ANALYSIS OF TURKEY'S FOREIGN TRADE OF MEDICAL AND PHARMACEUTICAL PRODUCTS IN THE PERSPECTIVE OF SPECIALIZATION AND COMPETITION

Türkiye'nin Tıp ve Eczacılık Ürünleri Dış Ticaretinin Uzmanlaşma Ve Rekabet Perspektifinde Analizi

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ABSTRACT

This paper aims to analyze the level of specialization and competition in the foreign trade of medical and pharmaceutical products which are of high added value and strategic importance in Turkey. In this context, we utilized the indices used in specialization and competition analyses. We can express the different but mutually supportive indices used in the study as "the Lafay Index, Index of Contribution to Trade Balance, Michaely Index and Export-Import Ratio Index". According to the results of the analyses conducted in the study on the 1997-2018 time period, Turkey was not able to gain expertise in the foreign trade of medical and pharmaceutical products. However, Turkey's level of specialization and competition in these products increased over time.

Key Words: Medical and Pharmaceutical Products, Specialization, Competition, Turkey

ÖZET

Bu çalışma Türkiye'nin katma değeri ve stratejik önemi yüksek olan tıp ve eczacılık ürünleri dış ticaretindeki uzmanlaşma ve rekabet düzeyinin analiz edilmesini amaçlamaktadır. Bu bağlamda, çalışmada, uzmanlaşma ve rekabet analizlerinde kullanılan endekslerden faydalanılmıştır. Çalışmada kullanılan, birbirinden farklı fakat birbirini destekleyici endeksler "Lafay Endeksi, Ticaret Dengesine Katkı Endeksi, Michaely Endeksi ve İhracat-İthalat Oranı Endeksi" şeklinde ifade edilebilir. 1997-2018 zaman dilimine ilişkin yapılan çalışmada yapılan analizlerin sonuçlarına göre, Türkiye tıp ve eczacılık ürünlerinin dış ticaretinde ağırlıklı olarak uzmanlaşma sağlayamamıştır. Bununla birlikte, Türkiye'nin söz konusu ürünlerdeki uzmanlaşma ve rekabet düzeyi giderek artış göstermektedir.

Anahtar Kelimeler: Tıp ve Eczacılık Ürünleri, Uzmanlaşma, Rekabet, Türkiye

1.INTRODUCTION

With globalization, competitive wars between countries in the international arena are increasing. Increased competition and efforts to gain a greater share of global revenue are also causing countries to change their production and investment decisions. Because, instead of the increase in the amount of products produced and exported each passing year, the added value in the hardware of the products has started to come to the fore. In fact, the concept of added value and R & D, which plays a key role in the creation of this value, has taken its place in the first place as the issues that countries focus more on each passing time. In this perspective, the health sector is one of the most important sectors for the countries, both in terms of the added value it generates and its contribution to the export revenues and global competitiveness of the countries.

The recent outbreak of the Covid-19 outbreak, which has turned into a global tragedy from a social and socio-economic standpoint, has led to a greater sense of the importance of the health sector. In this context, the countries that can provide specialisation in the sector, especially in medical and pharmaceutical products, can increase their global rantability and dominance in economic and political terms. Therefore, increasing the comparative advantages and international competition level in medicine and pharmaceutical products with high added value, strategic importance and R & D levels is now more important and imperative than ever.

Turkey is on the way to becoming a major actor on a global scale with its economic size as well as its product and market diversification in exports. The country's most important aim for foreign trade is to increase its international competitiveness by increasing the R & D and added value level in its sectoral exports. In this context, to specialize in the foreign trade of medical and pharmaceutical products and to increase their competitiveness is emerging as one of the most important objectives to achieve this goal. Increasing the share of health expenditures in the budget and national income each passing year is one of the policies implemented to achieve this goal.

Considering the importance given to exports and the health sector, Turkey's desire to specialize in medical and pharmaceutical products and to increase the level of global competition is evident. In this study, we aim to analyze the development of Turkey's level of specialization and competition in medical and pharmaceutical products over the years. In the study, we conduct a literature survey and indicate at what level this study could contribute to the literature. We then explain the data and method used in the study. Finally, we cover the subject in detail using different indices in the analysis and findings section.

