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TRADE IN AGRI-FOOD PRODUCTS – PERSPECTIVES FROM BIBLIOMETRIC ANALYSIS

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Abstract: *Growing global population and growing demand for food have put a lot of pressure on the global food supply chain. The global population is expected to reach 8.5 billion by 2030 and 9.7 billion by 2050. In this context, providing agri-food products in the quantity needed by an ever-growing population puts even greater pressure on the supply chain with agro-food products globally. The present study aims to identify research trends in the field, so that it can identify the characteristics of trade in agri-food products. These are illustrated through a bibliometric study where the research contributions of authors, countries and scientific journals are presented. By using this research method, we want to identify the links between the number of documents published in the field, the research topic, the frequency of citation of the articles and the interest given to the research subject depending on the country.*

Keywords: *trade, agro-food products, trade balance, supply chain, bibliometric analysis.*

JEL classification: Q10, Q13, Q17.

INTRODUCTION

In the specialized literature, the studies are focused on the analysis of the competitiveness of the trade in agri-food products, however, the measurement of the competitiveness of the agri-food trade still represents a challenge. From a methodological point of view, in order to measure the agri-food competitiveness of a region/country, a trade analysis (export-import) is necessary.

Most scientific articles have focused on the analysis of foreign trade at the regional or country level. Also, most of the articles included in this study analyzed the competitiveness of the agri-food sector either at the EU level or at the level of one of the member states, presenting significant events related to the agri-food trade, after the 2000s, namely: EU accession (2007), the crisis global financial crisis (2007-2008), the COVID-19 pandemic (2020), the Russian oil embargo (2022-2023), and the war in Ukraine (2022).

At the level of the EU member states, the results show that the old member states (Germany, Luxembourg, Belgium, the Netherlands, France and Italy) have a more developed commercial structure than the new ones, registering a higher share of processed goods, this share representing one of the most important elements of the competitiveness of the agri-food trade.

MATERIAL AND METHOD

Bibliometrics is a research method that quantitatively measures scientific publications on a given topic. This method appeared in the field of research as early as 1969, Alan Pritchard being the one who used it, for the first time, in a documentary note (Donthu et al., 2021).

Bibliometric analysis is based on statistical and mathematical methods for data evaluation. By applying this research method, it is desired to identify the links/correlations between the number of documents published in a studied field, in this case, trade in agri-food products, the research theme, the frequency of citation of articles and the interest given to the research subject in depending on the country.

The literature review for this paper was conducted by identifying scientific articles published in the Web of Science (WoS) database, with the aim of recognizing concerns about agri-food trade. Searching for articles was done by configuring the "Subject" field in WoS, which filters the search by title, keywords, author, abstract. The keyword used in the search was "trade agri-food products". The search results displayed a sample of 600 documents, and through the VOSviewer Software, the data were presented graphically, through maps and then interpreted.

RESULTS AND DISCUSSION

The annual publications registered in the Web of Science database based on the query after the keyword "trade agri-food products" totaled 600 publications, of which 83 (13.787% of the total publications from the period 1995-2023) were registered in the year 2022. An increase in the number of WoS indexed publications has been observed since 2009 (16 publications), reaching a maximum of 83 publications in 2022. It should be noted that 2023 is an incomplete year, this being ongoing, the analysis being carried out in the ninth month (September) of the year. (Fig.1)

