How Has SARS-COV-2 Affected the Different Branches of Agri-Food Industry? A Study Focused on the Region of Extremadura

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Abstract: The pandemic caused by Covid-19 has been causing a great impact on the world economy since 2020. This study analyses the impact of the pandemic on innovative agri-food companies from different branches of agro-industrial activity located in Extremadura (Spain) to determine which activities have been most affected and whether there are differences between the actions and changes carried out depending on the nature of the product, process or services. The information was obtained using an online questionnaire in which the research questions were proposed (what consequences, actions or changes has the pandemic had on the development of your activities?). Data were analysed descriptively, studying statistically the existence of independence or not between the effects and the actions carried out depending on agri-food industry branches of activity. The main results have shown that in general, all the agro-industrial branches have incorporated changes in their products and services, mainly by providing new and better customer benefits and improving product formats and forms of payment to suppliers.

1. INTRODUCTION

Globally, the coronavirus pandemic has become a health threat and is causing an unprecedented economic impact on the global economy (Donthu & Gustafsson, 2020).

The coronavirus has affected all areas, regions and sectors of activity. In the case of the food and beverage manufacturing sector, food production and consumption patterns have been disrupted (Eftimov et al., 2020). The challenges facing this sector involve operations, security, the supply chain, training, emergency response, awareness, incident management, a recreation of business models, digitisation and other impacts not previously considered (Vázquez-Martínez et al., 2021). As is happening worldwide, the pandemic has also brought about a change in food consumption patterns in Spanish households. The main changes in consumption trends during the first confinement in Spain (mid-March to mid-May 2020) were: the purchase of healthier foods, less spending on foods of low nutritional interest, and increased cooking at home. Similarly, other reports and studies also reveal that during the lockdown, there was a 50% increase in spending in supermarkets and large food outlets (Pérez-Rodrigo et al., 2020). There was also a 60% increase in the use of online commerce for food purchases, thus avoiding movement, travel and contact among people. In addition, spending on restaurants was reduced by 90% (CaixaBank Research, 2020).

Regarding the type of food and its consumption, in accordance with the report published by the Ministry of Agriculture, Fisheries and Food (MAPA) on May 15, 2020, in relation to data from the consumption panel relating to the purchase volume of Spanish households during March,

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a greater presence of meat, vegetables, legumes, rice and dairy products was observed in the shopping basket, as well as a greater demand for fish products (Ministerio de Agricultura Pesca y Alimentación, 2020b).

In Extremadura, the Spanish region on which this study focuses, the agri-food sector is strategic for promoting the economic and territorial development of the region. In fact, the weight of the agricultural sector and its associated industries is notably higher than the national average. According to data from the Spanish National Institute of Statistics (Instituto Nacional de Estadística, 2021), in 2020 there were 1,382 companies associated with the food, beverage and tobacco industries, which represents 2.07% of the total in the Extremadura region. Agri-food organisations have a weight in the total number of industries in the country of 0.89%, representing Extremadura more than twice that at the national level.

However, despite its relevance in regional economic development, Extremadura’s agribusiness suffers from chronic problems derived from a lack of business clusters, small size and local nature, or marginally innovation activities (Corchuelo & Mesías, 2017). Thus, the agri-food industry is undergoing substantial changes as it sees the need to include innovation in its strategies and to change its products. Innovation (technological and non-technological) provides agri-food companies with the opportunity of generating higher income and increasing their productivity and competitiveness, which is especially relevant in crisis situations (Corchuelo & Martín-Vegas, 2018).

The main objective of the study is to analyse the impact, consequences, and implications of the pandemic on innovative agro-industries in different branches of activity to determine which activities have been most affected and whether there are differences between the actions and changes carried out depending on the nature of the product, process or services. To achieve this objective, we analyse the firm’s answers to the following research questions: What consequences has the pandemic had on the development of your activities?; What actions have you taken to deal with the consequences of the pandemic of COVID-19?; What changes have you been obliged to make as a result of the pandemic in terms of product, services, brand, product format or consumer behaviour?

Our research fills this gap by providing an overview of the consequences, implications and actions taken by innovative agri-food industries in Extremadura according to a branch of activity. Furthermore, the results of the present research intend to make a useful contribution to the existing literature on the impact of the pandemic on the agricultural sector, especially in the Extremadura region. Likewise, the findings may be beneficial for senior executives of the Extremadura agri-food companies and the public administration of the region, providing information for the development of initiatives that mitigate the negative effects of the pandemic and favour the implementation of actions that help the adaptation of agro-industrial activities.

