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Research Article/Araştırma Makalesi

International Competitiveness Analysis of Turkish Pasta Industry in Framework of Some Indexes and Product Mapping: A Research on the Years 2001-2020

Türk Makarna Sektörünün Bazı Endeksler ve Ürün Haritalaması Çerçevesinde Uluslararası Rekabet Gücü Analizi: 2001-2020 Yılları Üzerine İnceleme

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Abstract

In the globalizing world, international trade is reaching advanced dimensions every passing day. Exporting companies had to make a competition both in local and international markets. Therefore, countries should have competitiveness both in the domestic and global markets. Nowadays, Turkey is leading pasta producer and exporter. In this study, the situation of the pasta industry in the world and in Turkey and the developments in its foreign trade were examined. This study aims to determine and analyze the international competitiveness of Turkey's pasta industry. Accordingly, pasta export and import data from Turkey and the world between 2001-2020 were used to calculate international competitiveness indices. Within the scope analysis, Balassa's RCA index, Vollrath's indices (RXA, RMP, RTA, RC), Revealed Symmetric Comparative Advantage Index (RSCA), Trade Balance Index (TBI) were used and The Product Mapping Method developed by Tri Widodo was applied. As a result of the calculation of all indices, it has been revealed that Turkey has a competitive advantage in the pasta industry and specializes in its export. Turkey has the position of a net exporter (Group A) with a comparative advantage in this industry.

Jel Codes: *F10, F14, F40, F43*
Keywords: *International Competitiveness, Pasta Industry, Revealed Comparative Advantage Indexes, Product Mapping*

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Öz

Küreselleşen dünyada uluslararası ticaret her geçen gün ileri boyutlara ulaşmaktadır. İhracat faaliyetlerini yürüten işletmeler hem kendi ülkelerinde hem de uluslararası pazarlarda rekabet etmek zorunda kalmışlardır. Ülkeler gerek iç pazarda gerekse küresel pazarlarda rekabet gücüne sahip olmalıdır. Türkiye günümüzde önde gelen makarna ihracatçısı ve üreticisi konumundadır. Bu çalışmada makarna sektörünün dünyadaki ve Türkiye'deki durumu ve dış ticaretindeki gelişmeler incelenmiştir. Çalışmanın amacı, Türkiye'nin makarna sektörünün uluslararası rekabet gücünü tespit ve analiz etmektir. Bu doğrultuda uluslararası rekabet gücü endekslerinin hesaplanması için Türkiye ve dünyanın 2001-2020 yılları arasında makarna ihracat ve ithalat verileri kullanılmıştır. Analiz kapsamında Balassa'nın RCA endeksi, Vollrath'ın endeksleri (RXA, RMP, RTA, RC), Açıklanmış Simetrik Karşılaştırmalı Üstünlükler Endeksi (RSCA), Ticaret Dengesi Endeksi (TBI) kullanılmış ve Tri Widodo tarafından geliştirilen Ürün haritalaması yöntemine başvurulmuştur. Tüm endekslerin hesaplanmasıyla ülkemizin makarna sektöründe rekabet avantajına sahip olduğu ve makarna ihracatında uzmanlaşma gösterdiği görülmektedir. Türkiye makarna sektöründe mukayeseli üstünlüğe sahip net ihracatçı (Grup A) konumda yer almaktadır.

Jel Kodları: *F10, F14, F40, F43*
Anahtar Kelimeler: *Uluslararası Rekabet Gücü, Makarna Endüstrisi, Açıklanmış Karşılaştırmalı Üstünlük Endeksleri, Ürün Haritalama*

1. Introduction

Competition is a concept in all areas of life. When competition is evaluated economically, it is the situation of more than one economic unit serving the same purpose within certain rules, gaining an advantage over each other, and competing to bring out the best performance (Kostakoğlu, 2018: 20). Competitiveness is the ability to compete in both national and international markets. International competitiveness is defined as a relatively higher income and employment creation power of industry compared to the same industries of other economies (Azgün, 2017: 71). With the effect of globalization, the key to success in international marketing activities is to have competitiveness. Countries have to increase their competitiveness to market their goods and services.

Pasta, which is highly demanded in international trade and has a nutritious content, consists of processes such as mixing semolina with water and other substances, shaping and drying by obtaining hard wheat. Pasta is one of the most important foods in the world in terms of both its nutritional value and production amount. The industry shows a steady increase due to factors such as the preference of buyers towards western-style food culture with the increasing income level, the cheapness of these products, their easy preparation, delicious, nutritious and long-term preservation (Ministry of Economy, 2017: 1). According to the annual report of the International Pasta Organization (IPO), approximately 16.9 million tons of pasta was produced in the world in 2021. The European Union countries have the highest share in the distribution of pasta production in the world, and this share is 32.8 (IPO, 2021). Nowadays, Turkey is one of the most important pasta producers in world, it ranks second in Europe in terms of all pasta types and is the fourth largest pasta exporter in the world. Turkey's pasta export amounted to 1.47 million tons in 2020 and the value amounted to 764 million dollars.

When the history of pasta in the world is examined, basically two approaches are put forward. The first is that pasta was first introduced by the Chinese in the BC between the years 17000-1100. The second is that it was discovered by Marco POLO in 1292 and brought to Italy, which is an important pioneer country today (Ministry of Economy, 2017:1). Pasta production in the European continent spread rapidly to other countries through Italy. When the historical evolution of pasta is examined, the first version of spaghetti was made in 1154, pasta collaborations started in 1500 years, the first machine for the production of pasta was designed in 1800, and it is estimated that 70 thousand tons of exports were realized in the world in 1914, pasta was published as a healthy meal in the Scientific Consensus Statement in 2004 and pasta production in the world was 14.5 million tons in 2019 (IPO, 2021). World Pasta Day is celebrated on 25 October every year with events and promotional initiatives in different countries of the world (UNAFPA, 2021).

Table 1: World Pasta Production -September 2020

Countries	Production (Ton)	Countries	Production (Ton)
Italy	3 505 649	Canada	136 000
USA	2 000 000	Colombia	118 647
Turkey	1 780 857	India	100 000
Egypt	1 200 000	South Africa	91 000
Brazil	1 108 000	Hungary	66 000
Russia	1 075 404	Ecuador	56 263
Nigeria	700 000	Romania	52 600
Iran	560 000	Australia	50 000
Argentina	407 336	Switzerland	43 140
Mexico	380 000	UK	35 000
Tunisia	345 000	Netherlands	23 335
Peru	340 969	Slovak Republic	22 000
Germany	334 390	Sweden	20 200
Japan	144 500	Others	182.635

Source: International Pasta Organization (IPO) and Union of Organization Manufacturers of Pasta Products of the European Union (UNAFPA)

Pasta production by continent in the world is 32.8% in European Union, 17.5% in other European countries, 12.9% in North America, 19% in Central and South America, 14.1% in Africa, 3.6% in the Middle East countries, 1.5% in Asia and 0.3% in Australia (IPO, 2021). The continent with the highest production of pasta production after European countries is America. The continent that produces the least amount of pasta is Australia. The continent that produces the least amount of pasta is Australia. World pasta production data is presented in Table 1. Italy is the largest pasta producer in the world with 3.5 million tons. The USA, which comes after Italy, produces 2 million tons of pasta. 1.7 million tons of pasta is produced in Turkey.