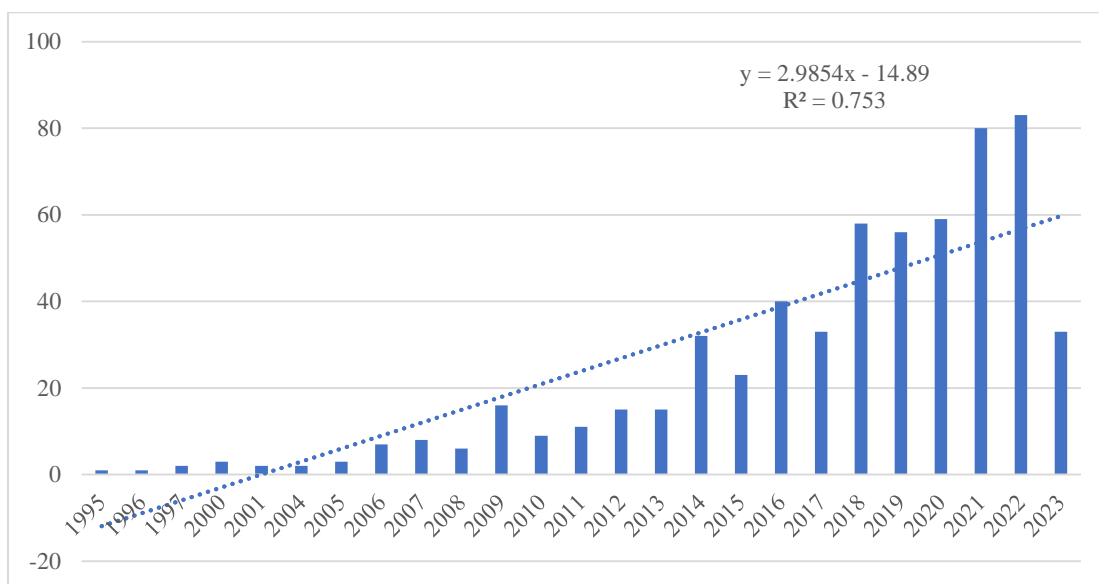


Figure 1. Annual publication trend from 1995 to 2023

Source: Own representation based on data provided by Web of Science, accessed on 31.08.2023.

The relevance of publications cannot be appreciated if the papers are not cited by other authors in their studies. So, the total annual citations are represented in the figure below, where an upward trend is observed in terms of citations at the level of the period 1995-2023, reaching a total number of 1,968 citations in the year 2022. (Fig. 2)

The main interrelated keywords are: trade, agri-food trade, export, import, agri-food products, market, competitiveness, competitive advantages and food security. Analyzing the connectivity of the keywords used, 6 clusters were identified.

The first cluster (red) consists of 40 agricultural keywords, including: agriculture, agricultural production, food security, sustainability and consumption.

The second cluster (green) comprises 36 keywords such as: trade, standard, quality, food, safety, food safety, certification, industry, innovation, challenges and governance.

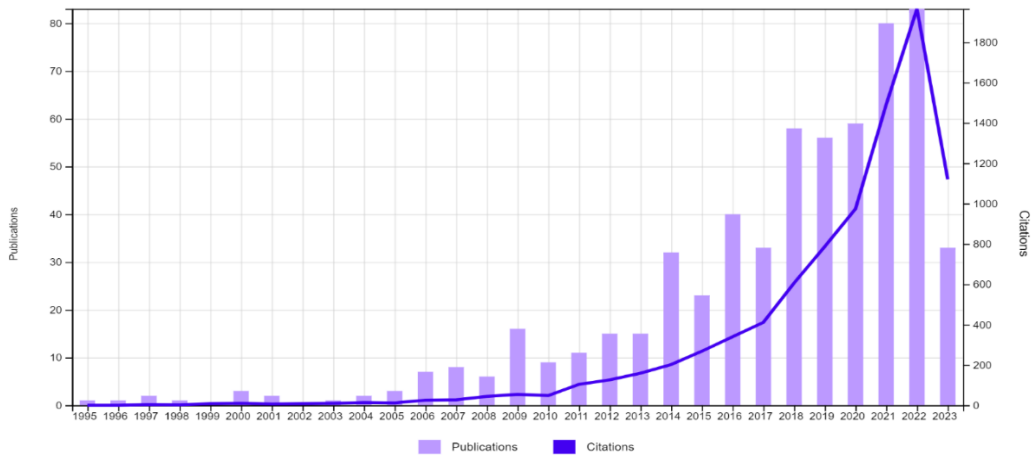


Figure 2. Trend of citations and publications over time
 Source: Web of Science database, accessed on 31.08.2023.

The third cluster (blue) is represented by 34 keywords, including: agribusiness, international trade, market, countries, competitiveness, competitive advantage, trade liberalization and specialization. (Fig. 3)

