrating because our products aren't interesting for retailers.”

Consumption at home, however, rose thanks to the openness of local essential services, such as supermarkets, bringing about a boost in wines in the medium and low segments of the market and the opportunity for some of the highest quality olive oils to get into kitchens. Consequently, wine firms experienced a twofold situation. On the one hand, firms producing high-quality wines for the hospitality business saw the market close to them, but on the other hand, others making medium- and low-quality wines discovered how unexpectedly sales rose due to the growth of consumption at home. A participant exclaimed that, surprisingly,

“We have hardly been affected by the confinement. In fact, the harvest is sold out.”

In this sense, sales of high-quality olive oils also soared, following the path of growing from the last few years, due to the high consideration of the Mediterranean diet in Europe's cuisines.

Touristic activities were eliminated in the portfolio of the companies due to the mobility restrictions.

#### 4.2. Organizational Changes

The effects of the pandemic and especially its recurrence have led firms to implement organizational changes, notably in wine companies, where they have had to adopt employment adjustments due to the reduction in sales and the shutdowns of touristic activities.

Job retention programs have incorporated enough flexibility to maintain the activity in some wine companies without increasing the level of unemployment in the region. Others, including most olive oils firms, have not used the ERTes, as they are called in Spain, because the pandemic has not affected their levels of sales, or, in cases where it has, they

have adapted their staffs to new activities such as online markets. The following answer is illustrative:

“Some of our employees has been moved from production to the new department of online sales we have opened.”

Consequently, special training for staff has been needed to face the challenge of digitization. Electronic commerce has been a solution of emergency for selling high-quality red wines and young white wines, which are made to be consumed in one or two years maximum. In this latter case, production cuts have been one of the actions adopted.

In the case of olive oils, new strategies of digital marketing have been developed. Companies devoted to bulk markets are opening electronic channels to sell their highest-quality products in new formats, including unit doses for hospitality business, attractive bottles for the premium extra virgin olive oil, and bag-in-box formats for improving the conditions of the product and offering it at a lower price. The latter has been used for selling low- and medium-quality wines for years, but now it is a solution for high-quality wines and olive oils to be offered online for consumption at home. That is why the most of respondents recognize that:

“People look for new ways for consuming high-quality products for less money.”

The most important organizational change has been the adjustment to electronic commerce, which has imposed the need to update web pages and include the possibility of purchasing online. However, in the meantime, the total amount commercialized electronically is less than 3% [34]. The reasons for such a low level of selling through this channel despite the dramatic situation is that the mechanism of online purchasing needs the construction of a narrative for captivating the client, generally based on the relation between the product, the people involved, and the soil. The narrative is needed in order to connect consumers with the wines and olive oils that are embedded in the local Mediterranean culture, in line with the French concept of *terroir*, which combines tangible and intangible matters, such as the emotions and experiences that consumers of high-quality wines and olive oils may perceive.

This change has required companies to improve their logistic capacity, signing agreements with delivery firms and commercial chains in national and international markets. Internal processes of management have been modified and videoconferences have been introduced in daily practice.

#### 4.3. *Strategies in the Value Chain*

As a consequence of the pressures in the competitive environment, the prices of grapes were reduced, which compensated in a relative way for the costs of stocking wines for small and medium firms, but in the case of big companies devoted to producing low- and medium-quality wines for big commercial chains, the situation has been very favorable, since the margins have soared.

In the case of small and medium wine firms, the reduction in sales obliged companies to look for cellars in order to stock the unsold annual production, with the logical pressure on prices downstream in the value chain. Likewise, the incorporation of new strategies, such as bottling on demand to maintain the wine in barrels to avoid its degradation, has been rolled out. In fact, only very big companies are able to have a significant strategic volume of bottling wine to provide big European supermarket chains. Some respondents claimed,

“You can’t tell a big chain that your stocks are sold out. That business is for bigwineries.”

Olive oil companies have also adapted their value chains to the new normalcy. The introduction of delivery for local and regional markets in order to make the most of short value chains has been one of the actions carried out for the newcomers in commercialization from traditional actions in the bulk market. These firms have also boosted the packaging of high-quality olive oils, improving the level of previous sales for national and international

clients, especially in the market of the United Kingdom, possibly because of the last-minute purchases of big commercial brokers for fear of congestion at borders due to Brexit.

