The food industry and its post-covid economic impact in Ecuador

[1]María Belén Bravo Avalos, [2]Tatiana ElizabethSánchez Herrera, *[3]Rogelio Estalin Ureta Valdez

[12]*Escuela Superior Politécnica de Chimborazo (ESPOH)*
[3]*Escuela Superior Politécnica de Chimborazo- ESPOCH sede morona Santiago, rogelio.ureta@espoch.edu.ec*

Abstract

A documentary review was carried out on the production and publication of research papers related to the study of the variable The Food Industry and its Post-COVID Economic Impact in Latin America. The purpose of the bibliometric analysis proposed in this document is to know the main characteristics of the volume of publications registered in the Scopus database during the period 2016-2021 in Latin American countries, achieving the identification of 54 publications in total. The information provided by the said platform was organized through tables and figures categorizing the information by Year of Publication, Country of Origin, Area of Knowledge, and Type of Publication. Once these characteristics were described, the position of different authors regarding the proposed topic was referenced using a qualitative analysis. Among the main findings of the present research, it is found that Brazil, with 20 publications, is the Latin American country with the highest production. The area of knowledge that made the greatest contribution to the construction of bibliographic material referring to the study of the Food Industry and its Post-COVID Economic Impact was Agricultural and Biological Sciences with 22 published documents and the type of publication that was most used during the period indicated above was the journal article, which represents 50% of the total scientific production.

Keywords: food industry, post covid.

1. INTRODUCTION

The pandemic declared due to COVID-19 brought with it dire consequences to the way people interact and the economy, changing the factors that were taken into account when choosing products. In addition to the effects of COVID-19 on physical and mental health, there were also consequences in the market. The Food Industry is of vital importance as it is responsible for the production and distribution of food at all stages, and has also been affected by the economic crisis, suffering changes in the supply chain as there are variations in production.

Since the beginning of 2020, the food industry is facing new challenges when performing its economic activity, since due to the Charada pandemic in March 2020, mobility was limited and biosecurity measures such as social distancing were created, making food production difficult and changing, having effects on the food security of the countries, creating uncertainty on the production, distribution and consumption systems, affecting the quality of life of the people. In Ecuador, as in the rest of the Latin American countries, the pandemic affected the levels of food security, which translates into an increase in poverty rates (Gavilanes Llango et al., 2022). All this brings with it in the post COVID period certain changes in the food industry to recover from the economic impact of the pandemic such as changes in the value chain and variations in the

characteristics of the products since after the pandemic, consumers have changed their preferences when buying a product, being increasingly important the price and the process of product development, in addition to others that have to do with the reduction of pollution by choosing environmentally friendly products.

Therefore, strategies have been developed to encourage the reactivation of the food industry to avoid shortages and have an economic growth that allows to level the prices of the products. Therefore, it is important to know the current state of research related to the Food Industry and its Post-COVID Economic Impact in terms of bibliographic resources, so a bibliometric analysis of the scientific production registered in the Scopus database during the period 2020 and the first quarter of 2022 is proposed to answer the question: How has been the production and publication of research papers related to the study of the variable Food Industry and its Post-COVID Economic Impact in the period 2020, 2021 and the first quarter of 2022?

2. General Objective

To analyze from a bibliometric and bibliographic perspective, the production of high impact research papers on the variable The Food Industry and its Post-COVID Economic Impact during the period 2020, 2021, and the first quarter of 2022.

3. Methodology

A quantitative analysis of the information provided by Scopus under a bibliometric approach on the scientific production related to the Food Industry and its Post-COVID Economic Impact is carried out. Also, from a qualitative perspective, examples of some research papers published in the area of the study mentioned above are analyzed from a bibliographic approach to describe the position of different authors on the proposed topic.

The search is performed through the tool provided by Scopus and the parameters referenced in Table 1 are established.