Table 2: World Pasta Consumption - September 2020 (kg per-capita)

Countries	Consumption	Countries	Consumption
Italy	23.1	Ecuador	3.5
Tunisia	17.0	UK	3.5
Venezuela	12.0	Denmark	3.2
Chile	9.5	Finland	3.2
USA	8.8	Mexico	3.0
Iran	8.5	Netherlands	2.8
France	8.3	Colombia	2.7
Germany	7.9	Romania	2.7
Uruguay	7.5	Norway	2.7
Turkey	7.2	Libya	2.0
Russia	7.2	South Africa	1.9
Egypt	7.1	Japan	1.7
Portugal	6.8	Ireland	1.0

Source: Union of Organization Manufacturers of Pasta Products of the European Union (UNAFPA)

Pasta consumption is increasing rapidly in the world. Among the reasons for this increase are the fact that wheat is the main nutrient, it is easy to prepare, and the nutritional value and quality of pasta are high. Every society in the world cooks pasta according to their taste. In Table 2, pasta consumption data per capita is presented. Italy ranks first in pasta consumption in the world with 23.1 kg. Tunisia, which came after Italy, consumed 17 kg and Venezuela consumed 12 kg. According to the table, Ireland is the country that has the lowest pasta consumption per capita, and it consumes 1 kg. Pasta consumption per capita in Japan is low. Pasta consumption in Turkey is 7.2 kg (UNAFPA, 2020).

Pasta production, which started in the republican period in Turkey, is the first feature of the food sector. The first pasta factory in Turkey was established by Hasan Tahsin in Izmir in 1922 (Ministry of Economy, 2017: 4). Turkey is the biggest pasta producer in the world with its capacity exceeding 1.7 million tons. Pasta consumption did not increase continuously but decreased in some years. In 2019, pasta consumption was 635 thousand tons, and this is the highest pasta consumption rate in the last ten years. Pasta consumption in Turkey was 580 thousand tons in 2020 (MÜSAD, 2021).

The purpose of this study is to measure the international competitiveness of the Turkish pasta industry for the periods covering 2001-2020 and to reveal the changes in the competitiveness of this industry. Balassa's Revealed Comparative Advantage Index (RCA), Vollrath's (RXA, RMP, RTA, RC) indices, Revealed Symmetric Comparative Advantage Index (RSCA), and Trade Balance Index is used to measure the international competitiveness of Turkey's pasta industry and the indexes are commented separately. In addition, a product map is generated for the pasta industry.

Studies on the competitiveness of Turkey's pasta industry in the literature are very narrow. Generally, the studies were made to reveal the current situation of the pasta industry. In these studies, the current situation of the industry was presented by using the export, import, production, and consumption data of the industry, and a SWOT analysis was made for this industry. Among domestic studies, there aren't any studies using RSCA, TBI, and product mapping methods to analyze the competitiveness of the pasta industry, so this study is very important. The difference of this study from other studies is that it allows a more detailed analysis of the pasta industry by using some indexes together and reveals the product mapping of the industry.

This study consists of four parts. In the first section after the introduction, the foreign trade structure of the pasta industry is expressed. Then, a literature review was made about both the pasta industry and its competitiveness. After giving information about the data sources and methodology of the study, competitiveness is analyzed using some indexes. In the conclusion part of the study, there are results and suggestions for the pasta industry to sustain its competitiveness.

2. Foreign Trade in the Pasta Industry

The countries involved in world pasta export are respectively Italy, China Korea Republic of, Turkey, Thailand, United States of America and Belgium. Other countries generally meet their domestic market demand. Total world pasta export in 2020 was realized as 12 billion dollars. In Table 3, the data of the countries exporting pasta in the world with the GTIP number 1902 are presented. Italy has been the most important actor in the pasta industry of the world market and its market share is 29.6%. After Italy, the most important actors in pasta export were China with 8.1% and Korea Republic of with 6.5%. Turkey had a 6.73% market share and exported 1.4 million tons of pasta in 2020. Thailand had a rate of 4.9% in world pasta export and exported 217 thousand tons of pasta in 2020. USA's pasta export in 2020 was 197 thousand tons, Belgium's 180 thousand tons of pasta, Germany's 156 thousand tons of pasta, Netherland's 83 thousand of pasta, Indonesia's 200 thousand tons of pasta and Vietnam's 143 thousand tons of pasta was exported.

Table 3: World Pasta Exporting Countries (1902 GTİP) (2020)

Countries	Value Exported 2020 (USD Thousand)	Quantity Exported In 2020 (Ton)	Share In World Export (%)	Unit Value ($)
Italy	3 587 774	2 590 919	% 29.6	$ 1.385
China	979 752	571 449	% 8.1	$ 1.715
Korea, Rep.	792 304	252 923	% 6.5	$3.133
Turkey	761 284	1 468 036	% 6.3	$ 519
Thailand	595 460	217 790	% 4.9	$ 2.734
USA	379 055	197 881	% 3.1	$ 1.916
Belgium	316 716	180 570	%2.6	$1.754
Germany	337 031	156 563	%2.8	$2.153
Netherland	263 909	83 607	% 2.2	$ 3.157
Indonesia	325 587	200 971	% 2.7	$ 1.620
Vietnam	352 048	143 505	%2.9	$2.453
Austria	260 607	96 494	%2.1	$2.701
Saudi Arabia	194 017	83 607	% 1.6	$ 1.864
France	234 023	116 577	% 1.9	$ 1.982
Spain	180 598	155 620	% 1.5	$ 1.161
Japan	183 327	48 093	% 1.5	$ 3.812
Poland	128 187	57 414	% 1.1	$ 2.223

Source: Compiled by authors using ITC Trademap data.

Total world pasta imports in 2020 was 11 billion dollars. In Table 4, the data of the countries importing pasta with 1902 GTIP in 2020 are presented. The most important pasta importers in world in 2020 was USA, Germany, France, United Kingdom and Canada. Italy was the most important supplier of these countries. The largest world pasta importer was the USA and its import share in the world was 11.8%. Germany became the second pasta importing country after the USA and its import share in the world was 7.9%. The rate of France in world pasta import in 2020 was 6.9% and it imported 527 thousand tons of pasta. The pasta imports of the United Kingdom for 2020 was 494 thousand tons, Canada's pasta import was 245 thousand tons, Netherland's pasta import was 190 thousand tons, Japan's pasta import was

250 thousand tons, China's pasta import was 149 thousand tons, Hong Kong's pasta import was 178 thousand tons and Belgium's pasta import was 184 thousand tons.