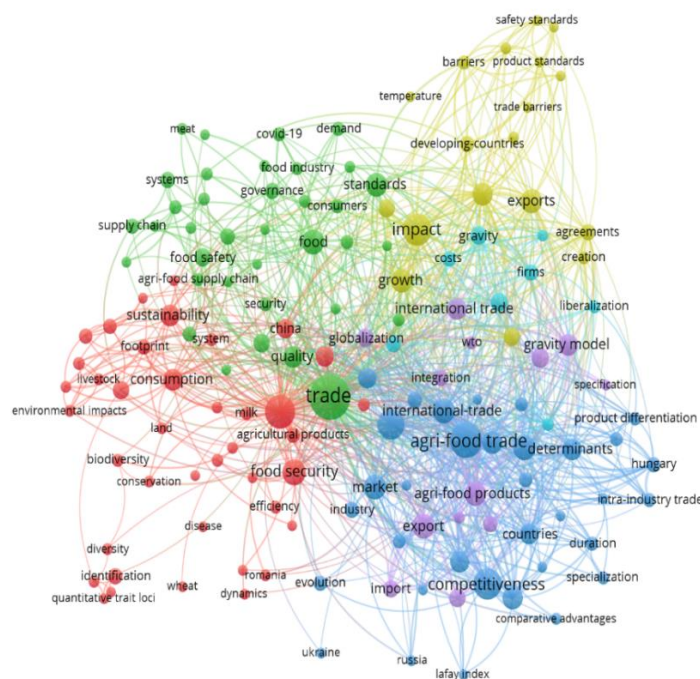


Figure 3. The connectivity of the keywords used ("trade agri-food products")
 Source: Own representation based on data provided by WoS using VOSviewer., on 31.08.2023

The fourth cluster (yellow) consists of 18 keywords such as: agricultural trade, impact, growth, policy, agri-food sector, barriers, trade barriers, temperature, developing countries, agreement, regulations and product standards.

The fifth cluster (purple) is made up of 13 keywords from the field of international agri-food trade, including: agri-food products, export, import, international trade, foreign trade, integration, specification, globalization and the European Union.

The last cluster (turquoise) includes 8 keywords such as: export of agri-food products, competition, costs, companies, liberalization, prices, and product quality. (Fig. 3)

During the analysis, 600 scientific articles addressing the subject of "trade agri-food products" from 99 countries were identified. The table below presents the ranking of the first 5 countries that registered the highest number of published scientific articles, representing 66.33% of the total publications found in the Web of Science database. Canada ranks first with 142 scientific articles, followed by the USA (109 articles) and Italy (59 articles). (Table 1)

Table 1. Top 5 countries with the highest number of publications registered in Web of Science

No	Country	Number of registered papers	% of 600
1.	Canada	142	23,667
2.	USA	109	18,167
3.	Italy	59	9,833
4.	Poland	47	7,833
5.	Spain	41	6,833

Source: Web of Science database, accessed on 31.08.2023.

According to the map below, 6 research directions are distinguished. Close ties are also observed between Canada and countries such as the USA, England, Japan, Holland. At the same time, it was noted that Romania, Croatia, the Czech Republic, Hungary, Poland, Russia, Slovakia, Slovenia and Sweden have a similar direction. Romania is in close collaboration with Slovakia, Slovenia, Spain, China and France. Close association between authors from EU and non-EU countries is encouraged by various research programs that favor partnerships between these countries. (Fig. 4)

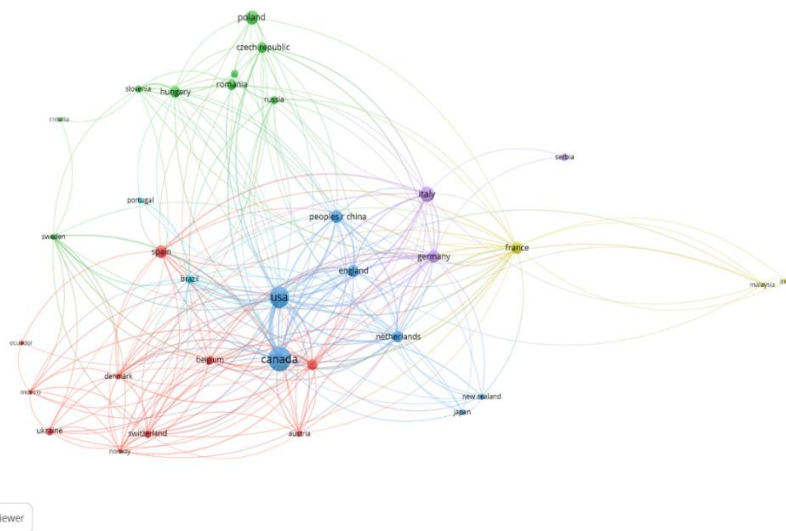


Figure 4. Graphic representation of co-author countries ("trade agri-food products")

Source: Own representation based on data provided by WoS using VOSviewer., on 31.08.2023

According to (Reardon et al., 2009), the agri-food sector has gone through several stages of restructuring over time that targeted specific areas, namely: wholesale trade (1960s – early 1990s); processing, (1970s – 1990s) and retail (1990s – 2000s).

