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Tesis

Peruvian Agro-Export Sector: a Competitiveness Study on Their Main Products in the Period 2010-2019

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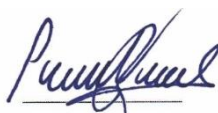
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Peruvian Agro-Export Sector: a Competitiveness Study on Their Main Products in the Period 2010-2019

La agro exportación en el Perú: Un análisis a la competitividad de los principales productos agrícolas de exportación peruanos (2010 – 2019)
Agroexportação no Peru: Uma análise da competitividade dos principais produtos agrícolas de exportação peruanos (2010 - 2019)

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Peruvian agricultural export products have gained importance in world markets in recent years. Therefore, the main objective of the study was to compare the level of competitiveness of the five main Peruvian products against similar products from other Latin American countries in a pre-pandemic and energy crisis development period (2010-2019). For this, two categories were analyzed: the level of specialization and the level of competitiveness with the competitiveness matrix modified by Lacayo and Morales in 2007. The study found a high level of specialization in all the Peruvian products analyzed, especially for the Blueberry category; likewise, the Grape, the Blueberry and the Avocado presented high levels of competitiveness; while Coffee and Asparagus were the least competitive due to their low performance in the analysis of the level of specialization.

Los productos peruanos de agroexportación han ganado importancia en los mercados mundiales en los últimos años. Por lo tanto, el objetivo principal del estudio fue comparar el nivel de competitividad de los cinco principales productos peruanos frente a productos similares de otros países latinoamericanos en un periodo de desarrollo pre pandemia y crisis energética (2010-2019). Para ello se analizaron dos categorías: el nivel de especialización y el nivel de competitividad con la matriz de competitividad modificada por Lacayo y Morales en 2007. El estudio encontró un alto nivel de especialización en todos los productos peruanos analizados, especialmente para la categoría de Arándanos; asimismo, la Uva, el Arándano y el Aguacate presentaron altos niveles de competitividad; mientras que el Café y el Espárrago fueron los menos competitivos por su bajo desempeño en el análisis del nivel de especialización.

Os produtos agrícolas de exportação peruanos ganharam importância nos mercados mundiais nos últimos anos. Portanto, o principal objetivo do estudo foi comparar o nível de competitividade dos cinco principais produtos peruanos com produtos similares de outros países latino-americanos em um período de desenvolvimento pré-pandemia e crise energética (2010-2019). Para isso, foram analisadas duas categorias: o nível de especialização e o nível de competitividade com a matriz de competitividade modificada por Lacayo e Morales em 2007. O estudo encontrou um alto nível de especialização em todos os produtos peruanos analisados, especialmente para a categoria Mirtilo; da mesma forma, a Uva, o Mirtilo e o Abacate apresentaram elevados níveis de competitividade; enquanto Café e Espargos foram os menos competitivos devido ao seu baixo desempenho na análise do nível de especialização.

1. Introduction

Peru is a country with an enormous cultural, historical and natural wealth; maybe one of the most famous is Machu Picchu, but from long time ago to will be famous, Peru was in the eyes of the world for their mining wealth, an area that today is predominant in the Peruvian economy and in second place for the geographic and genetic wealth. Peru is a country that has a highest diversity of weathers, ecological floors, area of production and productive ecosystems (Brack & Yauri, 2010), all of this allow hold a countless quantity of animals and plants that benefit the Peruvian population and even to the worldwide population like is the case of potato that practically today produce in all the world, but the origins remount zones high Andeans of Latin America (Chávez, 2019). Since ancient times it was known take advantage all this wealth even in zones like was difficult their production and evidence of this was the "andenes" that located in different zones in Peru, whose objective were maximize the agricultural production. That ancient value, genetic and geographic allow that today Peru is in the eyes of the world for their capacity of agricultural production and their "Superfoods", that in the world are collect more importance for their highest nutritional value (Ekiert & Dochniak, 2015), consolidating its climatic conditions, resources and natural spaces as a natural advantage for Peru (Daniels et al., 2013).

The aforementioned conditions allow Peru to have an agricultural sector that still maintains ancestral techniques in the cultivation and harvesting process, however, with new research and technological development, it allows national production to not only focus on local markets, but also to international markets.

Brack & Yauri (2010) affirm that of the 117 recognized life zones in the world, 84 of them are in Peru. By having this geographical space with characteristics similar to those of other countries, it allows Peru to be able to adapt other crops that benefit the agricultural sector, thus promoting the country's competitiveness. Such is the case of Blueberries which, due to its geographical conditions, the proliferation of this crop has positioned Peru as the largest exporter of this product in the world in terms of export value (ITC-TradeMap, 2020) despite not being originally from the country, thus displacing a competitor that almost always remained in first place (Chile); its various areas also allow the production of other species that are also highly demanded in the world such as bananas, coffee, avocado, among others.