3.1 Methodological design

Table 1. *Methodological design.*

	PHASE	DESCRIPTION	CLASSIFICATION
PHASE 1	DATA COLLECTION	Data was collected using the Scopus web page search tool, through which a total of 54 publications were identified.	Published papers whose study variables are related to The Food Industry and its Post-COVID Economic Impact. Research papers were published during 2020 and the first quarter of 2022. Limited to Latin American countries. Without distinction of the area of knowledge. Without distinction of the type of publication.
PHASE 2	CONSTRUCTION OF ANALYSIS MATERIAL	The information identified in the previous phase is organized. The classification will be made through graphs, figures,	Word Co-occurrence. Year of publication Country of origin of the publication.

		and tables based on data provided by Scopus.	Area of knowledge. Type of publication
PHASE 3	DRAFTING OF CONCLUSIONS AND FINAL DOCUMENT	After the analysis carried out in the previous phase, we proceed to the drafting of the conclusions and the preparation of the final document.	

Source: Own elaboration (2022)

Figure 1 shows the co-occurrence of keywords within the publications identified in the Scopus database.

4. Results
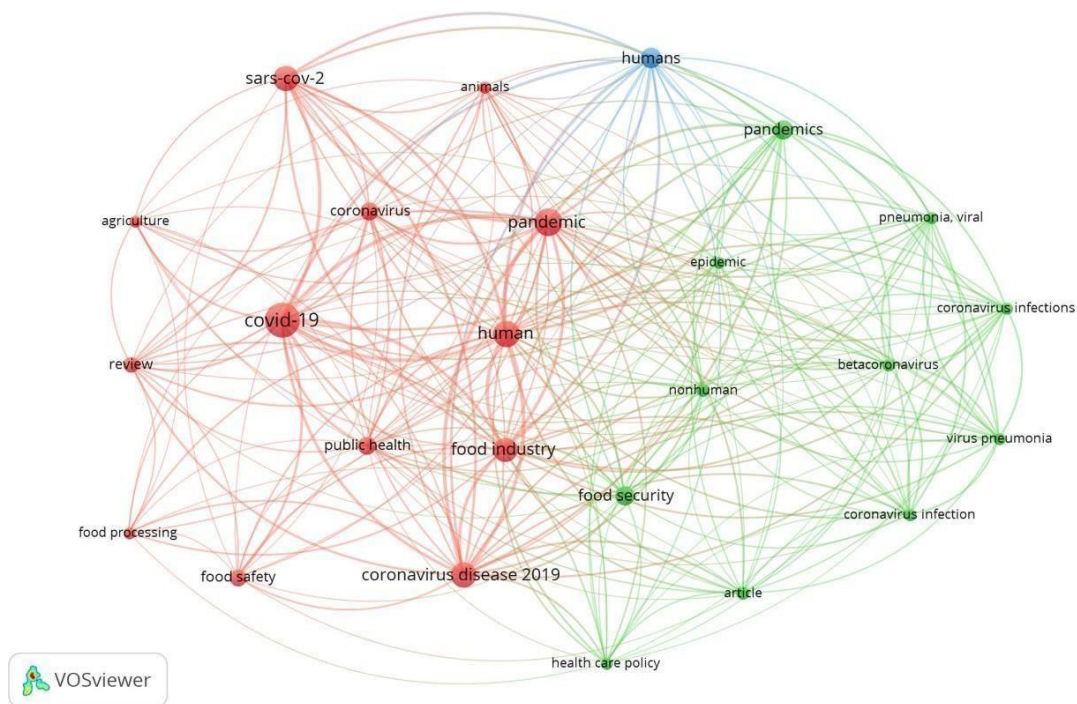
4.1 Co-occurrence of words

Figure 1. *Co-occurrence of words*

Source: Own elaboration (2022); based on data provided by Scopus.

As shown in Figure 1, the most used keyword in this study is the COVID-19 virus for which the pandemic was declared in early 2020 and which caused certain changes in the way we relate to each other and impacted the global economy. The food industry, food safety, and food processing are keywords that shed light on the process of food production and distribution, taking into account the supply and value chains to avoid food shortages to avoid interrupting the production chain, ensuring food security in the countries, mitigating the harmful impact of the pandemic and lowering the poverty rate, so it is also important to take into account aspects

such as changing consumer preferences, the rising cost of products and their means of distribution as well as factors that determine which product is consumed more. There are also keywords such as health policies which refer to the biosecurity rules that must be taken into account in the food production line because although there is no risk factor of possible contagion through food, it can put the lives of workers at risk if they do not take the necessary measures to prevent the spread of the virus in the plant. Finally, there are keywords such as agriculture, reviews, and public health which shed light on problems arising from poor management of food production lines.