2. LITERATURE REVIEW

Studies on the competitiveness of the sector often address competitiveness at the micro level within the country. These studies mainly examined the level of competition of pharmaceutical companies within the country. For example, Mohammadzadeh et al. (2019) aimed to demonstrate competitiveness in the Iranian pharmaceutical sector and the Competitive Strategies of companies. They surveyed 80 companies in Iran in their studies. The results show that exports were not a competitive priority of pharmaceutical companies in Iran. In the Competitive Strategies of firms, cost leadership ranked first and quality ranked second (Mohammadzadeh, Bakhtiari, Safarey, & Ghari, 2019). Spichak et al. (2015) analyzed the competitiveness of pharmaceutical companies within the framework of modern information technology and socially oriented management (Spichak, Vladimir E. Poryadin, & Spichak, 2015). Sousa et al. (2013) examined the competitiveness of sales representatives in pharmaceutical companies. They commented on the data obtained from the interviews with sales representatives (Kleber Cavalcante de Sousa, 2013). Shabaninejad et al. (2014) aimed to identify key factors affecting the competitiveness of companies in the pharmaceutical industry in Iran. They surveyed 25 firms in the study. As a result, the most important factors affecting competitiveness in the sector were human capital and macro developments (Shabaninejad, Mehralian, Rashidian, & Baratimarnani, 2014).

Some of the literature on the sector also addressed the competitiveness of the health sector in a particular country or city of the country. For example, Coşkun (2014) analyzed the health services competitiveness of Konya province according to Porter's Five Forces Model (Coşkun, 2014). Seki and Kaya (2018) analyzed the competitiveness of the health sector in Turkey at the regional level. At IBBS 2 level, they conducted analysis for the period 2012-2016. They used the Data Envelopment Method and Malmquist Total Factor Efficiency in the analyses. According to the results, the competitiveness of 12 out of 26 regions decreased, one region's competitiveness remained unchanged and the competitiveness of 13 regions increased (Seki & Kaya, 2018). Kaplan et al. (2019) conducted a competitive analysis of the Isparta health services sector based on the Five Forces Model developed by Porter. The analysis emphasized that differentiation was the most basic condition for ensuring competitive advantage in health services. Due to this differentiation, they presented various proposals for Isparta health services sectors (Kaplan, Çelik, & Kaplan, 2019).

Some studies analyzed the competitiveness of countries in health tourism. From these studies, Ganguli and Ebrahim (2016) took a qualitative approach to Singapore's health tourism competition. They did this case study to identify and analyze the factors that position Singapore as a competitive medical tourism destination (Ganguli & Ebrahim, 2016). In addition, Sas vd. (2015) and Alberti Alberti vd. (2014) analyzed the health tourism competitiveness of Romania and Thailand, respectively (Sas, Popescu, Cirla, Gheonea, & Popescu, 2015), (Alberti, Giusti, & Papa, 2014).

Gambardella et al. (2000), Liu et al. (2010), Kaynak (2016) and Turan et al. (2019) analyzed the international competitiveness of pharmaceutical products. Gambrella et al. analyzed the competitiveness of the pharmaceutical sector in European countries in their study. They took into account countries' foreign trade in the sector, their share in employment, total factor productivity, market concentration, number of patents and R & D projects as competitive criteria. They considered strengthening their technological capabilities as an important priority for European competitiveness in the study. They also stated that European companies lag behind American companies when investments in R & D and other factors are