Being the most attractive international market to trade, in Peru national and international investors have opted for agro-export development (Villanueva, 2019), so Peru is a country that in recent years has gained notoriety in the agro-export sector for its high levels of production and quality (Anyosa Gutiérrez, 2019), however, and despite the fact that there are figures and databases available to anyone, exist a lack of research that analyzes the behavior of said sector at a competitive level and it is in this empty that this research proposes to analyze the competitive behavior of Peru, its main competitors and the main destination markets through an agile and easy-to-interpret methodology, considering its importance of growth in recent years, so that this growth can be affirmed or denied, especially for a pre-pandemic period where the figures allow us to have a more accurate analysis of how this sector developed.

Competitiveness has been the object of study of many authors, Michael Porter (1985) present that the competitiveness of a company is in its ability to produce and sell its products better than

the competition; in addition, Michael Porter (1991) establishes a term that is "competitive advantage", which consists of generating value for customers through competitive strategies. International organizations evaluate the competitiveness of countries according to the weighting of the factors that generate competitiveness, for example, we have the World Competitiveness Yearbook [WCY], prepared by the International Institute for Management Development [IMD] where compares the ability of countries to generate a favorable environment so that companies can be more competitive, and the Global Competitiveness Report [GCR] prepared by the World Economy Forum [WEF] (Guevara Ramírez & Morales Letzkus, 2018) .

We also have Ivancevich and Lorenzi (1997) who discuss the competitiveness of nations, stating that it is the ability of a country to survive in international markets and in turn raise the income of citizens. For a country, competitiveness translates into the possibility that its citizens have to achieve a high and growing standard of living (Labarca, 2007). The *Comisión Económica para América Latina y el Caribe* [CEPAL] has developed a matrix where it can measure the competitiveness of countries in four quadrants using import and export indicators; the dynamism and competitiveness of countries is important and serves as a reference to understand how a market behaves and the level of specialization of exporters (Mandeng, 1991) and this allows decisions to be made for the benefit of each country (Yu & Qi, 2015).

The indicators of specialization and dynamism added to the indicator of revealed comparative advantage [RCA] allow for a better analysis of the competitive advantage of the countries to be studied (Yu & Qi, 2015), offering data that is easy to interpret, but with a great value of knowledge (Sevela, 2002).

Arumta et al. (2019) said that a determining factor for exports is access to information and technology by producers. Making research on agriculture freely available directly benefits agro-export development in a country (Krauskopf, 2012). Organic production is also a factor that determines the competitiveness of Peruvian agricultural exports (Mallqui et al., 2017) and compliance with what is agreed in purchase and sale contracts sets a good precedent with importing countries (Laredo, 2019). Another important factor in agricultural competitiveness in a country is the alliances between producers and trust in them (Rodríguez & Vicente, 2020), it does not matter if a producer is small or large, all together they can form a great force that generates an enormous advantage competitive in the countries (Esquivel et al., 2019); therefore, this research work offers an analysis for those who want to know more about agricultural competitiveness in Peru.

For the government, maintaining the stability of export earnings is important in the management of its foreign exchange reserve (Simatupang, 2016) because it provides a greater amount of foreign exchange for the country (Daulika et al., 2020) and this is important due to because global economic risks are constantly on the rise (Baleevskikh & Galeev, 2020). So, for countries to be more efficient and better focus their own resources on promoting of their products to the main destination countries, it is important to know which countries present greater dynamism and development opportunities (Yulhar & Darwanto, 2019).

Competitiveness or specialization analyzes reflect important data for decision-making in international trade, since there is not a single country in the world that does not export or import any good or service (Ibrahim & Sekunmade, 2018). The methodology that will be used for this research will be mainly a modification to the competitiveness matrix developed by CEPAL, this modification was presented in the article "An analysis of the performance of Chilean farming exports (1994-2004)" by Lacayo & Morales, 2007; was proposed because the CEPAL matrix did not show a complete panorama of the dynamism and competitiveness of the countries to be studied, which is why they went from having 4 quadrants to

Danton Arturo Escalante Yaulilahua, Jimena Melissa Olivera Recuay, Mayte Rocio Miranda Galván &
Pedro Bernabé Venegas Rodríguez

37

9 quadrants where the values and position of each country with respect to each product or category can be better explained. The RCA and ICTB indicators were also used, allowing for a more complex analysis that demonstrates or denies the competitiveness of the products or categories studied, as evidenced in the research carried out by Escalante Yaulilahua et al., 2022 on the agro-export competitiveness of the Netherlands.

As general results of the investigation, a high degree of specialization was evidenced in all Peruvian agricultural products, but especially in the Blueberry category with a growth greater than 484% in the period studied.