The most innovative companies have incorporated new formats in bottling olive oil to introduce the product in Asia. That is the case of China, Korea, and Japan, where 250 mL bottles are demanded for medium and high niches of the market. Sales have been growing thanks to the use of online platforms through brokers in destination. Videoconferences and phone calls have substituted traditional face-to-face contact.

Segmentation, diversification, and market expansion are the strategies most reputed wineries are using to face the new context. The very limited stocks for some high-quality wines are preventing these companies from suffering the inconveniences that the pandemic has introduced in small and medium firms. Others, however, have decided to push an aggressive strategy of low prices for great high-quality wines to be sold in big super-market chains. Despite the fact that diversification is one of the mantras of olive oil and wine companies, enotourism and oleotourism have been put aside due to the restrictions. However, managers coincided on the perception that these activities are marginal in the final results of the firms. They argued that the costs of touristic activities sometimes are higher than the income, which is why small firms shut down their activity even before the pandemic came. As one participant expressed,

“We had touristic visits for a while, but the costs . . . guides, catering service, cleaning . . . were higher than revenues.”

Notwithstanding, some companies tackle touristic activities as a medium of promotion of the main products in order to better connect the clients with the symbolic matters that constitute a complete experience to value natural and cultural agri-food products.

#### *4.4. The Role of Territorial Public Bodies*

Agri-food activities are usually linked to embedded value chains. Because of that, the role of territorial public bodies in supporting them is a key task for local policies. In Spain, innovation, promotion, and supporting industrial activities depend on regional authorities, but we must not always consider them as bottom-up policies due to the size of some regions. That is the case for regions such as Castilla y León and Andalucía, where these policies must be considered top-down ones. However, local bodies such as provincial halls are devoted to promoting and boosting agri-food activities in their territories, mainly because of the importance they have in rural areas, which are under their political competences. Territorial politicians and staff carry out truly bottom-up policies aligned with the local initiatives they want to promote and support.

National top-down policies such as the job retention programs have been very useful for the biggest companies in order to keep the level of employment, but in general they have had a very low impact on total activity due to the fact that production has been maintained in order to attend to the big channels of delivery. Only HORECA has suffered the consequences of the lockdown.

The limitation of production is a traditional goal that agriculture authorities have addressed in order to reduce the oscillations of the market. To this end, aids to reduce harvests in vineyards and stock production in the olive oil sector have been the most used tools to reach the objectives of these policies.

Public aid for improving the processing technology, the intervention of public finances to reduce the financial costs, and support for introducing the products in new markets have been some of the most important top-down regional policies used in the pre-pandemic world. Regional and national agencies such as Extenda and ICEX have permitted companies to improve their international contacts.

Territorial public bodies are especially involved in promoting local products such as wine and olive oil. Given the fact that they are the main agri-food products in these regions, their promotion is a must for the nearer administrations, insofar as they take part in national and international exhibitions in order to spread information about the local

products, and, more importantly, these actions give an opportunity to small firms to attend international events, which opens the door to new markets for them.

However, there is a significant discrepancy between the perception of public and private managers. Managers of local firms think that local public bodies have relatively low importance in supporting territorial activities, which is more limited for wine than for olive oil, whereas from the perspective of policymakers, their implication for local activities is high in any case.

The differences in perception are even wider when the topic is tourism. For most private managers, tourism is mostly a marginal activity, and some companies are reluctant to consider it profitable. They consider tourism a way to promote the main product, or, in some cases, an institutional activity to catch the attention of regional and national media, but in no case does it have enough potential to be considered a main part of the firm's portfolio. For public bodies, on the other hand, enotourism and oleotourism are among the main activities to be boosted. They have programs to be developed for companies, financial lines to support the firms' investments to implement necessary organizational changes, and so on.

It is important to note that enotourism and oleotourism go beyond agri-food activities, benefiting others such as accommodations, restaurants, transport, etc., which are very important for a country such as Spain, which is very focused on tourism as an engine of growth. These considerations explain the difference between local managers' and territorial policymakers' perceptions about the issue. As one policymaker assessed,

“Our intention supporting tourism within agri-food activities is to create a package for enjoying the territory.”