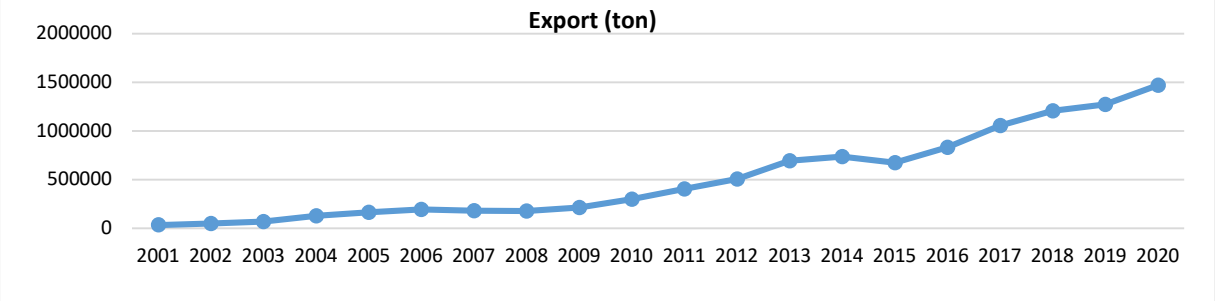
Table 4: World Pasta Importing Countries (1902 GTİP) (2020)

Countries	Value Imported In 2020 (USD Thousand)	The Quantity Imported In 2020 (Ton)	Share In World Import (%)	Unit Value ($)
USA	1 357 296	660 133	% 11.8	$ 2.056
Germany	907 461	581 015	% 7.9	$ 1.535
France	787 803	527 738	% 6.9	$ 1.493
UK	760 350	494 907	% 6.6	$ 1.546
Canada	504 877	245 102	% 4.4	$ 2.060
Netherlands	372 975	190 126	% 3.2	$ 1.962
Japan	411 026	250 157	% 3.6	$ 1.643
China	341 492	149 548	% 3	$ 2.283
Hong Kong	362 262	178 778	% 3.2	$ 2.038
Belgium	263 439	184 957	% 2.3	$ 1.424
Australia	302 960	149 137	% 2.6	$ 2.031
Spain	230 353	103 398	% 2	$ 2.228
Korea, Rep.	172 430	123 809	% 1.5	$ 1.393
Austria	170 480	89 709	% 1.6	$1.990
Malaysia	180 690	117 376	% 1.6	$ 1.539
Switzerland	172 882	73 323	% 1.5	$ 2.358
Sweden	153 380	90 876	% 1.3	$ 1.688

Source: Compiled by authors using ITC Trademap data.

After Turkey's first pasta factory was established in 1922, 48 years later, its first export was realized in 1970 (Ministry of Economy, 2017: 5). Although there have been fluctuations in pasta export since this date in Turkey, increases have occurred in the long term. Turkey ranks second after Italy in world pasta export. In Figure 1, pasta export data from Turkey between 2001-2020 is presented. There were small increases in pasta export between 2001 and 2008. Pasta export in 2011 was 285 million dollars, in 2012 it was 357 million dollars, and in 2013 it was 494 million dollars. Since 2010, pasta export has been increasing. In 2019, 1.27 million tons in quantity and 608 million dollars in value of pasta were exported. In 2020, 1.47 million tons of pasta export were realized in quantity and the value reached 764 million dollars increasing by 25.5% compared to the previous year. (MÜSAD, 2021: 7).

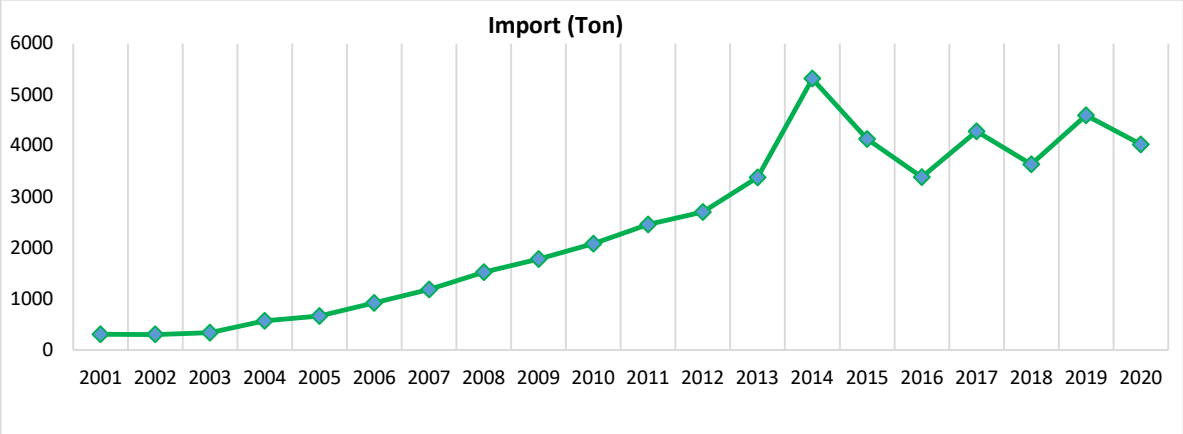
Figure 1: Turkey's Pasta Export (2001-2020)



Source: Compiled by authors using the Turkish Statistical Institute

Pasta imports in Turkey is very low compared to export because pasta production is sufficient for the domestic demand. Pasta is imported in Turkey to provide a different presentation and variety to the consumer in hotels and restaurants. In Figure 2, pasta import data from Turkey between 2001-2020 is shown. Pasta import was recorded at low levels between 2001 and 2006. The most were in 2014 and 2019. Pasta import was 4.593 tons in 2019. In 2020, it was 4,023 tons (MÜSAD, 2021). Turkey's pasta import was 3 million dollars in 2018, 5 million dollars in 2019, and 5 million dollars in 2020. Turkey's pasta import is made especially from Italy, Iran, Yemen, China, Philippines, Romania, Ukraine, Thailand, Iraq, and Chile (Trademap, 2021).

Figure 2: Turkey's Pasta Import *(2001-2020)*



Source: Compiled by authors using the Turkish Statistical Institute

3. Literature Review

It has been determined that the studies on the measurement of competitiveness in the pasta industry are limited and not up-to-date. Studies were generally made to reveal the foreign trade, production, and consumption situation of the industry, and problems of the industry, and a SWOT analysis was carried out for the industry. This study is very important because there is no study using RSCA, TBI, and product mapping methods to comment on the competitiveness of the pasta industry in the domestic literature. It is thought that this study, which has wide time series and the analysis detailed by using various indexes, will contribute to the field. There are studies on the pasta industry. They were written by Saraçoğlu & Köse (2000), Ertaş (2002), Özkan (2003), Turhan (2008), Eser (2009), Fehér & Németh (2017).

Saraçoğlu & Köse (2000) used the "Comparative Export Performance Index (CEP)" in their project report to measure the international competitiveness of the pasta, biscuit, and flour industry between 1992 and 1997. To determine the status of the products against competing countries, it was examined by the "Main Components Analysis" method. Using the Engle-Granger Joint Integration analysis method, they investigated the long-term relationships between the exports of products, real exchange rates, and relative prices abroad, and finally revealed the problems of product groups by conducting surveys with companies. According to the results, it has been determined that Turkey has a comparative advantage in pasta,

biscuits, and wheat flour products. It was emphasized that Turkey is an important actor in pasta export abroad and has a price advantage compared to Italy, its most important rival.