2. Methodology and Sources

2.1. Methods

Four formulas divided into two categories were used: specialization indicators and competitiveness indicators. Each category will be detailed below:

2.1.1. Specialization Indicators

To analyze this category, two very important indicators were used to analyze this category: the revealed comparative advantage [RCA] and the indicator of the contribution to the trade balance [ICTB].

Revealed Comparative Advantage (RCA):

The RCA makes it possible to analyze the comparative advantage of a given country with other countries, even with groups of countries or the world (Balassa, 1965). It is used to compare whether or not countries have competitiveness through their export structure, likewise this indicator allows determining whether or not a product or category has specialization (Addison-Smyth, 2005). Its formula is as follows:

$$RCA_{ij} = \frac{(X_{ij}/X_j)}{(X_i/X)} \times 100 \qquad (1)$$

Where:
RCA_{ij}: the RCA of product i from country j
X_{ij}: total exports of product i from country j
X_j: total exports of country j
X_i: total exports of product i around the world
X: total exports of the world.

The RCA index analyzes the commercial structure of a product in a certain country in relation to the structure of the same product in the world or global trade. This indicator takes positive values, but if

this value is greater than 100, then we can say that the analyzed country has a revealed comparative advantage for the chosen product. (Utkulu & Seyman, 2004).

Indicator of the contribution to trade balance (ICTB):

To have a better analysis of the competitiveness of countries, it is necessary to analyze competitiveness through net exports because many countries not only produce, but also import the same product, and this in the RCA indicator is a limitation, that is why we will use the ICTB indicator to complement the analysis and be more objective in processing the information. The formula is as follows:

$$ICTB_{ij} = \frac{X_{ij} - M_{ij}}{\dfrac{X_j + M_j}{2}} - \frac{X_j - M_j}{\dfrac{X_j + M_j}{2}} \times \frac{X_{ij} - M_{ij}}{X_j + M_j} \qquad (2)$$

Where:
$ICTB_{ij}$: the ICTB of product i in country J
X_{ij}: total exports of product i from country j
M_{ij}: total imports of product i from country j
X_j: total exports of country j
M_j: total imports of the country j.

Unlike the RCA indicator, the ICTB can take positive or negative values. They can be greater or less than zero, likewise this indicator identifies those sectors that contribute in greater or lesser proportion than their percentage participation in the country's total trade (Laursen, 2015). This indicator allows us to analyze the changes in the commercial structures of the products in the countries and when the values are positive, we can affirm that it presents a comparative advantage in relation to the product or category analyzed or that it does not present when the value of the indicator is negative.

2.1.2. Competitiveness indicators

The reference methodology for estimating export competitiveness is based on the CAN (Competitive Analysis of Nations), developed by CEPAL but modified by Lacayo & Morales in 2007. This methodology provides a series of indicators that are useful for studying the competitiveness of Peruvian products in different markets.

Dynamism or sector participation index (SP):

This indicator, for the present investigation, is an annual time series and the evolution over time of this index allows analyzing the growth of the participation of a good or set of goods in the total imports of the country or region considered for study.

$$SP_i = \frac{M_i}{M_{total}} \times 100 \qquad (3)$$

Where:
SP_i: sectoral share of product i (it can also be a group or category of products)
M_i: total imports of product i in the country or region considered for the analysis (importing countries or destination markets)
M_{total}: Total imports of the country or region under consideration.

Competitiveness or market share index (MS):

It measures the ability of a country that exports a certain good to a certain country or region (the target market) to increase its competitiveness in the target market with respect to the rest of the countries that export the same good to the same target market. In the same way as with the analysis for dynamism, for the research the data obtained are from annual series. The formula is as follows:

$$MS_{ij} = \frac{X_{ij}}{M_i} \qquad \textbf{(4)}$$

Where:
MS_{ij}: market share of product i produced by country j for the target market, country or region considered
X_{ij}: total exports of product i from country j to country or region considered
M_i: total imports of the product i in the country or region considered.

As mentioned before, for this analysis a variation of the competitiveness matrix proposed by Lacayo and Morales in 2007 was taken. The reason why this modification was chosen for the analysis is because the classification based on competitiveness (market share) and dynamism (sector share) could be considerably improved if it were based on the statistical significance of the trend (the slope indicator in a linear regression model with time as a regressor) in the evolution of each of the indicators, instead of simply considering whether they increase or decrease over time as used in the original CEPAL matrix.

A type I error of 5% was used in estimating the slope. In this way it is possible to obtain not only two categories in this evolution (increase or decrease) but three, after incorporating the constant category. "Therefore, if with a 10% significance, the slope of the MS indicator (market share) is positive, zero or negative, competitiveness could be increasing, constant or decreasing; for dynamism the same values would be taken respectively" (Lacayo & Morales, 2007, p. 298).