4.2 Distribution of scientific production by year of publication.

Figure 2 shows how the scientific production is distributed according to the year of publication, taking into account that the period from 2016 to 2021 is taken.
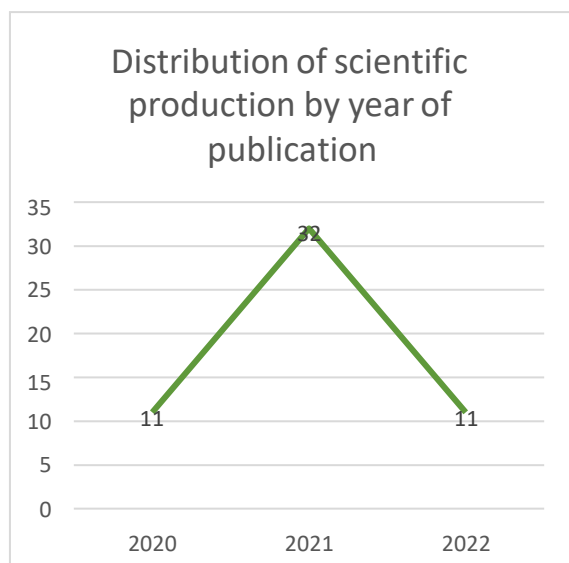

Figure 2. *Distribution of scientific production by year of publication.*

Source: Own elaboration (2022); based on data provided by Scopus.

2021 is the year with the highest number of publications related to the variables under study, with 32 publications, among which is the title "Impacts of COVID-19 on the value chain of artisanal hake fishing in northern Peru" (J., T., R.a, & J, 2021). The main objective of this document is to determine the impact of COVID-19 from March to August 2020 on the supply and value chain of artisanal fisheries in two communities in Peru. In this study, it was found that fishing levels and primary purchasing were the most affected, affecting many jobs in this period. In economic terms, there was a deficit of $913,000, and how each community overcame this situation was observed, being that Ñuro, one of the communities analyzed, depended mostly on the international market, which is why it suffered a negative impact for much longer. The conclusion is that the Peruvian government should help formalize the processes that are carried out in the artisanal fishing chain to reactivate small-scale fishing activities.

In second place is 2022, which presents 11 publications registered in Scopus within which is the title "The impact of COVID-19 on the food supply chain and the role of e-commerce for food purchasing" (Din et al., 2022). The main objective of this paper is to study the Q technique to determine the behavior of consumers and manufacturers online, and the possibilities of supply chain and e-commerce after COVID-19. With the arrival of the pandemic, the economy suffered a great impact affecting all countries in their trade and supply chains having uncertainty in the processes of manufacturing, delivery, and consumption of food by limiting mobility and changes in consumer demand, in addition to the closure of several food manufacturing industries and trade regulation; all which caused financial stress as a result. Therefore, this study determined the change in consumer behavior, being e-commerce one of the factors that was strengthened by the pandemic, so producers need to innovate their marketing processes to reactivate the food industry.

4.3 Distribution of scientific production by country of origin.

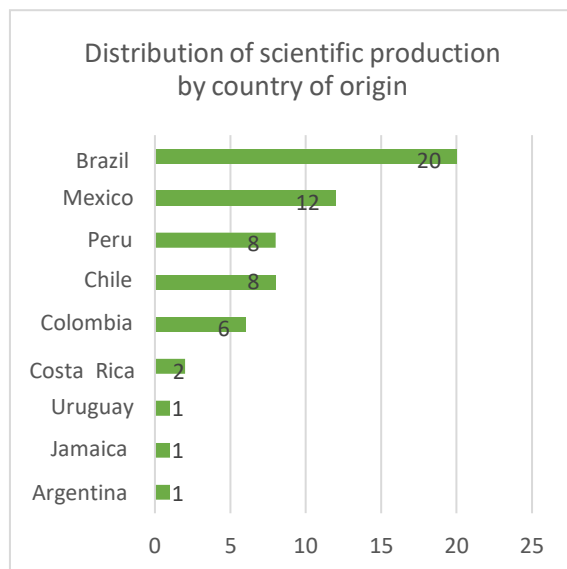Figure 3 shows the distribution of scientific production according to the nationality of the authors.