Yet, managers and policymakers agree on the importance of training courses to make the most of digital platforms. Provincial halls have been especially active in organizing training activities for local workers to improve digital competencies. These activities have been very useful for firms to employ swift marketing efforts from the physical to the digital sphere.

On the basis of the territory as a mechanism of resilience, wine and olive oil companies—and the effort made by local public bodies in supporting them—have used different tools in order to deal with the challenges of the international context. The main instrument implemented has been the intensification of digitization. Virtual tasting and territorial e-platforms have allowed visual contact with the client to be maintained, as some policymakers reported:

“Local firms had to maintain the relation with the final market, but the smaller companies couldn't. Local public bodies knew that we had to step forward to create it.”

Indeed, the creation of e-marketplaces by local public bodies has been the most worthwhile solution by local companies to fight against the effects of the pandemic. Thanks to this, small firms have been able to commercialize local products in electronic markets without having a webpage. This action is the first step to creating a virtual space for companies to sell local products using the new electronic channels.

From a strategic perspective, territorial public bodies have been key supporters of territorial brands, such as Protected Denominations of Origin and Protected Geographical Indications, which are new territorial institutions improving the level of local resilience. The building of a territorial image is one of the most important contributions of territorial brands as a backbone for promoting local products in international markets.

Notwithstanding the consolidated mechanism of resilience, firms' portfolios have been seriously affected, especially for those who were starting to offer touristic activities. Despite all the managers interviewed considering it a marginal output for the bottom line, this is the area where territorial public bodies have implemented more actions to be promoted. Some innovative firms consider, however, that the best option for their future should be increasing public–private collaboration in the promotion of national consumption, which

has been reduced in recent times, especially among young people. The bigger ones go beyond: Research and innovation activities should be introduced in territorial collaborative actions in order to find new combinations of products, new ways of marketing, and the better use of territorial potential to increase their resilience capacity and improve their position in the international markets.

In sum, despite the fact that the impact of the pandemic has been high, the mechanisms of resilience rolled out by the different actors within the territory could avoid, in the words of the interviewees, the shutdown of business, though could have absorptions and other processes of firm concentration in the very near future.

## 5. Discussion

Territorial public bodies have helped companies to be resilient in the adjustment process to globalization challenges in the past [72]. Indeed, policies such as promoting diversification, for instance, through tourism; opening new markets, for instance, by easing attending international exhibitions; and enhancing quality, for instance, by creating awards for the best wine or olive oil, have been some of the bottom-up actions provincial town halls have rolled out.

Cooperation is an old concept to boost firms being paradoxically competitive [27]. Thus, bottom-up policies promote institutional collaboration between public bodies and local companies to improve entrepreneurial organization and innovation processes, which are the engines of economic growth [73]. In rural territories, innovation is very often a consequence of cooperation and benchmarking processes, which are the main components of social innovation [63]. Spanish wine and olive oil territories are good examples of these dynamics, since local innovators run the risks of innovating (and harvesting the main benefits if they succeed) but, more importantly for the local society, point out the path to follow.

In this sense, innovation is a territorial process through which social risks are reduced. The mechanism used is to wait and see. Local innovators are leaders—regardless of their size—with the capacity to propose new solutions to new problems. That is why, if they succeed, their decisions—probably questioned in the beginning [62]—spread out the territory, paving the way for other firms and even public bodies to respond to the crisis.

In pandemic times, resilience has been one of the landmarks strategically assumed by companies and public bodies in order to maintain their territorial competitive capacity in national and international markets. Given the fact that locally concentrated agri-food activities are among the most resilient [74] because of the involvement of different and embedded actors, the variety of landowners linked through the territorial value chain, and their production of basic products to attend to human needs, wine and olive oil activities have undergone the consequences of the economic recession better than the majority of businesses.

Yet, their effects on the demand have been very hard, especially for small firms in the wine sector, which were very concentrated on the HORECA channel. In those cases, the territorial social capital is working in favor of the maintenance of the activity, thanks to the bonding linkages local actors have built [75], which allow generational replacement. The latter is especially important for rural territories in Europe, which are under the threat of depopulation [76].