taken into account (Gambardella, Orsenigo, & Pammolli, 2000). Liu et al. analyzed the international competitiveness of China's pharmaceutical industry. They used Porter's Diamond Model, which is widely used in the analysis. They stated that China's competitiveness was high due to the increasing R & D expenditures in the sector, its marketing power, its strong international communication. However, they listed poor property rights, customs restrictions, the superiority of Japan and South Korea in natural medicine as the country's handicaps in the sector (Liu, Zhang, & Xu, 2010). Kaynak addressed the competitive structure of the pharmaceutical sector in Turkey in the perspective of market concentration. He used the Concentration Ratio (CRn) and the Herfindahl Hirschman Index (HHI) as competition criteria in his study, which covered the period 2005-2015. As a result, he stated that concentration rates were relatively low and HHI scores showed relatively high concentration (Kaynak, 2016). Turan et al. analyzed the export competitiveness of pharmaceutical products of Turkey and Brazil. They calculated the countries' export rates in the pharmaceutical sector, the Comparative Advantage Index, the Relative Export Advantage Index and the Comparative Export Performance Index in the study for the period 2008-2017. The results showed that both countries had a comparative competitive disadvantage in the world. However, Brazil had a competitive advantage over Turkey in the sector when the two countries are compared (Turan, Kayıkçıoğlu, & Çağlar, 2019).

When we examine the literature, we can not find a publication on the specialization of countries in the health sector. However, we also find that there is a limited number of studies on the international competitiveness of countries in the sector. Our study differs with literature in that it addresses the level of specialization in the foreign trade of medical and pharmaceutical products in the sector of Turkey. Furthermore, since we analyze the specialization levels of medical and pharmaceutical products over a wide period of time (1997-2018) with the help of 4 different indices (the Lafay Index, Index of Contribution to Trade Balance, Michaely Index, Export-Import Ratio Index), we believe that our study is original and may contribute to the literature.

3. DATA AND METHOD

We discuss 10 sub-product groups related to the sector in the study, where we aim to determine the level of foreign trade specialization of medical and pharmaceutical products in Turkey. We select these product groups according to the Standard International Trade classification 4 digit product grouping. (SITC Rev 3, 4 digit product classification). We obtain the data with the help of the United Nations Comtrade database (UN Comtrade) (World Integrated Trade Solution, 2020). Medical and pharmaceutical products are as follows (http://wits.worldbank.org/WITS/WITS/AdvanceQuery, 2020):

5411: Provitamins and vitamins, natural or reproduced by synthesis (including natural concentrates), derivatives thereof used primarily as vitamins, and intermixtures of the foregoing, whether or not in any solvent

5413: Antibiotics

5414: Vegetable alkaloids, natural or reproduced by synthesis, and their salts, ethers, esters and other derivatives

5415: Hormones, natural or reproduced by synthesis; derivatives thereof, used primarily as hormones; other steroids used primarily as hormones

5416: Glycosides; glands or other organs and their extracts; antisera, vaccines and similar products

5419: Pharmaceutical goods, other than medicaments

5421: Medicaments containing antibiotics or derivatives thereof

5422: Medicaments containing hormones

5423: Medicaments containing alkaloids or derivatives thereof but not containing hormones,

5429: Medicaments, not elsewhere specified

In the study, we examine Turkey's specialization levels in medical and pharmaceutical products over a period of 22 years. In order to compare the specialization levels of the products, we cover the 22-year period in the form of 1997-2007 and 2008-2018 periods and make the analyses accordingly. However, we use the Lafay Index, the Index of Contribution to Trade Balance, the Michaely Index, the Export-Import

Ratio Index to determine the specialization levels of these products. The purpose of using different indices is to compare the scores obtained on the specialization levels of product groups in a healthy way.

We use the appropriate average instead of the arithmetic average when taking 22-year averages of scores related to specialization levels in the study. Our goal here is not to include the highest and lowest values in the series in the average. Because, abnormal low or high scores may occur in the series due to political or seasonal reasons, positive or negative shocks (Küçükkiremitçi, 2006). In case of the presence of these values which are outside the normal, "averages obtained by subtracting outlier or extreme values" are preferred as appropriate averages (https://www.tcmb.gov.tr/wps/wcm/connect/, 2020). The LI allows the country's specialization in a particular sector and inter-industry trade to be measured. (Desai, 2012). The index is formulated as follows[1]:

$$LI = 100 \left[\frac{X_{kt}^j - M_{kt}^j}{X_{kt}^j + M_{kt}^j} - \frac{\sum X_{kt}^j - M_{kt}^j}{\sum X_{kt}^j + M_{kt}^j} \right] \frac{X_{kt}^j + M_{kt}^j}{\sum X_{kt}^j + M_{kt}^j}$$

The index is valued between -50 and 50 (Desai, 2012). The positive index score indicates that the country specializes in the foreign trade of the sector in question. If the index score is negative, the country does not specialize in the sector (Reyes, 2014).