2. MATERIALS AND METHODS

The data analysed come from crossing and analysing various databases on agri-food companies in Extremadura (Spanish National Institute of Statistics, Agri-food Cooperatives of Extremadura, and Iberian Balance Sheet Analysis System) belonging to the sectors of the National Classification of Economic Activities (NCEA) code 10 (Agrifood Industry), 11 (Beverages) and 12 (Tobacco). Finally, the report/directory contains information on 734 companies, of which innovative agri-food companies (283 companies) were selected as the study population.
To obtain information about the research, a questionnaire was designed based on the results of previous research (Corchuelo et al., 2021). The questionnaire includes questions on the characteristics of the companies and the informant, questions related to the impacts as they affect the financial performance and operational performance, the new actions incorporated by the industries into their processes and in their procedures to deal with the consequence effects of the coronavirus.

Finally, 150 responses were obtained (53% of all innovative agribusinesses). The sample obtained is representative of the population (confidence level of 95% and a margin of error of 5%) and the data were analysed descriptively, analysing the frequency of responses in the different aspects questioned according to branches of activity. From a statistical point of view and considering the frequencies observed for each question, the Pearson chi-square test applied to the study of two variables (contingency tables) was used.

3. RESULTS

Generally, and coinciding with the study by Vázquez-Martínez et al. (2021), the challenge and changing scenarios caused by the pandemic mean that organisations belonging to the food sector are facing impacts not previously considered. However, it can be seen that all companies, regardless of their branches of activity, carried out actions and procedures as a result of the negative impacts they suffered.

3.1. Negative Consequences of the Pandemic in the Development of Agribusiness Activities (Financial and Operational Functions)

Extremaduran agri-food industries perceive the decrease in their turnover as the greatest negative consequence of the pandemic affecting their financial function, as has been shown in other reports (Federación Española de Industrias de alimentación y Bebidas-FIAB, 2019). This negative consequence is reported in more than 50% of all companies in all branches of activity. In addition, more than 85% of all branches of the tobacco industry and the manufacture of beverages have seen their turnover particularly affected. In the case of the Tobacco Industry, as reported in other reports, the monthly tobacco sales from March 2020 began to fall by 23.8% fewer sales in April compared to the same month in 2019. Unlike other sectors, tobacconists remained open during the March and April confinement. However, the restrictions associated with other activities, such as tourism, catering or nightlife, have also had an impact on the tobacco sector, as leisure and social time has been reduced, and tourism has an influence on many sectors (García, 2021). Regarding beverage manufacturing, 100% of the companies are wine and beer (alcoholic beverages) manufacturers and have seen their turnover decrease, as indicated by 85.7% of the total. The decline in turnover has occurred despite the fact that alcohol continued to be available at all times, although this trend seems to confirm the importance of the social consumption of alcoholic beverages. The overall drop in drinking did not prevent a likely increase of alcohol ingested at home, as during the months of confinement a large increase in the purchase of products usually consumed in bars and restaurants, such as wine, beer and spirits, was observed, although not in the same volume (Villanueva et al., 2021).

Industries have also been affected by the shift in demand for products. There has been a decrease in the demand for some food products as a result of the restrictions and measures adopted by governments to deal with the pandemic. As indicated in the study by (Pérez-Rodrigo et al., 2020), the pandemic is generating changes in food consumption patterns. Thus, since the first confinement was
decreed in Spain until the “new normality” (March 14-June 21), food consumption trends were oriented towards the consumption of healthier, fresh and nutritionally rich products (Bona et al., 2020). Consequently, the branches of activity that have been most affected are meat and beverage manufacturing. In line with the study by Sinisterra-Loaiza et al. (2020), this trend can be explained by the fact that most of the meat companies in the sample not only work with fresh meats but also manufacture sausages and cold cuts, which could be perceived by consumers as less healthy products.

Moreover, the Manufacture of beverages branch of activity is also experiencing a notable shift in demand for its products. In the case of sparkling wines, the decline in sales and the shift to other types of wines, such as still wines, is basically due to the fact that the sparkling wine category is closely associated with celebratory occasions, although producers are increasingly making great marketing and communication efforts to change this perception of the moment of consumption (Bharadwaj et al., 2020).

On the other hand, companies perceive a decrease in the investment budget (36% of the total) and a slowdown in R&D projects (29.3% of the total) as minor negative consequences affecting their financial function.

Concerning the negative consequences affecting the operational function of the industries, these have had an effect mainly on their marketing activities (56.7% of the total). In general, as has happened worldwide, the agri-food industries in Extremadura have experienced difficulties in carrying out trade activities due to the virus containment measures. The physical closing of international borders has had a negative impact on the freedom of exchange of goods, although the flexibilization and relaxation measures of governments, together with the resilience of companies, have contributed to softening this negative trend (Makhiboroda et al., 2020).