Figure 3. *Distribution of scientific production by country of origin.*

Source: Own elaboration (2022); based on data provided by Scopus.

Brazil is the country with the largest contribution to research related to the Food Industry and its Economic Impact Post-COVID with 20 publications, among which is the title "One year after the beginning of the COVID-19 pandemic: existing challenges and ways in which the food industry has been affected" (Vargas-Ramella et al., 2021). This paper analyzes the effects of the pandemic on the food supply chain by assessing the risks in human-animal interactions and identifying protocol adjustments needed for the food industry. Although the transmission of the virus through food is not a risk factor, its accessibility is, since vulnerable populations suffer the consequences of the economic impact due to the change in the cost of food distribution. Therefore, it is determined that the coronavirus has had an immense impact on the food industry, bringing uncertainty to the food system of the countries, so it is necessary to carry out projects that allow a country to have robust food security.

At this point, it should be noted that the production of scientific publications, when classified by country of origin, presents a special characteristic and that is the collaboration between authors with different affiliations to both public and private

institutions, and these institutions can be from the same country or different nationalities so that the production of an article co-authored by different authors from different countries of origin allows each of the countries to add up as a unit in the overall publications. This is best explained in Figure 4, which shows the flow of collaborative work from different countries.
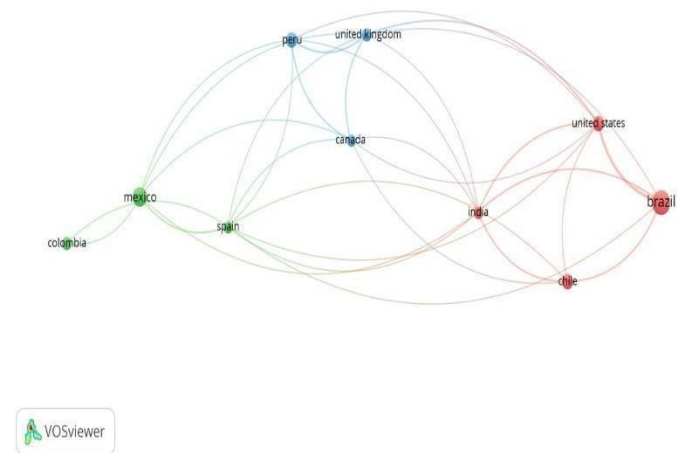

Figure 4. *Co-citations between countries.*

Source: Own elaboration (2022); based on data provided by Scopus.

As mentioned above, Brazil is the Latin American country with the largest number of related publications. The variables under study, within these publications, are documents in collaboration with authors affiliated with institutions belonging to countries such as the United States, Chile, and India, which shows the interest of countries outside Latin America to investigate the effects of COVID-19 in the food industry. In second place is Mexico with 12 publications, some of which are co-authored with Spain, Peru, and Colombia. Among these documents, is the one entitled "Food safety, environmental health, and economy in Mexico: lessons learned from COVID-19" (Monroy-Torres et al., 2021). This research is an analysis of the levels of food security, environmental health, and the economy in Mexico through a bibliographic review. The result of this study

was that 44.5% of Mexican households are food secure and 45.5% of the remaining households are moderately or severely food insecure. This is the result of the economic crisis, so to ensure health, environment, and economy it is necessary to promote agroecological public policies so that in the post-COVID era all people enjoy high-quality food and an adequate environment.