The ICBT is calculated as the difference between the actual trade balance and the theoretical trade balance. A difference equal to zero shows neither comparative advantage nor comparative disadvantage. A positive difference reflects a comparative advantage, a negative difference reflects a comparative disadvantage (Stellian & Danna-Buitrago, 2019). With other expression, if the index value is positive, the country has competitiveness in the export of the sector (Sujova, Hlavackova, & Marcinekova, 2015). The ICBT is shown as follows:

$$ICTB = \left[\frac{X_{kt}^j - M_{kt}^j}{X_{kt}^j + M_{kt}^j} \right] - \left[\frac{X_t^j - M_t^j}{X_t^j + M_t^j} \right] \text{ x } \left[\frac{X_{kt}^j - M_{kt}^j}{X_t^j + M_t^j} \right] \text{ x } 10000$$

The MI compares the industry's export pattern to its own import pattern. It shows the country's comparative advantage and specialization in the sector. The index is valued between -1 and 1. Positive value refers to the state of specialization and comparative advantage in the sector, vice versa (Wongpit & BounmyInthakesone, 2017). The MI is formulated as follows:

$$MI = X_{kt}^j \big/ \frac{\sum X_{kt}^j - M_{kt}^j}{\sum M_{kt}^j}$$

The EIRI indicates the level of competitiveness and specialization in the foreign trade of a sector of a country. The formula is as follows (Balassa, 1977):

$$EIRI = \frac{X_{kt}^j}{X_t^j} \big/ \frac{M_{kt}^j}{M_t^j}$$

If the EERI is greater than 1, the country has specialization. If the index is less than 1, the country has not specialization. The index is shown with the help of the logarithmic. If the EERI is greater than 0.50, the specialization of the country is high. If the EERI is less -0.50, the specialization of the country is low. If the EERI is between -0.50 and 0.50, the country's specialization level is marginal (Bozduman & Erkan, 2019).

4. THE FINDINGS OF THE RESEARCH

When we analyze the levels of specialization in the foreign trade of medical and pharmaceutical products using the LI and taking into account the appropriate average values, we can see that Turkey specialized in the foreign trade of 5 of the 10 products (5414, 5419, 5421, 5423, 5429) in question. However, the LI scores of these products were quite low. In other words, Turkey's specialization levels in the foreign trade of these 5 products were very low. (Table 1).

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[1] The symbols in all formulas are as follows:
X: Export, M: Import, t: Term (year), k: Textile product, j: Country

Table 1. The LI Values of Medical and Pharmaceutical Products of Turkey

Product Code	1997-2007 average	2008-2018 average	Appropriate average (1997-2018)	The acceleration of change (1997-2007, 2008-2018)
5411	-0,27	-0,37	-0,30	↓
5413	-1,75	-0,80	-1,19	↑
5414	2,63	1,03	1,70	↓
5415	-0,33	-0,15	-0,23	↑
5416	-2,18	-2,85	-2,41	↓
5419	0,33	0,44	0,38	↑
5421	1,94	2,60	2,21	↑
5422	-1,20	-1,75	-1,44	↓
5423	0,77	-0,18	0,21	↓
5429	0,07	2,04	0,95	↑

Source: We calculate and arrange the table using the UN Comtrade database.

When we compare the LI scores in terms of period averages (1997-2007 ve 2008-2018), we see that Turkey's specialization level was relatively high in 5 out of 10 products. However, while Turkey specialized in 1 product (5423) in the first period, it did not specialize in the second period (Table 1).