However, other measures adopted to control the virus, such as the closure of catering establishments or the limitation of opening hours, have been extended over time depending on the speed and characteristics of the propagation of the pandemic. This has caused changes in food marketing channels (Bolívar et al., 2021). Specifically, the most adversely affected channel has been the HORECA channel (hotels, restaurants and cafeterias) (Caldart et al., 2021).

Industries in the food and beverage sector have also been adversely affected operationally because of the reduced availability of personnel due to sick leave caused by coronavirus infection (Food and Agriculture Organization of the United Nations, 2020). In addition, labour shortages have contributed in part to the occasional decline in activity in some production centres. According to the study by Corchuelo et al. (2021), this negative effect is enhanced in agroindustrial branches that concentrate their activity on seasonal work campaigns due to the characteristics of their products, as is the case of fruits and vegetables. Thus, the large food processing industries have been forced to introduce staggered entries to work centres, thus reducing interpersonal contact at specific times of peak activity. Finally, the results reveal that the lack of supplies from suppliers has also affected the operational functioning of the companies (20% of the total), although to a lesser extent.

3.2. Actions in Processes and Procedures Developed to Deal with the Consequences of the Pandemic of COVID-19

In response, industries belonging to the food sector have incorporated and continue to include actions in their activities to minimise the negative effects caused by the pandemic (Food and Agriculture
Organization of the United Nations, 2020). First, with respect to the changes, they implement in their processes and as shown by other previous studies and reports, the pandemic has accelerated the trend towards a digital economy (Calza et al., 2022). In general, the agri-food industries, as far as possible, have incorporated teleworking in some areas of work not related to production, such as administration, thus allowing them to continue with their activities. The food sector has also used new channels to relate to the market, such as the use of virtual communication and purchasing platforms, an action which industries belonging to the Beverage Processing branch have highlighted above the rest (CaixaBank Research, 2020). The results show, however, that the search for and design of new products is less frequently mentioned by the companies as an action carried out in the processes.

Secondly, the industries of the food sector have also incorporated actions in their procedures to minimise the negative consequences of the pandemic in their activities. Mainly, the implementation of hygienic-sanitary protocols (73.3% of the total) and the reorganisation of activities and personnel (51.3%) stand out, even though the food industry usually has very demanding criteria of quality, and hygiene and food safety. In addition, those industries that manufacture and market products for different channels, such as retail and HORECA, have had to reorganise their activities. The pandemic has accelerated the incorporation of new lines that will allow the marketing of a greater volume of its products in supermarkets and hypermarkets in an attempt to compensate for the losses that will be generated by the closure of the hotel and catering business.

3.3. Changes Made as a Result of the Pandemic in Terms of Product, Services, Brand, Product Format, and Consumer Behaviour

Furthermore, the agri-food industries have incorporated changes mainly in the performance of their products and services to meet the changing market trends and the demands of their customers. Conversely, concerning changes in terms of the brand and format of their products, 70% of the total number of industries surveyed in Extremadura do not incorporate these changes in their products (64% of the total).

Finally, it has been observed that, except for the implementation of strict hygienic-sanitary measures, the results of the chi-square test reveal that the consequences, actions and changes are independent and carried out based on the branches of activity, which reveals that the pandemic has affected the agri-food industry equally.

4. FUTURE RESEARCH DIRECTIONS

Future lines of research will focus on exploring and extending the effects of the coronavirus in the post-pandemic stage in Extremaduran agri-food industries.

5. CONCLUSION

The coronavirus pandemic has affected all branches of Extremaduran agri-food activities. The pandemic is causing different negative impacts affecting the financial performance of the Extremadura agri-food industry (decrease in turnover and demand of products in the branches of agri-food activity). This has affected, in particular, firms related to the HORECA channel, which remained closed and suffered numerous restrictions from the state of alarm in March 2020. Agro-industries have also faced difficulties affecting their operational performance. The lack of personnel is one of the main ones, especially in those activities subject to the seasonality
of their products (e.g. fruit and vegetable plants), and the difficulties in carrying out marketing activities. In response, firms have taken actions that allow them to adapt their activities and face the negative effects, guaranteeing their continuity. Mainly, the industries have promoted the use of ICTs in their communication and trade activities, as well as the incorporation of more demanding hygienic and sanitary protocols. In relation to the changes included in their organizations, these are mainly based on the performance of their products and services. The consequences, actions, and changes produced by the pandemic have affected the agri-food industry equally and, except in the implementation of more demanding hygienic and sanitary protocols, there is no association between them and the different branches of activity.

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