Ertaş (2002), in his study, commented on the general situation of the pasta industry in the world and in Turkey, the functioning of the pasta industry, and the main problems of the industry, and made a sector analysis. Solution suggestions were presented for the raw material problem in the pasta industry, and with the "Inward Processing Authorization Certificate ", durum wheat, the raw material of the pasta industry, was obtained and it was emphasized that it would be beneficial to continue this practice.

Özkan (2003) explained the situation of the pasta industry in the world and in Turkey, production, consumption, foreign trade, problems, and entry barriers of the industry in his study. SWOT analysis was used within the scope of the strategic analysis for “Untas Food Industry and Trade Inc”, which produces pasta in the sector. In addition, strategies for the pasta industry have been proposed and emphasized.

Turhan (2008) used indices such as import penetration rate, specialization tendency, openness to foreign competition, export market share, and export/import ratio to measure the international competitiveness of the pasta industry between 1993 and 2004. It has been revealed that the import penetration rate, which indicates the import density in the sector, was quite low, the level of specialization in the sector was high in the years 1995-1998, the export market share and export/import ratios, which show the development of the sector in the world market and the degree of specialization of the sector, increased after 1999 and the competitiveness tendency increased.

Eser (2009), in her study, reflected on the production, consumption, and foreign trade situation of the pasta industry and durum wheat, which is the raw material of the industry, and emphasized the development of policies to solve the idle capacity and raw material problem of the pasta industry, and to increase the production and export of durum wheat. In the pasta industry, manufacturers were interviewed in terms of problems such as capacity and marketing. Pasta purchasing behaviors of consumers according to pasta types and companies were examined. In addition, SWOT analysis of the pasta industry was made.

Fehér & Németh (2017) reflected on the current situation of the pasta industry in the world and Hungary and used Porter's Diamond Model (demand conditions, factor conditions, strategy, structure and competition, related and supporting industries, state and luck factor) in determining the competitiveness of the pasta industry. It has been determined that the pasta industry has intense competitiveness. It has been observed that it is difficult for new companies in the pasta industry to enter international markets.

Furthermore, there are many studies in the literature both domestically and internationally within the scope of the analysis of the competitiveness of sectors or products. In these studies, Balassa Index and Vollrath Indices (RXA, RMP, RTA, RC) are generally used. Limited studies are using the RSCA, TBI, and Product mapping methods. They were written by Ignjatijevic (2014), Topçu & Sarıgül (2015) Bağcı (2016), Ketenci & Bayramoğlu (2018), Terin & Yavuz (2018), Bakkalcı (2018), Maqbool et al. (2020), Başkol & Bektaş (2021).

Ignjatijevic (2014), in this study, determined the international competitiveness of Austria, Bulgaria, Czech, Hungary, Bosnia-Herzegovina, Croatia, Moldova, Germany, Romania, Slovakia, Slovenia, Serbia, and Ukraine within the scope of the processed food sector between 2005 and 2011. Balassa's (RCA) index and Vollrath's (RXA, RMA, RTA, RC) indices were used in this analysis and the existence of a correlation between these indices was investigated.

Topçu & Sarıgül (2015) analyzed the competitiveness of five industries with the largest share in Turkey's exports between the years 2000-2014 and used RCA, Vollrath indices, RSCA, TBI, and product mapping methods in the analysis. Industries with HS Codes 84, 65, 78, and 67 were in group A according to product mapping and it was revealed that these industries have had a comparative advantage.

In the study conducted by Bağcı (2016), the competitiveness of Turkey's manufacturing industry was analyzed from 1995 to 2014. Within the scope of the analysis, the Revealed Comparative Advantage Index (RCA), the Relative Export Advantage Index (RXA), the Relative Import Penetration Index (RMP), the Relative Trade Advantage Index (RTA), and the Revealed Competitive Advantage Index (RC) were used. According to the findings, it was determined that Turkey hadn't had a competitive power in the manufacturing industry in general.

Ketenci & Bayramoğlu (2018) determined the competitiveness of Turkey's walnut product in the international market and used the Revealed Comparative Advantage Index (RCA). Between 2005 and 2015, Turkey had the competitiveness of walnuts in the international market, but its competitiveness decreased in 2016. In addition, in the study, SWOT analysis was made for the competitive situation of walnut production in the domestic and foreign markets, and solution suggestions were emphasized for the problems experienced in walnut production and marketing activities.

Terin & Yavuz (2018) tried to determine the international competitiveness of Turkey's cheese industry between 2001-2016 and compared the competitiveness of the cheese industry with the European Union countries and selected European countries. In the study, both Balassa's (RCA) index and Vollrath's (RXA, RTA, RC) indices were used. According to the findings, it has been shown that Turkey has a comparative advantage in the international cheese trade and that its competitiveness is low against the EU and selected European countries.

In his study, Bakkalcı (2018) analyzed the competitiveness of the Turkish textile industry for the period from 2001 to 2016 and used RCA, RSCA, TBI, and product mapping methods within the scope of the analysis. It has been stated that the Turkish textile industry has lost its relative importance in the economy.

Maqbool et al. (2020) analyzed the competitiveness of the mining industry of Pakistan for the period from 2003 to 2018 in their study and used RCA, NEI, RSCA, RMA, and RTA indices in the analysis. According to the findings, it was revealed that Pakistan had a comparative disadvantage in the export of the mining industry in 2003 and that it had a comparative advantage in the export of the mining industry between 2004-2018.

In the study conducted by Başkol & Bektaş (2021), the competitiveness of the Turkish iron and steel industry was analyzed from 2000 to 2019, and RCA, RSCA, TBI, and product mapping

method was used in the analysis. In the study, the competitiveness of nine sub-sectors was analyzed and it was determined that three of them were net exporters with comparative advantage, two of them were net importers with comparative disadvantage, and two of them were net importers despite having a comparative advantage in recent years.

4. Data Sources and Methodology

4.1. Data Sources

Pasta industry data in Turkey were obtained from the Turkish Statistical Institute (TUIK) and the Pasta Producers and Industrialists Association (MÜSAD). The pasta industry data Union of EU Pasta Products Producers Organizations (UNAFPA). Foreign trade data in the world has also been taken from the International Pasta Organization (IPO) and obtained from websites such as Comtrade and Trademap to use in the analysis. Following the main purpose of the study, export and import data of the pasta industry were collected between the years 2001-2020. Within the scope of the study, the competitiveness of the 1902 HS code number (pasta) in the Customs Tariff Chart was commented.