When we analyze the level of specialization in medical and pharmaceutical products using the ICBT and with the appropriate mean values, a very negative view emerges. Because, Turkey specialized in the foreign trade of only 1 of the 10 products (5414). However, Turkey's level of specialization in this product (ICBT score) was very low (Table 2).

When we compare the ICBT scores in terms of period averages (1997-2007 and 2008-2018), we see that Turkey's specialization level increased relatively in 8 out of 10 products (Table 2). The rise in Turkey'S ICBT scores over the years has been a sign that the number of products it will specialize in for years to come may increase.

Table 2. The ICBT Values of Medical and Pharmaceutical Products of Turkey

Product Code	1997-2007 average	2008-2018 average	Appropriate average (1997-2018)	The acceleration of change (1997-2007, 2008-2018)
5411	-0,23	-0,18	-0,20	↑
5413	-1,44	-0,40	-0,87	↑
5414	0,22	0,05	0,12	↓
5415	-0,24	-0,07	-0,15	↑
5416	-1,64	-1,87	-1,80	↓
5419	-0,38	-0,18	-0,28	↑
5421	-0,47	-0,07	-0,27	↑
5422	-1,16	-0,89	-1,01	↑
5423	-0,13	-0,09	-0,12	↑
5429	-5,04	-3,87	-4,44	↑

Source: We calculate and arrange the table using the UN Comtrade database.

We can express that the MI values in the foreign trade of medical and pharmaceutical products of Turkey are significantly similar to the ICBT values. Because the appropriate average values of the MI also reveals that the country specialized in only 1 product (5414) (Table 3).

When we compare the MI scores in terms of the period averages (1997-2007 and 2008-2018), we see that Turkey increased its level of specialization in 7 of the 10 products relatively (Table 3). The overall rise in the MI scores in the second period is a positive development in the context of Turkey's specialization.

Table 3. The MI Values of Medical and Pharmaceutical Products of Turkey

Product Code	1997-2007 average	2008-2018 average	Appropriate average (1997-2018)	The acceleration of change (1997-2007, 2008-2018)
5411	-0,0005	-0,0004	-0,0004	↑
5413	-0,0031	-0,0008	-0,0019	↑
5414	0,0005	0,0001	0,0003	↓
5415	-0,0005	-0,0001	-0,0003	↑
5416	-0,0034	-0,0040	-0,0037	↓
5419	-0,0008	-0,0004	-0,0006	↑
5421	-0,0011	-0,0002	-0,0006	↑
5422	-0,0024	-0,0019	-0,0021	↑
5423	0,0000	-0,0002	-0,0002	↓
5429	-0,0110	-0,0082	-0,0096	↑

Source: We calculate and arrange the table using the UN Comtrade database.

The EIRI scores in medical and pharmaceutical products of Turkey are significantly similar to both the ICBT and MI scores. According to the EIRI analysis, Turkey only specialized in 1 product (5414) (Table 4).

When we compare the EIRI scores in terms of period averages (1997-2007 and 2008-2018), the similarity between the ICBT and MI scores remains. According to this index, Turkey's level of specialization was relatively high in foreign trade of 8 out of 10 products (Table 4). Of course, this shows that the course of the country's specialization is positive.

Table 4. The EIRI Values of Medical and Pharmaceutical Products of Turkey

Product Code	1997-2007 average	2008-2018 average	Appropriate average (1997-2018)	The acceleration of change (1997-2007, 2008-2018)
5411	-3,14	-2,82	-2,77	↑
5413	-3,03	-2,89	-2,77	↑
5414	0,95	0,50	0,98	↓
5415	-4,23	-3,58	-3,80	↑
5416	-4,19	-2,35	-2,81	↑
5419	-1,37	-0,88	-0,89	↑
5421	-0,79	-0,10	-0,21	↑
5422	-3,06	-2,86	-2,71	↑
5423	0,31	-2,75	-0,24	↓
5429	-172,98	-124,20	-1,25	↑

Source: We calculate and arrange the table using the UN Comtrade database.