4.4 Distribution of scientific production by area of knowledge

Figure 5 shows how the production of scientific publications is distributed according to the area of knowledge through which the different research methodologies are executed.
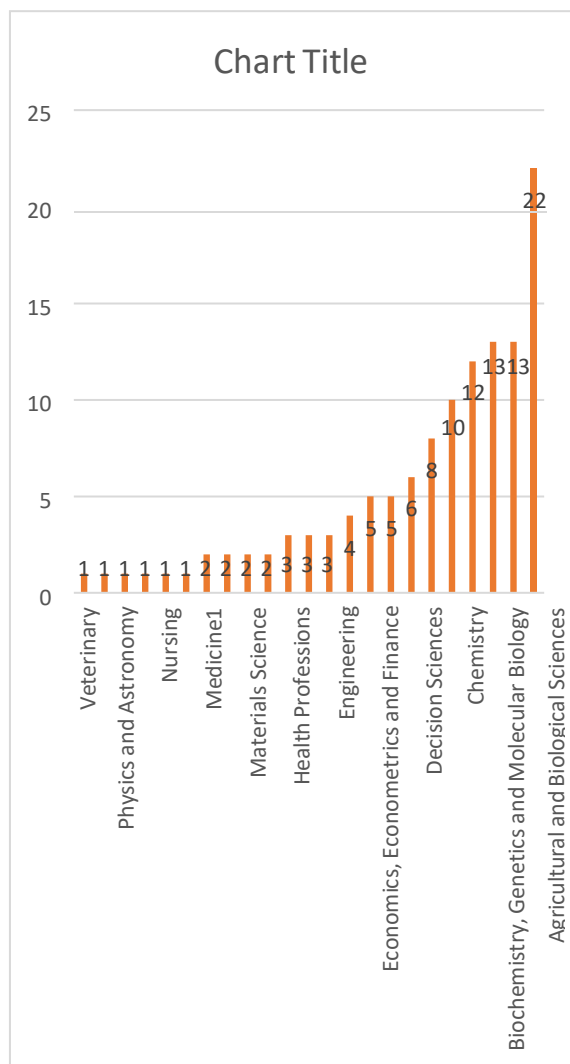

Figure 5. *Distribution of scientific production by area of knowledge.*

Source: Own elaboration (2022); based on data provided by Scopus.

Agricultural and biological sciences are the area of knowledge with the largest number of contributions through the theories that are framed in it, in the search for new knowledge about the Food Industry and its Impact on the Post-COVID economy with 22 papers within which is the title "Impact of the COVID-19 pandemic on food production and animal health" (Rahimi et al., 2022). This publication analyzes the impact of the pandemic on animal-derived food production systems and all that this implies. In this analysis, it was obtained that as a consequence of mobility restrictions and social distance limitations the quality in productivity and competitiveness of the Food Industry is low, affecting the livestock sector by disrupting its food supply chain and reducing animal husbandry and labor participation to low demand. It is concluded that COVID-19 negatively affected the food industry and that this may translate into Post-COVID food insecurity in the most vulnerable populations.

In second place is arts and humanities where 13 documents were written following the guidelines of the thematic areas related to this area. Among these documents is "The crisis, covid and the price of rice: food practices, public policies, and resistance movements" (da Silva et al., 2021). This document aims to analyze the concept of agroecological food and its social movement, addressing the consequences of the pandemic in the data for the current food industry through a literature review and documentary. Through this study, it is concluded that it is necessary to rethink the role played by small producers in the agricultural model by implementing public policies to encourage food production in Brazil.