With these changes, the competitiveness matrix now has nine entries, corresponding to three levels each of competitiveness and dynamism. **Figure 1** shows the competitiveness matrix to be used.

Figure 1 - Modified competitive matrix

Market Share (competitiveness)	Increasing (competitive sectors)	Winner in depressed market	Stable market winner	Winner in booming market
	Constant (sectors in transition)	Persistent in depressed market	Persistent in stable market	Persistent in booming market
	Decreasing (non-competitive sectors)	Loser in depressed market	Loser in stable market	Loser in booming market
		Decreasing (stagnating sectors)	Constant (sectors in trasition)	Increasing (dynamic sectors)
		Sector Participation (dynamism)		

Source: Taken from Lacayo and Morales (2007) with the names of the quadrants proposed by Guevara and Morales (2018).

2.2. Sources and choice of products and countries

All the information collected was extracted from the ITC-TradeMap platform, the period analyzed was from 2010 to 2019; likewise, the five products with the highest participation in Peruvian exports during the period from 2010 to 2019 were considered, making an analysis of the main destination countries and competitors.

For the classification, the Harmonized System of Description and Coding of Goods of the World Organization 2012 was used, this harmonized system is composed of six digits and groups goods with similar characteristics to those we wish to study. The names will be modified to facilitate the understanding; table 1 shows the categories to be analyzed.

For the analysis, the comparison was also made with the main exporters in the world since they are direct competitors for Peru. In the category of Grapes and for the analysis of the main competitors, it is important to point out that China is the largest exporter in this category, but because its exports are destined mainly to Southeast Asia and not to the main importing countries, it was not considered for the category competitiveness study, for the other categories if the top exporters in the world were analyzed.

Table 1 shows the summary of the countries and the categories considered for the analysis of this research.

Table 1. - Categories, exporting countries and selected destination countries

Category	Name	Description	Main Exporters	Main Importers
080610	Grapes	fresh grapes	Chile	United States, Netherlands, United Kingdom and Germany
081040	Blueberry	Fresh cranberries, bilberries and other fruits of the genus Vaccinium	Chile	United States, Netherlands, United Kingdom and Germany
080440	Avocado	Fresh or dried avocados	Mexico	United States, Netherlands, France and United Kingdom
090111	Coffee	Coffee (excluding roasted and decaffeinated)	Brazil and Colombia	United States, Germany, Italy and Japan
070920	Asparagus	Fresh or chilled asparagus	Mexico	United States, Germany, Canada and United Kingdom

Source: Own elaboration, based on statistics from the ITC-Trade Map

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41

3. Results and Discussion

Figure 2 - Mean annual growth rate of Peruvian exports products studied (2010 – 2019)
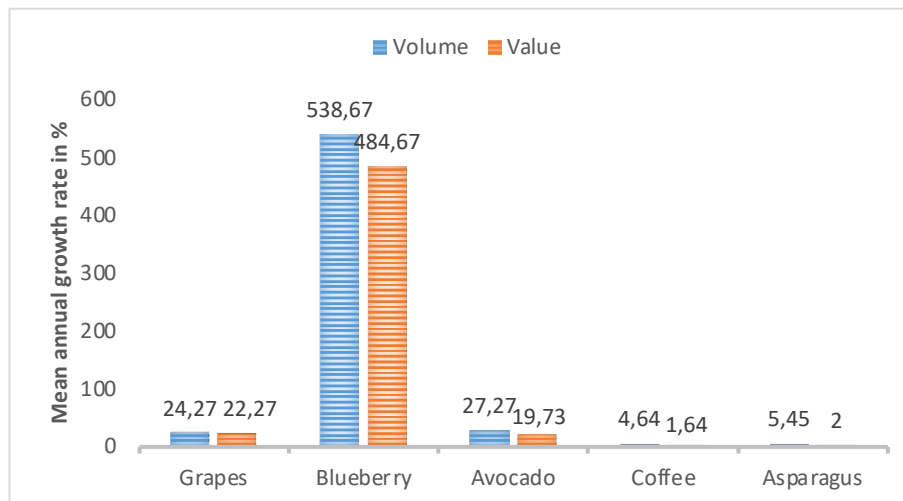
Source: Own elaboration, based on statistics from the ITC-Trade Map

An analysis of exports with a single indicator, such as export value, can lead to errors in the conclusions or interpretation of the data, for example, the value of exports grows only as a result of an increase in the price of the products studied. , however, other factors may influence to determine an increase in both the exported volume and the exported value (Lacayo & Morales, 2007), to avoid this erroneous interpretation, a comparison was made between the exported value and the volume as shown in Fig. **Figure 2**.