4.2. Methodology

In this study, international competitiveness indexes found in the literature were used as a methodology. In this context, the indexes used to measure international competitiveness are as follows:

- Revealed Comparative Advantage Index (RCA)
- Relative Export Advantage Index (RXA)
- Relative Import Penetration Index (RMP)
- Relative Trade Advantage Index (RTA)
- Relative Competitive Advantage Index (RC)
- Revealed Symmetric Comparative Superiority Index (RSCA)
- Trade Balance Index (TBI)
- Product Mapping

The Revealed Comparative Advantage (RCA) index was developed by Bela Balassa in 1965. It is a frequently used dimension to compare the relative advantages in export performance by country and industry (Balassa Indexes, 2003: 155). This index is calculated by rating the ratio of the country's exports in that industry to the total exports and then dividing the world's exports of the same industry by the total exports. The formula used to calculate the Revealed Comparative Advantage (RCA) index is as follows:

$$\mathrm{RCA} = \frac{X_{kt}^{j} \,/\, X_{t}^{j}}{X_{kt}^{w} \,/\, X_{t}^{w}} \qquad (1)$$

In this formula, *'j'* represents the country, *'t'* represents the period*, 'k'* represents the product or industry, and '*w*' represents the world country groups. If the RCA value is less than 1, the country has a disadvantage in terms of the comparative advantages disclosed in the related

goods or industry group, and when the value is greater than 1, the country has a comparative advantage in the related goods and industry group (Balassa, 1965: 99-124).

The Relative Export Advantage Index (RXA) is calculated using export data, as is the Revealed Comparative Advantage Index. The index is defined as the ratio of the export share of a particular industry or product in the world market of a country to the share of the same country in world exports of all other industries or products (Frohberg & Hartmann, 1997: 7). The formula used to calculate the Relative Export Advantage Index (RXA) is as follows:

$$RXA = (X_{ij} / \sum_{l,l\neq j} X_{il}) \Big/ (\sum_{k,k\neq i} X_{kj} / \sum_{k,k\neq i} \sum_{l,l\neq j} X_{kl}) \qquad (2)$$

In this formula, X represents exports, i and k indices represent the product categories; j and l represent countries. If the value of RXA is greater than 1, it has a competitive advantage in products and industries, if it is less than 1, it has a competitive disadvantage in products and industries (Sarıçoban & Kösekahyaoğlu, 2017: 429).

The Relative Import Penetration Index (RMP) is calculated using import data as opposed to the Relative Export Advantage Index. The difference between RMP and RXA indices is that the formula is based on import data as opposed to export data (Frohberg & Hartmann, 1997:8). The equation includes import (M) instead of export. The formula used to calculate the Relative Import Penetration Index (RMA) is as follows:

$$RMP = (M_{ij} / \sum_{l,l\neq j} M_{il}) \Big/ (\sum_{k,k\neq i} M_{kj} / \sum_{k,k\neq i} \sum_{l,l\neq j} M_{kl}) \qquad (3)$$

If the RMP index value is greater than 1, it indicates that there is a competitive disadvantage in the product or industry, and if it is less than 1, it indicates a competitive advantage in the product or industry (Gürpınar & Barca, 2007: 44).

The Relative Trade Advantage Index (RTA) is formed by taking the differences between the Relative Export Advantage Index and the Relative Import Penetration Index. This index takes both export and import aspects into account, so it gives more accurate results in calculating competitiveness. If the RTA index is positive, it is explained that it has competitiveness in the industry and product group, and if the RTA index is negative, it is explained that there is no competitiveness in the industry and product group (Frohberg & Hartmann, 1997: 8). The formula used to calculate the Relative Trade Advantage Index is as follows:

$$RTA = RXA_{ij} - RMP_{ij} \qquad (4)$$

The Relative Competitive Advantage Index (RC) was developed by Vollrath (1991). This index is calculated by taking the logarithm of the difference between the Relative Export Advantage Index (RXA) and the Relative Import Penetration Index (RMP) (Vollrath, 1991). It is shown that if the RC index value is positive, it has a comparative competitive advantage in the industry or product group, and if the RC index is negative, it does not have a comparative advantage in the relevant industry and product group (Gürpınar & Barca, 2007: 45). The formula used to calculate the Relative Competitive Advantage Index is as follows:

$$RC_{ij} = \ln(RXA_{ij}) - \ln(RMP_{ij}) \quad (5)$$

In this formula, RC_{ij} shows the relative competitive advantage index of country j in product or industry i; RXA_{ij} shows the index of relative export advantage of country j in product or industry i, and RMP_{ij} shows the relative import penetration index of country j in product or industry i. According to Vollrath (1991), the Relative Competitive Advantage Index (RC) is a more preferable metric than lnRXA and RTA since it better represents the supply and demand index (Sarıçoban & Kösekahyaoğlu, 2017: 430)**.**

If the export value of any product or industry is 0, there is an asymmetry problem, and this problem affects the analysis and commentary. Therefore, the RCA index needs to be adjusted symmetrically within its neutral value. Dalum, Laursen & Villumsen (1998) suggested the Revealed Symmetric Comparative Advantage Index for it (Widodo, 2009: 68). Laursen suggested the following formula to make the RCA index symmetrical (Laursen, 2015: 101-104):

$$RSCA = \frac{RCA - 1}{RCA + 1} \quad (6)$$

The values of the Revealed Symmetric Comparative Advantage Index (RSCA) range from "-1 or +1". If RSCA>0, it indicates that the relevant country has a comparative advantage in the product or industry. Otherwise, if RSCA < 0, it shows that the relevant country has a comparative disadvantage in the product or industry (Widodo, 2009: 68).

The Trade Balance Index (TBI) was developed by Lafay (1992) and is known as the Lafay index in the literature. This index shows whether the relevant country is a net exporter or a net importer of the product or industry. The formula used to determine the Trade Balance Index is as follows:

$$TBI_{TRpasta} = \frac{(E_{TRpasta} - M_{TRpasta})}{(E_{TRpasta} + M_{TRpasta})} \quad (7)$$

In this formula, "$E_{TRpasta}$" represents Turkey's pasta export. "$M_{TRpasta}$" represents Turkey's pasta import. If Trade Balance Index value is negative, it is called a "net importer" in the relevant product or industry, and if it is positive, it is called a "net exporter" in the relevant product or industry (Widodo, 2009: 68).

The Product Mapping Method was developed by Widodo (2009). A product map is created by using the Revealed Symmetric Comparative Advantage Index (RSCA) and Trade Balance Index (TBI) together. In the research industry, both the foreign trade balance and the competitiveness of Turkey are commented together. Product mapping consists of four different groups (A, B, C, D). Group A includes products that have both comparative advantage and export specialization. Group B involves products that have a comparative advantage but do not show specialization in export. Group C contains products that have specialization in export but do not have a comparative advantage. Lastly, Group D occurs in products that do not have a comparative advantage or specialization in export (Widodo, 2009: 68).