In olive oil territories, the cooperation of local farmers, grouped under the umbrella of the co-operatives, has been an important element for creating their own mechanism of resilience. In fact, for many towns, the olive oil co-operative is the main, if not the only, industry. For this reason, the quality of life depends on the evolution of the activity and the co-operative's capacity to deal with new challenges [63]. However, for other type of business, family tradition, the quest for quality, and the relation between Mediterranean culture and the product is the territorial anchor from where local firms withstand the impact of the pandemic. For wine and olive oil firms, territorial brands, protected by the European Union as PDOs and PGIs, are key elements of competitiveness [10].

Despite being both very mature activities, innovation processes are present along the whole value chain, from harvesting to delivering the final product. Thus, the wine and olive oil industries are not absent from the techno-economic paradigm of digitization [77], since the use of electronically connected devices to plants and machinery is usual nowadays in the most innovative producers. In fact, their use ranges from managing the very moment of maturity of fruits, or the accurate process of extraction of the final product, to the use of electronic platforms to sell and promote products, due to the organizational adjustments brought about by the confinement and the new normalcy.

It is important to recognize the role that the confinement has played in fostering digitization in very traditional activities like these. In the new paradigm, production and commercial networks are key for the organization of the value chain in the territory, the absorption of innovations, and the assimilation of the new institutions ruling globalization [71,78,79]. However, the assumption of this paradigm for companies entails not only organizational changes but also new capabilities in order to make the most of them. Yet, the process of assuming the new ways of working is slow, but once the new processes are integrated into the daily work of rural societies the situation has no return. As a matter of fact, the pandemic has sparked the incorporation of innovation processes in wine and olive oil activities, especially in commercial and promotional areas, but has also contributed to consolidating the idea of increasing the use of mechanization and new technologies in crops.

New processes of learning are going to be needed in order to understand the best combination of technology, tradition, terroir, and markets to maintain and improve the competitive capacity of the local firms in the new global context. Learning processes are collectively and territorially nurtured [32], mainly because of the importance of the practice [80], and due to tacit and contextual knowledge [81]. Therefore, the new capabilities needed to thrive in the very near future are path-dependent and non-tradable [82], which could constrain the growth in non-innovative territories, such as some of them in rural regions, because the most strategic assets are values, culture, and organizational experience. This is when the role of local public bodies should be strategic to help lead to swift behaviors in the direction of the world market.

## 6. Conclusions

Spanish territories producing wine and olive oil have demonstrated a great resilience during the hardest moments of the pandemic, in line with agri-food activities as a whole. Nevertheless, rural territories face significant challenges for the near future. Although the traditional ones have not been solved, such as the consequences of the lack of competitiveness, deriving from the vicious circle of depopulation, new challenges have also emerged.

In fact, the new normalcy has accelerated the process of digitization in all areas, increasing and diversifying the capabilities needed to manage agri-food business. It is important to note that local public bodies have supported them in keeping an eye on the market in the very beginning of the confinement, but the techno-economic paradigm entails the need for new planning for the long term and a sustainable policy of collaboration between local actors in order to implement successful territorial policies to deal with it.

Agri-food activities are diversified enough in the European soil to be considered strategic in fighting against today's big challenges: climate change, social and territorial inequality, and so on. However, the interrelation of these activities within rural spheres involving bonding dynamics needs to incorporate bottom-up policies to implement more tailored measures. Local development policies could offer an adequate way out of the bottlenecks caused by the lack of skills, maintaining the strategic tacit and contextual knowledge as a source of competitiveness. National [83] and international [84] reports have been released, but the implementation of digitization is far from being started. From now on, local actors in wine and olive oil activities should incorporate territorial governments in

the challenge of acquiring dynamic capabilities and capacities permitting the management of resilient local agri-food systems, making the most of big data and digital platforms [85].

In order to succeed, it is necessary to reach a strategic agreement between public bodies' and firms' objectives [36]. The design of territorial policies could be condemned to fail if the roadmaps of local agri-food systems differ from the planning and support of local public bodies, since the local actors are competing in a very complex reality, more and more conditioned by the rapid evolution of the institutions leading the new technological paradigm.

This research has some limitations derived from the small size of the sample and the methodology used for the analysis. The conclusions should be taken with caution out of the area of the research, because they could have been conditioned by the institutional logic of the specific territories where the field work was carried out. It is necessary to conduct more studies in order to assess the results in territories under different economic, geographic, and institutional contexts.

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