When we evaluate the LI, ICBT, MI and EIRI together, we see that Turkey did not specialize enough in the foreign trade of medical and pharmaceutical products. The specialization in foreign trade of the "SITC Rev 3, 5414" coded product stands out in all indices. All index results show that Turkey specialized in the "vegetable alkaloids, natural or reproduced by synthesis, and their salts, ethers, esters and other derivatives" product group.

According to the results of these indices, Turkey was not able to specialize mainly in medical and pharmaceutical products with high value added and R & D levels. However, the index scores for Turkey's specialization levels increased relatively over the years. This is proof that Turkey will be able to gain specialization in the foreign trade of these products in the future.

5. CONCLUSION

Today, the ability of countries to compete on a global scale is not only achieved by raising the values of macro-economic indicators such as national income and exports. The main factor determining international competitiveness is the level of added value in the equipment of manufactured and exported products. In this context, R & D and innovation are the key concepts. Because the higher the R&D and innovation equipment of the products that the country specializes and exports, the higher the added value of the product. As a result, the comparative advantage and competitiveness of the country in the export of this product will be high.

Due to the high level of R&D and innovation, medical and pharmaceutical products have a high added value. In addition, these products are considered to be strategic products globally. Therefore, global demand levels of these products are also high. Considering the recent Covid-19 outbreak, which captured the world, it is better understood why countries need to specialize in these products, both socially and economically and politically.

This study aims to analyze the level of specialization in Turkey's medical and pharmaceutical products based on the comparative advantages of more labor-intensive products. For this purpose, we can not see Turkey's medicine and specialized mainly in foreign trade of pharmaceutical products as a result of our analysis of the indices we use. In other words, Turkey does not have a comparative advantage and competitive advantage in the export of these products. Naturally, these results suggest that Turkey is mainly dependent on foreign products with high added value and strategic level.

Although Turkey's level of specialization in medical and pharmaceutical products is insufficient, positive developments in the field and increased exports in the sector have been noticeable in recent years. However, the relative height of the population makes the domestic demand for medical and pharmaceutical products always high. Turkey should first raise R & D spending and innovation level in the sector in order to specialize and to eliminate external dependence in medical and pharmaceutical products, which are of high strategic importance both economically and socially and politically. For this reason, public-university-private sector cooperation is inevitable. Furthermore, the qualified workforce should be directed, encouraged in line with the needs of the sector, and measures should be taken to prevent or reduce brain drain in order to increase the value added in the sector. If Turkey equips its qualified workforce with information technologies and eliminates financing difficulties, it can provide the desired value-added increase in production and exports.

REFERENCES

Alberti, F. G., Giusti, J. D., & Papa, F. (2014). Competitiveness policies for medical tourism clusters: government initiatives in Thailand. *Int. J. Economic Policy in Emerging Economies, 7*(3), 281-308.

Bozduman, E. T., & Erkan, B. (2019). Sectoral Competitive Advantages in Kazakhstan's Foreign Trade as a Rising Star of Central Asia. *7th SCF International Conference on "The Future of the European Union and Turkey-European Union Relations"* (s. 160-168). Uşak: SCF.

Coşkun, B. (2014). M. Porter'ın 5 Kuvvet Modeline Göre Sağlık Hizmetleri Sektörünün Rekabet Analizi. *Sağlıkta Performans ve Kalite Dergisi, 7*(1), 43-60.

Desai, F. P. (2012). Trends in fragmentation of production: A comparative study of Asia and Latin America. *Procedia - Social and Behavioral Sciences, 37*, 217-229.

Gambardella, A., Orsenigo, L., & Pammolli, F. (2000). *Global Competitiveness in Pharmaceuticals: A European Perspective.* Lucca: IMT Institute For Advanced Studies.

Ganguli, S., & Ebrahim, A. H. (2016). A qualitative analysis of Singapore's medical tourism competitiveness. *Tourism Management Perspectives, 21*, 74-84.

http://wits.worldbank.org/WITS/WITS/AdvanceQuery. (2020). WITS. adresinden alındı

https://www.tcmb.gov.tr/wps/wcm/connect/. (2020).