When both results (export value and volume) are analyzed, it can be concluded that, in the period and categories analyzed , the growth and comparative advantage in Peruvian exports is due entirely to an increase in the export volume and to the export value, this is reflected in the specialization indicators where the categories of Grapes, Blueberry and Avocado are the ones with the highest degree of specialization.

3.1. Specialization

The RCA for Peruvian agricultural export products show an evident comparative advantage, as shown in figure 3. In the case of Blueberry, until 2012 it had a positive RCA, but it does not show a revealed comparative advantage (less than 100), being since 2014 the category with the highest sustained and accelerated growth of comparative advantage throughout the period. The second fastest growing product was Grapes and the third was Coffee. The remaining categories show a decreasing comparative advantage for the entire period studied.

Regarding the main competitors, all have a comparative advantage. The category with the highest growth throughout the period was Asparagus (Mexico), followed by Coffee (Brazil), all the remaining categories show a decrease in their comparative advantage.

Figure 3 - Evolution of the RCA indicator for Peruvian agricultural exports (left) and for its main competitors (right) in the period 2010-2019.
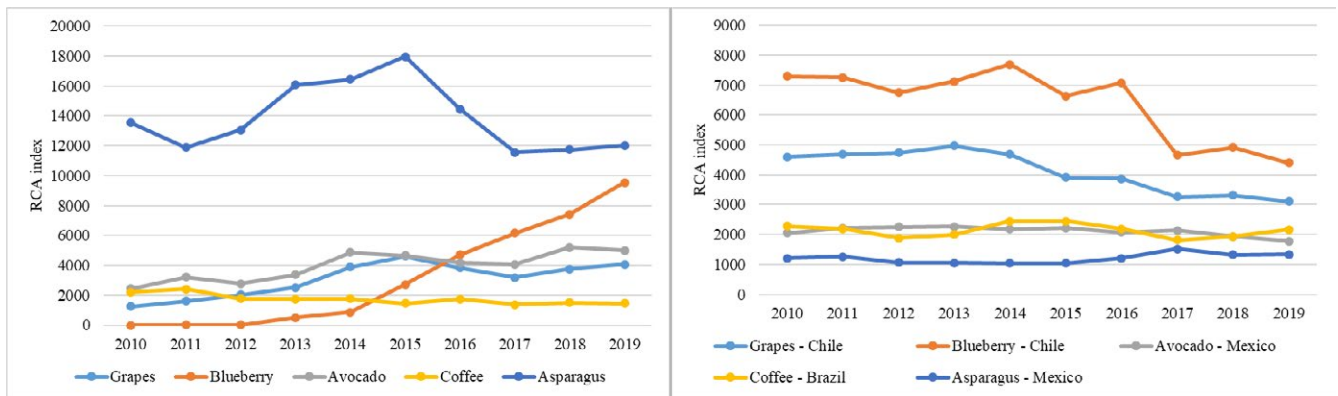
Source: Own elaboration, based on statistics from the ITC-Trade Map

The categories where Peru has the best growth with respect to its comparative advantage are Blueberry, Grapes and Avocado in that order, but it loses competitiveness compared to the growth of the advantage of Asparagus (Mexico) and Coffee (Brazil) for the period studied as shown in **figure 3**. The Blueberry category is the one with the highest growth trend for the coming years, making Chile less competitive, which was the main exporter of this category from 2005 to 2018 (ITC-TradeMap, 2022).