Table 5: Product Mapping

RSCA>0	**Group B:** Comparative Advantage Net-importer (RSCA>0 and TBI<0)	**Group A:** Comparative Advantage Net-exporter (RSCA>0 and TBI>0)
RSCA<0	**Group D:** ComparativeDisadvantage Net-importer (RSCA<0 and TBI<0)	**Group C:** ComparativeDisadvantage Net-exporter (RSCA<0 and TBI>0)
	TBI<0	**TBI>0**

Source: WidodoTri, Comparative Advantage: Theory, EmpiricalMeasuresand Case Studies. 2009: 67.

5. Results

Balassa Index was first used to calculate the competitiveness of Turkey's pasta industry. Analysis values are shown in Table 6. It is the statement that if the Balassa index values are greater than 1, the country's export share of the product or industry at the time of analysis is greater than its share in total world exports in the same period, in other words, it has competitiveness in product and industry exports within the scope of the analysis. However, if the index is less than 1, it is stated that there is a competitive disadvantage in the relevant product or industry. The Balassa index is below 1 only in 2001. When the values are examined, it has been revealed that Turkey has a competitive advantage in pasta export between 2002-2020. The average value of the Balassa Index (RCA) results for the 2001-2020 periods is calculated as 3.88. It was determined that the values obtained by calculating the Balassa Index were higher in 2013-2014, and 2018- 2020. The main reason for these increases is the high level of pasta export values in the relevant periods.

Table 6: Balassa Index Results (RCA)

Years	RCA	Years	RCA
2001	0,84	**2011**	4,69
2002	1,01	**2012**	5,10
2003	1,22	**2013**	6,29
2004	1,81	**2014**	6,09
2005	2,10	**2015**	5,22
2006	2,40	**2016**	5,17
2007	2,50	**2017**	5,56
2008	3,00	**2018**	5,95
2009	2,64	**2019**	6,04
2010	3,51	**2020**	6,47
AVERAGE	3,88		

Source: Compiled by writers

Within the scope of the analysis, Vollrath's Indices (RXA, RMP, RTA, RC) were calculated respectively. First, the Relative Export Advantage Index (RXA) was used. Unlike the Balassa Index, this index prevents double calculations in the relevant product or industry of the

country. The values of the Relative Export Advantage Index (RXA) are interpreted just like the Balassa index. Analysis values are presented in Table 7. Relative Export Advantage Index values are similar to Balassa Index values. Relative Export Advantage Index is below 1 only in 2001. When compared to other periods, the calculated values were found to be 1 and above.The average value of the Relative Export Advantage Index (RXA) results for the 2001-2020 periods was calculated as 4.04. It was determined that the index values were higher in 2013-2014, 2018- 2020. The main reason for these increases is the high level of pasta export values in the relevant periods and the increase in the demand for pasta products in the foreign market. According to the results of this index, it has been determined that Turkey has competitive advantage in pasta trade and demonstrates specialization in export.

Table 7: Relative Export Advantage Index Results (RXA)

Years	RXA	Years	RXA
2001	0,84	**2011**	4,87
2002	1,01	**2012**	5,31
2003	1,23	**2013**	6,50
2004	1,83	**2014**	6,29
2005	2,17	**2015**	5,49
2006	2,44	**2016**	5,45
2007	2,56	**2017**	5,89
2008	3,08	**2018**	6,31
2009	2,71	**2019**	6,43
2010	3,61	**2020**	6,95
AVERAGE	4,04		

Source: Compiled by writers

If the Relative Import Penetration Index (RMP) is greater than 1, it has a competitive disadvantage in the relevant industry or product group, and if it is small, it has a competitive advantage in the relevant industry or product group. The values of the Relative Import Penetration index are presented in Table 8. The index value was realized as 1.01 only in 2019. The average value of the Relative Import Penetration Index (RMP) results for the 2001-2020 periods is calculated as 0.13. In this context, it has been determined that Turkey has a comparative advantage in the pasta industry.

Table 8: Relative Import Penetration Index Results (RMP)

Years	RMP	Years	RMP
2001	0,02	**2011**	0,04
2002	0,25	**2012**	0,06
2003	0,02	**2013**	0,08
2004	0,04	**2014**	0,13
2005	0,49	**2015**	0,08
2006	0,04	**2016**	0,07
2007	0,04	**2017**	0,07
2008	0,04	**2018**	0,06
2009	0,06	**2019**	1,01
2010	0,06	**2020**	0,06
AVERAGE	0,13		

Source: Compiled by writers

Since Relative Trade Advantage Index (RTA) takes into account both the export and import aspects, it offers a more accurate assessment. Relative Trade Advantage Index (RTA) values are shown in Table 9. It was determined that index values were low in 2001 and 2002. These values were calculated as 0.81 in 2001 and 0.76 in 2002. Between 2003 and 2005, the values continued as 1. Other period values differ from year to year. Index values in 2013, 2014, 2018, and 2020 are higher when compared to other years. The average value of the Relative Trade Advantage Index (RTA) results for the 2001-2020 periods was calculated as 3.91. Positive values revealed that it has a comparative advantage in the pasta industry.

Table 9: Relative Trade Advantage Index Results (RTA)

Years	RTA	Years	RTA
2001	0,81	**2011**	4,83
2002	0,76	**2012**	5,25
2003	1,21	**2013**	6,42
2004	1,79	**2014**	6,16
2005	1,68	**2015**	5,41
2006	2,40	**2016**	5,38
2007	2,52	**2017**	5,82
2008	3,08	**2018**	6,25
2009	2,65	**2019**	5,42
2010	3,55	**2020**	6,89
AVERAGE	3,91		

Source: Compiled by writers

The Relative Competitiveness Index (RC), which is the last one within the scope of the analysis, was calculated. This index takes into account the supply and demand balance. The Relative Competitiveness Index (RC) values are shown in Table 10. When these values are examined, they are usually calculated as 1 and above. The average value of the Relative Competitiveness Index (RC) results for the 2001-2020 periods was calculated as 3.84. With the positive RC values, it has been determined that our country has a comparative advantage and competitiveness in the pasta industry between 2001-2020.

Table 10: Revealed Competitiveness Index Results (RC)

Years	RC	Years	RC
2001	3,46	**2011**	4,79
2002	1,37	**2012**	4,47
2003	3,75	**2013**	4,37
2004	3,82	**2014**	3,84
2005	1,47	**2015**	4,22
2006	3,89	**2016**	4,28
2007	4,01	**2017**	4,34
2008	5,89	**2018**	4,53
2009	3,74	**2019**	1,84
2010	3,99	**2020**	4,73
AVERAGE	3,84		

Source: Compiled by writers

The Revealed Symmetric Comparative Advantage Index (RSCA) shows that if the calculated values are greater than 0, there is a comparative advantage in the relevant industry or product, and if it is less than 0, there is a comparative disadvantage in the related industry or product. RSCA index values including 2001-2020 are given in Table 11. According to the values, the negative value was only in 2001. On the other hand, the values calculated between 2002-2020 are positive. The average value of the Revealed Symmetric Comparative Advantage Index (RSCA) results for the 2001-2020 periods was calculated as 0.53. In this context, Turkey had a comparative advantage in other years except 2001.