Kaplan, M., Çelik, P. D., & Kaplan, D. B. (2019). Beş Kuvvet Modeline Bağlı Olarak Isparta Sağlık Hizmetleri Sektörü Rekabet Analizi. *Balkan ve Yakın Doğu Sosyal Bilimler Dergisi, 5*(1), 115-121.

Kaynak, S. (2016). Türk İlaç Sektörünün Rekabet Yapısı ve Yoğunlaşma Analizi. *Çankırı Karatekin Üniversitesi, 6*(2), 49-66.

Kleber Cavalcante de Sousa, F. C. (2013). Essential Competences to the Pharmacy Industry Competitivity: Case Study With Cooperators in the Town of Natal, Rio Grande do Norte, Brazil. *China-USA Business Review, 12*(9), 1514-1537.

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

Küçükkiremitçi, O. (2006). Sanayi Sektörünün Dış Ticaret Performansının Rekabet Gücüne Göre Değerlendirilmesi (1995-2005 Dönemi). *Ulusal Bağımsızlık İçin Türkiye İktisat Politikaları Kurultayı.* Malatya.

Liu, Y., Zhang, Y., & Xu, C. (2010). Analysis of the International Competitiveness of Chinese Medicine Industry Based on the Diamond Model. *International Business Research, 3*(3), 165-170.

Mohammadzadeh, M., Bakhtiari, N., Safarey, R., & Ghari, T. (2019). Pharmaceutical industry in export marketing: a closer look at competitiveness. *International Journal of Pharmaceutical and Healthcare Marketing, 13*(3), 331-345.

Reyes, G. U. (2014). Examining the Revealed Comparative Advantage of the ASEAN 6 Countries Using the Balassa Index and Lafay Index. *Journal of Global Business and Trade, 10*(1), 1-12.

Sas, T.-N., Popescu, M., Cirla, A., Gheonea, I.-A., & Popescu, A.-I. (2015). The Multidisciplinary Approach of Graves Ophthalmopathy Management a Source of Competitiveness of the Medical Tourism in Romania. *International Journal for Responsible Tourism, 4*(1), 7-32.

Seki, İ., & Kaya, M. (2018). Sağlık Sektörü Açısından Rekabet Gücünün Bölgesel Analizi: Türkiye Örneği. *Uluslararası Yönetim ve Sosyal Araştırmalar Dergisi, 5*(10), 69-81.

Shabaninejad, H., Mehralian, G., Rashidian, A., & Baratimarnani, A. (2014). Identifying and prioritizing industry-level competitiveness factors: evidence from pharmaceutical market. *DARU Journal of Pharmaceutical Sciences, 22*(35), 1-7.

Spichak, I. V., Vladimir E. Poryadin, I. M., & Spichak, A. S. (2015). Pharmacy Competitiveness Optimization Using Information Technologies. *International Business Management, 9*(7), 1595-1597.

Stellian, R., & Danna-Buitrago, J. (2019). Revealed comparative advantages and regional specialization: Evidence from Colombia in the Pacific Alliance. *Journal of Applied Economics, 22*(1), 349-379.

Sujova, A., Hlavackova, P., & Marcinekova, K. (2015). Evaluating the Compettiveness of Wood Processing Industry. *Original Scientific Paper*, 281-288.

Turan, Z., Kayıkçıoğlu, S. C., & Çağlar, A. E. (2019). Eczacılık Ürünleri İhracat Performanslarının Belirlenen Endekslerle Ölçülmesi: Türkiye – Brezilya Örneği. *İşletme Araştırmaları Dergisi, 11*(4), 2680-2690.

Wongpit, P., & BounmyInthakesone. (2017). Export and Import Performance of Lao's Products. *Southeast Asian Journal of Economics, 5*(1), 41-74.

World Integrated Trade Solution. (2020, April 20). Trade Data (UN Comtrade). New York, USA.