The specialized literature shows that the sectoral reforms had repercussions on the agricultural sector, the visible result being the fact that subsistence agriculture facilitated the outflow of added value abroad. Also, the changes that occurred in the agri-food sector through the

development of the technical process did not only concern the production process, but also the way of marketing and consumption of agri-food products. The activity of the agri-food sector has acquired new values with the transition from the satisfaction of basic foods to following trends in the consumption of agri-food products, as well as the interest in preserving the environment. Moreover, the increase in the population's income has determined a considerable development of the agri-food sector and a diversification of the demand for agri-food products, which is able to identify new consumer profiles that are oriented towards the consumption of organic products, dietetic products, green products, exotic fruits and vegetables or authentic foods (Ciutacu & Chivu, 2014; Panait et al., 2020).

Another factor with both positive and negative influences on the agri-food sector is globalization. One of the negative effects of globalization is represented by the existence of global chains that affect the traceability of agri-food products, the agri-food sector becoming dependent on the distribution sector.

Mizik (2021), presented in his paper the trends of global agri-food trade, which since 2010, began to fluctuate between 14.2 and 18 billion USD, in 2020 its share reached approx. 10% of global trade. Latin America stood out as the largest net exporter of agri-food products (+US\$123 billion) while, at the opposite pole, East Asia-Pacific is the largest net importer with a trade deficit of US\$115 billion.

Studies have shown that the agri-food sector has proven to be one of the most difficult areas during trade talks. Although the issue of competitiveness in the agri-food sector of EU countries has been investigated in numerous scientific researches, they have mainly focused on assessing the competitive advantages of the EU and US agri-food sectors globally (Pawlak, 2021).

A paper analyzing the dynamics of agri-food comparative advantage between Nigeria and the European Union (EU28), using the 'product mapping' approach based on trade balance index, Balassa index, Lafay index and other descriptive approaches, shows that Nigeria has recorded substantially a negative trade balance index in international trade. (Verter et al., 2020)

An analysis of the efficiency of agri-food trade in the EU for the period 2013-2022 showed an increase in the value of agricultural production by 33.77%, an increase that increased exports. The results showed an increase in agri-food trade by +61.3%, amounting to 424.6 billion euros in 2022. The value of exports reached 229.1 billion euros in 2022, being 58% higher, while the value imports increased by 65.53%, reaching 195.5 billion euros. In terms of prices, it was noted that the average export price was higher than the average import price every year. (Popescu et al., 2023)

In Romania, 27 scientific articles were identified in the Web of Science database, at the time of the preparation of this study. One of the works emphasizes the fact that with the transition from the planned/centralized economy to the market economy, foreign trade with agri-food products in Romania presented significant changes felt on the trade balance, which registered a deficit at the level of the period 1990-2020. Currently, production processes in the agri-food sector are increasingly integrated at an international level. International trade shows a significant growth trend and includes goods represented by intermediate products, which are exported by one country to be processed/processed/packaged in other countries, which then, in turn, export them to other regions. (Andrei et al., 2022).

Romania's accession to the EU in 2007 had a strong impact on trade in agri-food products. The impact of joining the EU is linked, on the one hand, to the adoption of the production and marketing rules stipulated in the Community *acquis* and, on the other hand, to the liberalization of trade. The effects of accession were manifested by the increase in exports of agri-food products,

which also attracted an increase in imports and implicitly an increase in the trade deficit with agri-food products. Export growth is based on the increase in the value of exports of agricultural raw materials, especially vegetable products (cereals, oilseeds, industrial crops or medicinal plants). For the category of agri-food products, excluding the listed vegetable products, Romania has a negative foreign trade balance. Approximately 70% of agri-food exports represent unprocessed products. At the same time, for unprocessed products of animal origin, Romania relies on imports to cover domestic consumption needs (Tudor, 2014; Andrei et al., 2022).

At the present moment, agriculture faces the challenges imposed by the implementation of new production systems, climate change, price volatility, the development of international trade in agricultural products, changing diets, urbanisation/depopulation of rural areas. The results of the empirical research of Constantin et al., 2023 showed that there are competitiveness deficiencies in the dynamics of agri-food processing capacities and international trade patterns. Also, agro-food products with a low added value can contribute to the trade balance deficit and to the decrease of competitiveness levels. Regarding agricultural raw materials, they can provide strategic competitiveness if they are involved in processing/processing activities, and subsequently due to favorable trade flows, they can generate a large number of competitive advantages. Although agriculture and the food industry are interconnected, they may follow diverging trends in terms of competitive performance.