Table 11: Revealed Symmetric Comparative Advantage Index Results(RSCA)

Years	RSCA	Years	RSCA
2001	-0,08	**2011**	0,77
2002	0,00	**2012**	0,72
2003	0,11	**2013**	0,86
2004	0,36	**2014**	0,69
2005	0,40	**2015**	0,59
2006	0,44	**2016**	0,67
2007	0,44	**2017**	0,74
2008	0,57	**2018**	0,75
2009	0,41	**2019**	0,72
2010	0,75	**2020**	0,77
AVERAGE	0,53		

Source: Compiled by writers

The Trade Balance Index (TBI) indicates whether the country is a net exporter or a net importer in the relevant product or industry. The results of the Trade Balance Index calculated between 2001 and 2020 are given in Table 12. According to the results, the values calculated in all years are greater than 0. Thus, it has been revealed that Turkey is a net exporter with a comparative advantage in the pasta industry. The average value of the Trade Balance Index (TBI) results for the 2001-2020 periods was calculated as 0.94. It has been observed that the values are very close to 1.

Table 12: Trade Balance Index Results (TBI)

Years	TBI	Years	TBI
2001	0,92	**2011**	0,95
2002	0,93	**2012**	0,96
2003	0,93	**2013**	0,96
2004	0,93	**2014**	0,94
2005	0,93	**2015**	0,95
2006	0,93	**2016**	0,96
2007	0,94	**2017**	0,96
2008	0,95	**2018**	0,97
2009	0,94	**2019**	0,96
2010	0,94	**2020**	0,97
AVERAGE	0,94		

Source: Compiled by writers

Based on the results of RSCA and TBI, the place of Turkey's pasta industry in product mapping was determined. In this context, the product mapping of the pasta industry for the 2001-2020 periods is shown in Table 13. According to this table, Turkey didn't have a comparative advantage only in 2001 and was a net exporter (Group C). From 2002-2020, Turkey was a net exporter (Group A) with a comparative advantage in the pasta industry, because of RSCA >0 and TBI>0. In general, Turkey has a comparative advantage in the pasta industry and is also a net exporter.

Table 13: Product Mapping

Years	Group	Years	Group
2001	C RSCA<0, TBI>0	**2011**	A RSCA>0, TBI>0
2002	A RSCA>0, TBI>0	**2012**	A RSCA>0, TBI>0
2003	A RSCA>0, TBI>0	**2013**	A RSCA>0, TBI>0
2004	A RSCA>0, TBI>0	**2014**	A RSCA>0, TBI>0
2005	A RSCA>0, TBI>0	**2015**	A RSCA>0, TBI>0
2006	A RSCA>0, TBI>0	**2016**	A RSCA>0, TBI>0
2007	A RSCA>0, TBI>0	**2017**	A RSCA>0, TBI>0
2008	A RSCA>0, TBI>0	**2018**	A RSCA>0, TBI>0
2009	A RSCA>0, TBI>0	**2019**	A RSCA>0, TBI>0
2010	A RSCA>0, TBI>0	**2020**	A RSCA>0, TBI>0

Source: Compiled by writers

6. Conclusion and Recommendations

Globalization in the world and developments in IT and logistics networks have brought a different perspective to international trade. In the foreign trade situation of the countries, while one country has a foreign surplus, another country has a foreign deficit. In the reflection of this situation, the main indicator is international competitiveness. Competitiveness is explained as being able to compete in international markets, increasing market share, reaching new countries in export marketing, and increasing profit margin. Turkey has an important position in the pasta industry. Turkey's pasta export in 2020 was realized as 1.4 million tons and this value amounted to 764 million dollars. The countries to which Turkey exports pasta in 2020 are Venezuela, Somalia, Japan, Ghana, Togo, Angola, Benin, USA, and Nigeria, respectively (ITC Trademap, 2021).

In this study, the international competitiveness of the Turkish pasta industry between 2001 and 2020 was calculated using some indexes. Balassa's Index (RCA), Vollrath Indices (RXA, RMP, RTA, RC) Revealed Symmetric Comparative Advantage Index (RSCA), and Trade Balance Index were evaluated separately. In addition, a product map is generated for the pasta industry. It was seen that the index values were consistent with each other. As Turhan (2008) said, after 1999, the industry showed stable development and its competitiveness tended to increase. Looking at the results of the Balassa Index (RCA), the values between 2002 and 2020 were calculated as 1 and above. This index and the Relative Export Advantage Index (RXA) values are similar to each other. The value of the Relative Import Penetration Index was calculated as 1,01 only in 2019. Relative Trade Advantage Index values were below 1 in 2001 and 2002. The values of the Relative Competitiveness Index (RC) between 2001 and 2020 were calculated as 1 and above. Revealed Symmetric Comparative Advantage Index (RSCA) values are positive in all years except 2001. According to the results of the Trade Balance index (TBI), the values are greater than zero in all years and Turkey is a net exporter in the pasta industry. Based on the product mapping, Turkey is also a net exporter (Group A) with a comparative advantage in the pasta industry. It has been determined that Turkey has competitiveness in the pasta industry in general, has a comparative advantage, and specializes in pasta export. In short, Turkey develops in favor of pasta export. In this context, Turkey should offer incentives to companies that export pasta. European Union countries impose a quota of 20 thousand tons to Turkey to protect Italy in pasta exports, so steps should be taken to abolish this practice. To gain an advantage in an intensely competitive environment, Turkey should diversify its product group range. To increase the share of Turkey in pasta export, R&D activities should be given importance, also, target market research should be conducted in export marketing. A new study can be conducted to explain how the companies that the pioneers in pasta export in Turkey are develop strategies in order to sustain their competitiveness.

References

Azgün, S. (2017). *Dış Ticaret ve Rekabet Gücü* (1. Baskı). Ekin Yayınevi

Bağcı, E. (2016). Türkiye'nin İmalat Sanayi Sektörünün Uluslararası Rekabet Gücü Analizi. *Marmara Üniversitesi İktisadi ve İdari Bilimler Dergisi*, *38*(1), 73-92.

Bakkalcı, A. C. (2018). Küresel Sistemde Türk Tekstil Sektörünün Ürün Haritalaması Yöntemiyle Analizi. *Yönetim ve Ekonomi Dergisi*, *25*(3), 569-585.

Balassa, B. (1965). Trade Liberalisation and Revealed Comparative Advantage. *The Manchester School*, *33*, 99-123.

Balassa Indexes. (2003). Organization for Economic Cooperation & Development. *OECD Economic Surveys: Italy, 2003*(13) https://search.ebscohost.com/login.aspx?direct=true&db=bsu&AN=11161385&lang=tr&site=ehost-live (Accessed on 28.10.2021).

Başkol, M. O. & Bektaş, S. (2021). Türkiye Demir-Çelik Sektörünün Ürün Haritalaması: Widodo Yöntemiyle Bir Analiz. *Yönetim Bilimleri Dergisi*, *19*(Özel Sayı), 57-84.