4.5 Type of publication

Figure 6 shows how the bibliographic production is distributed according to the type of publication chosen by the authors.
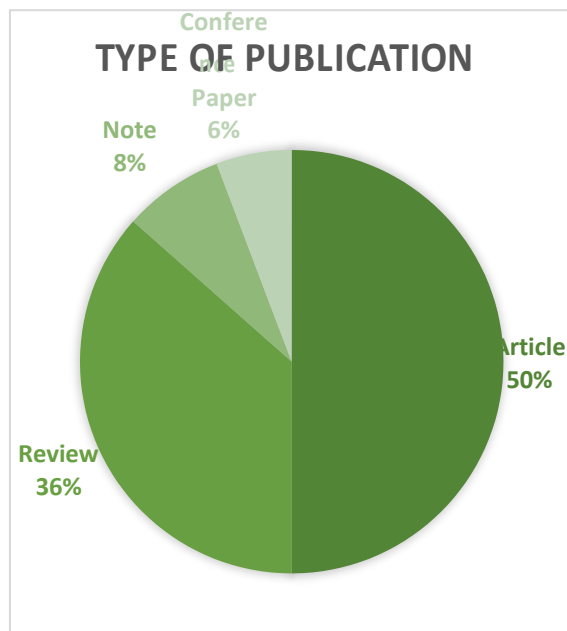
Figure 6. *Type of publication*

Source: Own elaboration (2022); based on data provided by Scopus.

As shown in Figure 6, within the different types of publications, 50% of the total number of documents identified through Phase 1 of the Methodological Design, correspond to Journal Articles, among which is the one entitled "The effects of COVID-19 on the preferences and beliefs of beef consumers in Colombia: a Logit model approach" (Ramirez et al., 20). This study analyzes the effect of COVID-19 confinement on changes in what food consumers in Colombia are looking for, implementing seven attributes: animal welfare, environmental sustainability, information on the origin and elaboration of food, food price, fair payment to the producer, and food packaging. With this, if equal to the conclusion that consumption preferences did not change for the most part but income or as a determining factor for the decision on consuming certain types of food, so to help food security and resilience of the food industry is necessary to define public policy interventions that seek to revive the beef trade.

In second place are the review reports, which represent 36% of the total number of documents, among which is the title "The

economic effects of the COVID-19 pandemic, which has disrupted the food supply chain affecting food security" (Shahbaz et al., 2020). The main objective of this document is to determine the economic effects of the COVID-19 pandemic, which has disrupted the food supply chain, affecting the food security of the countries, so it is proposed that the food industry and the government must unite to ensure the production of food without mishaps to avoid food shortages in the market, also taking into account the health challenges in the production of these foods, so specific precautions must be taken to combat the transmission of coronavirus among employees. All this is in order not to interrupt the flow of manufactured food products and ingredients.

5. Conclusions

Thanks to the bibliometric analysis proposed in this research, it can be determined that Brazil is the Latin American country with the largest number of bibliographic records in the Scopus database during the period between 2020 and 2022 with a total of 54 documents. The scientific production related to the study of the Food Industry and its Economic Impact Post-COVID has presented an important growth during the above mentioned period, going from 11 publications in 2020 to 11 units in only the first quarter of 2022 being this year the one with the highest number of publication with 32 documents, i.e., it was possible to increase the creation of bibliographic records in 5 years, which indicates the importance of researching on the economic impact on the Food Industry in the post COVID identifying the challenges that this important Industry faces.

The food industry is one of the most important because it provides the food necessary for human life, and is relevant in all countries, but also suffered havoc because of the pandemic declared in early 2020, which led to an economic crisis and even alteration in the global food production system. The food production line was affected because to comply with the biosafety mechanisms implemented by the countries, most of these companies stopped

their production, from the procurement of raw materials to the marketing of products to the final consumer, creating shortages. This resulted in food insecurity, which caused a rise in food prices in the most vulnerable countries, such as those in Latin America, such as Ecuador, where the food production system changed due to a state of exception, which created biosecurity policies that prevented some companies from continuing their economic activity, causing a 50% increase in food products.

Therefore, in the post-COVID era, this industry faces several challenges, such as the resumption of its production systems, value chains, and changes in consumer preferences, adapting to the current era where e-commerce is booming. All of the above, allows this article to conclude, highlighting the importance of knowing the theory or bibliographic resources that seek to arouse interest in countries to investigate the implications of the pandemic in the food industry and the changes to which it was subjected to avoid shortages. For this reason, the need for studies such as the one presented in this document is emphasized, which makes a tour of those texts that address the aforementioned topic to give the reader a broad view of the current situation of the literature on the Food Industry and its Economic Impact due to Post-COVID.

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