The results of the study carried out by Andrei et al., 2022, show that in the case of Romania, the high concentration of exports on a small number of categories of agri-food products that mainly include agricultural raw materials does not ensure the sustainable growth of the export of agri-food products. Romania should focus on the processing of raw materials and the creation of added value of agro-food products, and then on the export of finished products.

CONCLUSION

The most relevant existing scientific works based on WoS have been identified in the present research, representing promising directions for future scientific approaches.

During the analysis, 600 scientific articles were identified, and based on them, the links between the researched subject (trade in agri-food products) and the interest given to it according to the country and the number of citations were established.

The results of the analysis identified numerous publications, from which several significant insights can be derived. First of all, the number of scientific articles related to the trade of agri-food products increased during the analyzed period, the vast majority of them being published in journals such as: Sustainability (20 articles), Agricultural Economics Zemedelska Ekonomika (17 articles), Agrarian Perspectives Series (13 articles), British Food Journal (13 articles), Acta Horticulturae (11 articles), Food Policy (11 articles), Scientific Papers Series Management Economic Engineering in Agriculture and Rural Development (11 articles), etc.. The fields of research were vast, the field agricultural registering 263 articles, followed by Business Economics (212 articles) and Food Science Technology (82 articles). Secondly, analyzing the global impact, it was found that in the top 10 countries with the largest number of publications in this field, Canada occupies the leading position in the ranking with a weight of approx. 24% (142 articles) of the total scientific articles identified.

Therefore, the subject of agri-food trade requires special attention mainly in terms of developing market strategies.

BIBLIOGRAPHY

1. Andrei, T., Oancea, B. and Mirică, A., 2022. Agriculture export variety and the short and long run impact on agriculture export. *Agricultural Economics*, 68(4), pp.137-145.
1. Andrei, T., Oancea, B., Mirică, A. and Anghel, L.C., 2022. The Competitive Advantage of Foreign Trade with Agri-Food Products. *Romanian Journal of Economic Forecasting*, 25(2), p.54.
2. Ciutacu, C., Chivu, L., & Preda, D. (2005). Company'S Social Responsibility-A Challenge for Contemporary World. *Romanian Journal of Economics*, 20 (1 (29)), 79 - 94.
3. Constantin, M., Sapena, J., Apetrei, A. and Pătărlăgeanu, S.R., 2023. Deliver Smart, Not More! Building Economically Sustainable Competitiveness on the Ground of High Agri-Food Trade Specialization in the EU. *Foods*, 12(2), p.232.
4. Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., Lim, W.M., 2021, How to conduct a bibliometric analysis: an overview and guidelines, *Journal of Business Research*, 2021, Elsevier, 133(C):285-296.
5. Mizik, T., 2021. Climate-smart agriculture on small-scale farms: A systematic literature review. *Agronomy*, 11(6), p.1096.
6. Panait, M., Erokhin, V., Andre, J.V. and Gao, T., 2020. Implication of TNCs in agri-food sector: Challenges, constraints and limits: Profit or CSR? *Strategic Management*, 25(4), pp.33-43.
7. Pawlak, K. (2021). Competitiveness of the EU Agri-Food Sector on the US Market: Worth Reviving Transatlantic Trade? *Agriculture*, 12(1), 23.
8. Popescu, A., Tindeche, C., Marcuța, A., Marcuța, L., Hontus, A. And Stanciu, M., 2023. The efficiency of the European Union agri-food trade in the decade 2013-2022. *Scientific Papers Series Management, Economic Engineering in Agriculture & Rural Development*, 23(2).
9. Reardon, T., Barrett, C. B., Berdegue, J. A., & Swinnen, J. F. (2009). Agrifood industry transformation and small farmers in developing countries. *World development*, 37 (11), 1717-1727. <https://doi.org/10.1016/j.worlddev.2008.08.023>.
10. Tudor, M.M., 2014. Utilization of land resources in agriculture—opportunity or risk for Romanian agri-food sector competitiveness. *Procedia Economics and Finance*, 8, pp.720-728.
11. Verter, N., Zdráhal, I., Bečvářová, V. and Grega, L., 2020. 'Products mapping'and trade in agri-food products between Nigeria and the EU28. *Agricultural Economics*, 66(1), pp.34-45.