Figure 4 - Evolution of the ICTB indicator for Peruvian agricultural exports (left) and its main competitors (right) in the period 2010-2019.
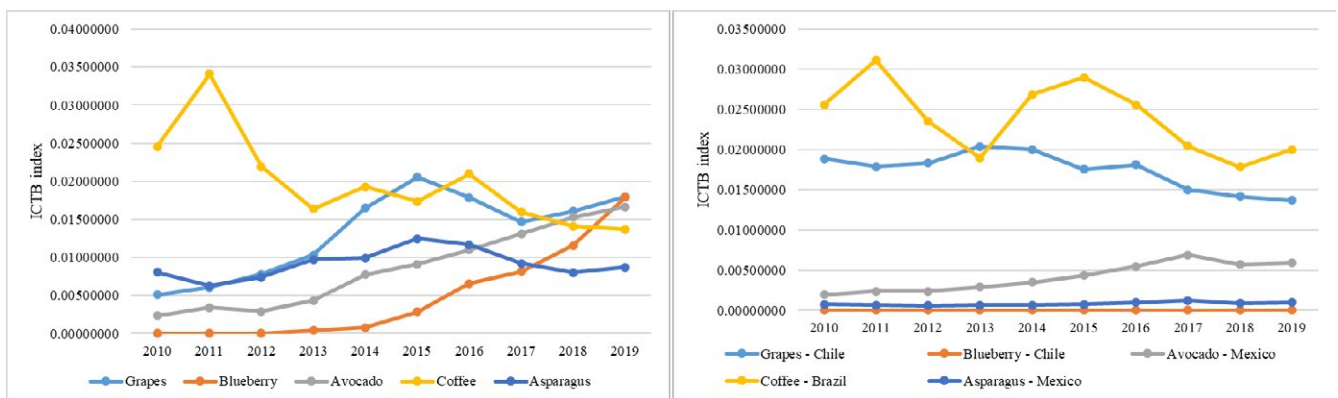
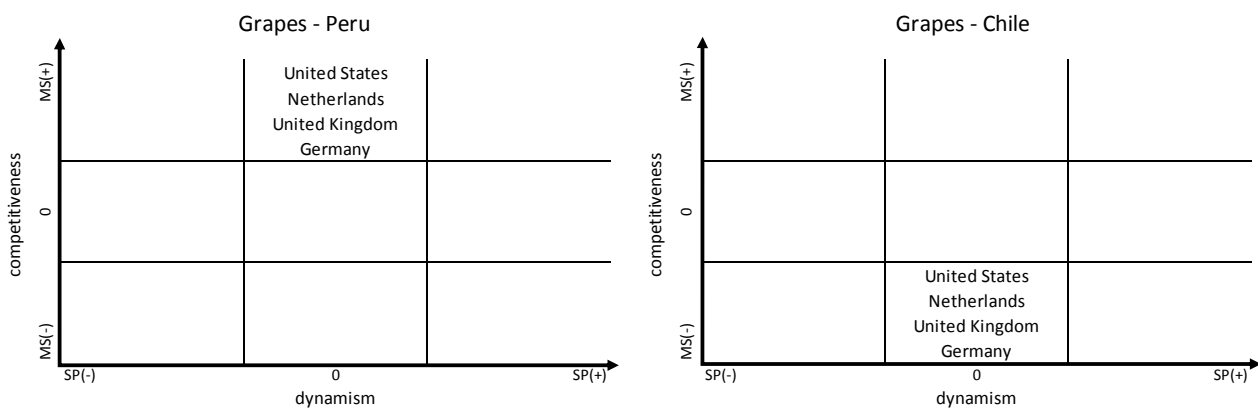Source: Own elaboration, based on statistics from the ITC-Trade Map

Regarding the contribution index (ICTB) for each category, Peru shows a positive comparative advantage. The categories with the highest growth of said advantage in the period studied was Blueberry, as seen in figure 4, followed by Avocado, Grapes and Asparagus. The only category that shows a decrease is Coffee, but its values are positive in the index, which is why it continues to maintain a comparative advantage. Blueberry presents a very high growth rate and makes it the second agricultural product with the highest contribution to the Trade Balance of Peru for 2019, climbing three positions since 2017.

For the main competing countries, all present a positive index in the period studied, the categories with the highest growth in this indicator are Asparagus (Mexico), Avocado (Mexico), Blueberry (Chile) and Coffee (Brazil). The category Grapes (Chile) has a decrease in the indicator for the period studied.

Contrasting the values of the RCA and the ICTB, we can affirm that Peru has a greater comparative advantage in the Blueberry category than its competition and this is affirmed by the fact that by 2019 Peru became the main exporter in the world in this category (ITC -TradeMap, 2020). In the other categories, Peru and its main competitors present an almost similar comparative advantage, except for the Coffee category, where for Peru there is a decrease in both indicators, unlike its main competitor (Brazil), which gains a greater competitive advantage, as shown in **figure 4**.

3.2. Export Competitiveness

Figure 5 - Competitiveness Matrices for Peru and the Top Exporter of the Grapes category.
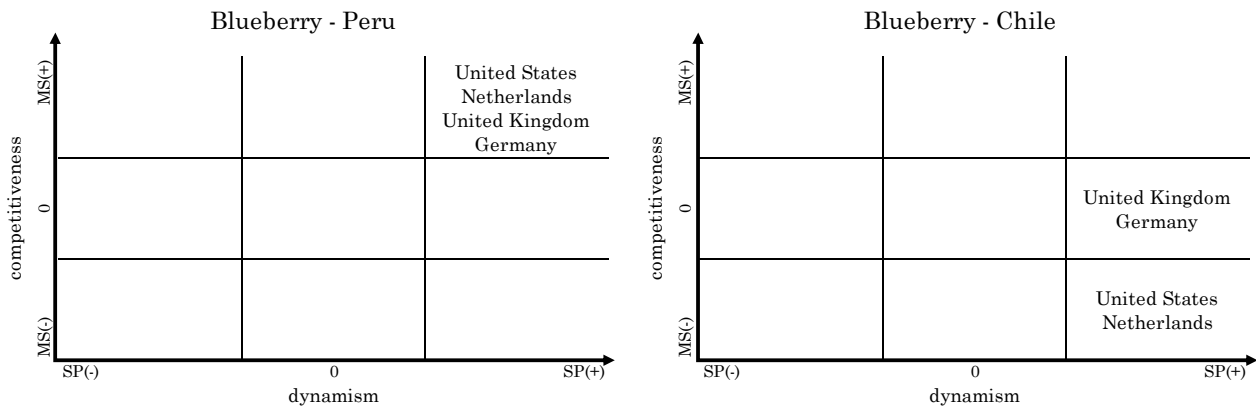