Ertaş, R. E. (2002). *Türkiye Makarna Sanayi Sektör Analizi Yapı-İşleyiş-Performans*. Yayımlanmamış Yüksek Lisans Tezi, Akdeniz Üniversitesi Sosyal Bilimler Enstitüsü, Antalya.

Eser, H. Ş. (2009*). Türkiye'de Makarnalık Buğday Üretiminde Uygulanan Politikalar ve Makarna Sektörünün Üretici ve Tüketici Düzeyinde Analizi*. Doktora Tezi, Namık Kemal Üniversitesi Fen Bilimleri Enstitüsü, Tekirdağ.

Fehér, I. & Németh, N. (2017). Analysis of the Situation and Competitiveness of the Hungarian Pasta Industry (Based on Porter's Model). *Management, Enterprise, and Benchmarking in the 21st Century*, 55-65.

Frohberg, K. & Hartmann, M. (1997). Comparing Measures of Competitiveness. *Institute of Agricultural Development in Central and Europe Discussion Paper*, Dp no:2.

Gürpınar, K. & Barca, M. (2007). Türk Mobilya Sektörünün Uluslararası Rekabet Gücü Düzeyi ve Nedenleri. *Eskişehir Osmangazi Üniversitesi İİBF Dergisi*, *2*(2),41-61.

Ignjatijević, S., Matijašević, J. & Milojević, I. (2014). Revealed Comparative Advantages and Competitiveness of the Processed Food Sector for the Danube Countries. *Custos e@ gronégocio*, *10*, 256-281.

International Pasta Organization (IPO). *Annual Report 2021*. Available online: https://internationalpasta.org/annual-report/ (Accessed on 25.06.2022)

International Pasta Organization (IPO). *Pasta Evolution*. Available online: https://internationalpasta.org/. (Accessed on 25.10.2021)

ITC Trademap. (2021). *Exporting and Importing Data of Pasta*. https://www.trademap.org, (Accessed on 28.10.2021).

ITC Trademap. (2021). List of Importing Markets for a Product Exported by Türkiye (Product: 1902 Pasta). *https://www.trademap.org,(Accessed on 30.10.2021)*

Ketenci, C. K. & Bayramoğlu, Z. (2018). Türkiye'de Ceviz Üretiminin Rekabet Analizi. *Türk Tarım ve Doğa Bilimleri Dergisi*, *5*(3), 339-347.

Kostakoğlu, S. F. (2018). *Modern Ekonomi'de Rekabet* (1. Baskı). Seçkin Yayıncılık.

Lafay, G. (1992). The Measurement of Revealed Comparative Advantages. M. G. Dagenais & P. A. Muet (Ed.), *International Trade Modeling*. London: Chapman & Hill.

Laursen, K. (2015). Revealed Comparative Advantage and the Alternatives as Measures of International Specialization. *Eurasian Business Review*, *5*(1), 99-115. DOI: 10.1007/s40821-015-0017-1.

Maqbool, M. S., Rehman, M. A. U. & Ditta, A. (2020). Comparative Advantage and the Product Mapping of Exporting Sector of Minerals in Pakistan. *Academic Journal of Social Sciences (AJSS)*, *4*(3), 700-710.

Makarna Üreticileri ve Sanayicileri Derneği (MÜSAD). (2021). *İstatistik Veriler 2001-2020*. https://musad.org/ (Accessed on 25 October 2021).

Ministry of Economy. (2017). *Pasta Industry Report*. https://www.torbalito.org.tr/wp-content/uploads/2019/12/Makarna-Sektör.pdf (Accessed on 23.10.2021).

Özkan, E. (2003). *Strategic Analysis of Macaroni in Turkey.* Master's Thesis, Bilgi University Social Science Institute, İstanbul.

Sarıçoban, K. & Kösekahyaoğlu, L. (2017). Ticaret Sonrası Verilerle Rekabet Gücünün Ölçülmesinde Kullanılan İndeksler Üzerine Bir Literatür Taraması. *Akademik Sosyal Araştırmalar Dergisi*, 424-444.

Saraçoğlu, B. & Köse, N. (2000). *Bazı Gıda Sanayilerinin Uluslararası Rekabet Gücü: Makarna, Bisküvi ve Un Sanayisi*. Proje Raporu, Gazi Üniversitesi, Ankara. Available online: https://arastirma.tarimorman.gov.tr/tepge/Belgeler/Yay%C4%B1n%20Ar%C5%9Fivi/1997-2005%20Yay%C4%B1n%20Ar%C5%9Fivi/Yay%C4%B1nNo39.pdf (Accessed 28 October 2021).

Union of Organization Manufacturers of Pasta Products of the European Union (UNAFPA). (2021). *Statistics 2020.* https://www.pasta-unafpa.org/ (Accessed on 25.10.2021)

Union of Organization Manufacturers of Pasta Products of the European Union (UNAFPA). (2021). *World Pasta Day*. Available online: https://www.pasta-unafpa.org, (Accessed on 20.10.2021)

Terin, M. & Yavuz, F. (2018). Türkiye Peynir Sektörünün Uluslararası Rekabetçiliğinin Avrupa Birliği Ülkeleriyle Karşılaştırmalı Analizi. *Türk Tarım- Gıda Bilim ve Teknoloji Dergisi*, *6*(9), 1243-1250.

Topçu, B. A. & Sarıgül, S. S. (2015). Comparative Advantage and the Product Mapping of Exporting Sectors in Turkey. *The Journal of Academic Social Science*, *3*(18), 330-348.

Turhan, Ş. (2008). Türkiye'de Makarna Sektörünün Rekabet Gücü Açısından Değerlendirilmesi. *Verimlilik Dergisi*, *4*, 115–125.

Türkiye İstatistik Kurumu (TÜİK). (2021). *Türkiye Makarna İhracat ve İthalat Veriler 2001-2020.* www.tuik.gov.tr, (Accessed on 26.10.2021).

Vollrath, T. L. (1991). A Theoretical Evaluation of Alternative Trade Intensity Measures of Revealed Comparative Advantage. *Weltwirtschaftliche Archiv/Review of World Economic, 127*, 265-280.

Widodo, T. (2009). Comparative Advantage: Theory, Empirical Measures and Case Studies. *Review of Economic and Business Studies*, 4, November, 57-82.

Çıkar Beyanı: Yazarlar arasında çıkar çatışması yoktur.

Etik Beyanı: Bu çalışmanın tüm hazırlanma süreçlerinde etik kurallara uyulduğunu yazarlar beyan eder. Aksi bir durumun tespiti halinde Fiscaoeconomia Dergisinin hiçbir sorumluluğu olmayıp, tüm sorumluluk çalışmanın yazarlarına aittir.

Yazar Katkısı: Yazarların katkısı aşağıdaki gibidir; (Birden fazla yazar varsa doldurulacaktır)

Giriş: 1. yazar

Literatür: 1. ve 2. yazar

Metodoloji: 1. ve 2. yazar

Sonuç: 2. yazar

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Introduction: 1. author

Literature: 1. and 2. author

Methodology: 1. and 2. author

Conclusion: 2. author

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