Source: Own elaboration, based on statistics from the ITC-Trade Map

Analyzing competitiveness through the modified matrix, in the case of the first category studied, Grapes, Peru is positioned in the winning quadrant in the market with stable dynamism while its main competitor (Chile) is positioned in the losing quadrant as shown in **figure 5**. The dynamism in the main importing countries is stable, that means that according to the analysis it has not presented a considerable growth or decrease, but it can be affirmed that there was no variation and its sectoral participation remained. Peru has an average market share of 12.98% in the United States, 12.04% in the Netherlands, 5.96% in the United Kingdom and 2.47% in Germany compared to the market share of Chile, which is 57.96%, 16.32%, 13.72% and 7.18%. respectively.

While it is true that Chile's market share is greater than Peru's, but Chile is losing that competitiveness in stable markets, which is being taken advantage of by Peru, however, increasing its competitiveness in the Grapes category and this is evidenced in the analyzes previous specialization where it shows a growth rate for Peru and a decrease for Chile in the period studied. In the same way, producers must intensify their efforts to increase production so that they maintain their levels and take advantage of the decrease in competitiveness in Chile (Lazo et al., 2020).

Figure 6 - Competitiveness Matrices for Peru and the Top exporter of the Blueberry category.
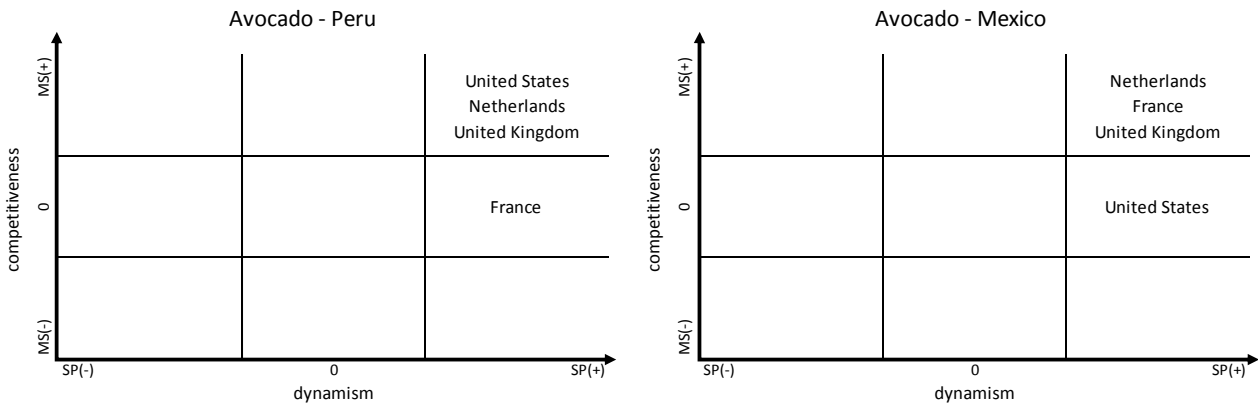

Source: Own elaboration, based on statistics from the ITC-Trade Map

For the Blueberry category, as seen in **figure 6**, the main importing countries show a positive and growing dynamism. Peru is consolidated as the winner in all the importing countries studied, having an average market share of 10.55% for the United States, 12.02% in the Netherlands, 6.36% in the United Kingdom and finally 6.68% in Germany. For Chile, its reality is different, it loses said competitiveness in the markets of the United States and the Netherlands, consolidating itself in the losing quadrant in markets with growing evolution, while the market share for the United Kingdom and Germany remains. The average market share of Chile is as follows: for the United States 42.65%, the Netherlands 32.05%, the United Kingdom 21.05% and Germany 12.78%. The United States is consolidated as the main importer of this category and for 2019 the market share of Peru-USA was 38.07% while Chile-USA 25.37%, this year it represented the change of positions and made Peru the main exporter in the world displacing its main competitor and exporter in the world, this is a sign of Peru's comparative advantage and specialization for this category (ITC-TradeMap, 2020).

The regions with the highest growth in production and planting of this product are found in La Libertad, Lambayeque and Piura, this being the product that has shown the greatest intensification of cultivation and that since 2004 research has been carried out for its cultivation and since 2010 to produce for export purposes (Salas Canales, 2020), despite its high cost of cultivation, the health benefits make this crop highly demanded by international markets.

For the Avocado category, as in the previous category, the main destination countries for this product have a growing evolution dynamism, that is, they are booming markets as seen in **figure 7**. Peru is consolidated in the winning quadrant in the countries of the United States, the Netherlands and the United Kingdom, while remaining constant in a booming market like France. Mexico is also consolidated as the winner in competitiveness in the countries of the Netherlands, France and the United Kingdom, while in the United States it remains constant. The average market share for Peru is as follows: United States 5.45%, Netherlands 24.69%, France 20.42% and United Kingdom 17.80%; while for Mexico 87.31%, 4.98%, 7.03% and 1.95% respectively. Mexico is the main producer of avocado in the world and therefore the difference in levels of competitiveness at the level of market share is notorious, however, Peru given its efforts to promote this category, in the years studied has shown to gain competitiveness and improve their specialization levels as seen in **figure 3**.
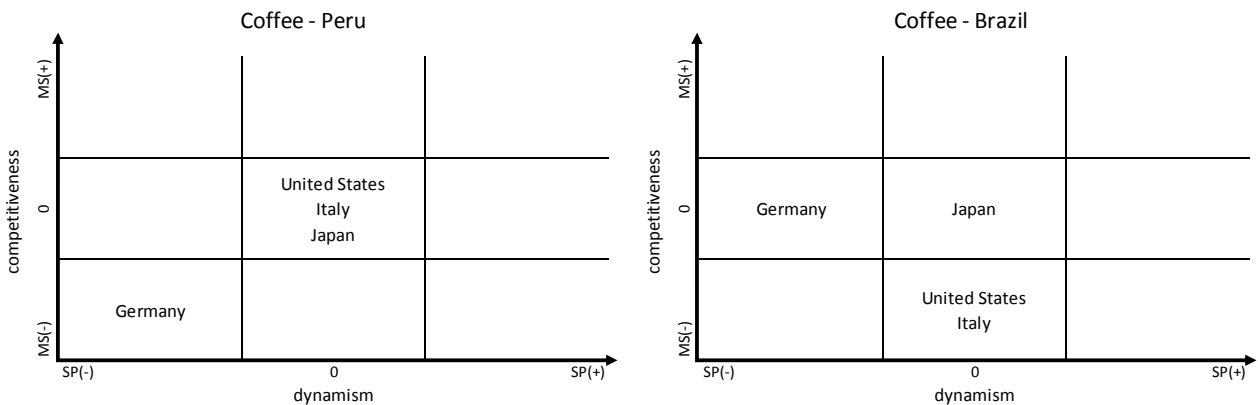
Figure 7 - Competitiveness Matrices for Peru and the Top exporter of the Avocado category.

Avocado - Peru

MS(+)

competitiveness — 0

MS(-)

SP(-) — 0 — SP(+)

dynamism

United States
Netherlands
United Kingdom

France

Avocado - Mexico

MS(+)

competitiveness — 0

MS(-)

SP(-) — 0 — SP(+)

dynamism

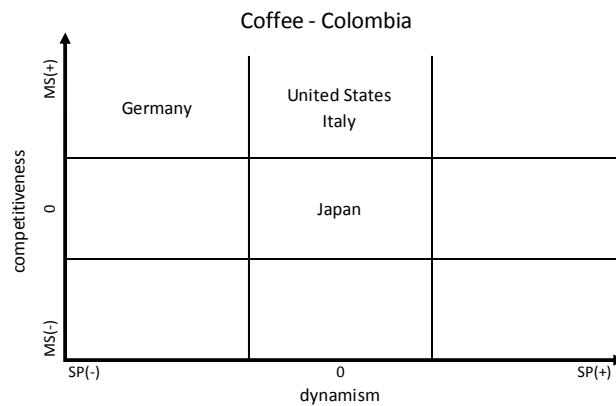Netherlands
France
United Kingdom

United States

Source: Own elaboration, based on statistics from the ITC-Trade Map

The main importer in the world is the United States and Mexico leads exports in North America. Peru, as an emerging country in avocado exports, represents a direct threat to Mexico since while Mexico is present in North America, Peru is gaining competitiveness in European markets. (Macias, 2011). The main variety grown in Peru is the Hass variety and part of the competitive advantage that Peru has is the seasonality of production (Salas Canales, 2020), given that while countries like Mexico stop harvesting, Peru begins with the harvest.

Figure 8 - Competitiveness Matrices for Peru and the Top Exporters of the Coffee category.
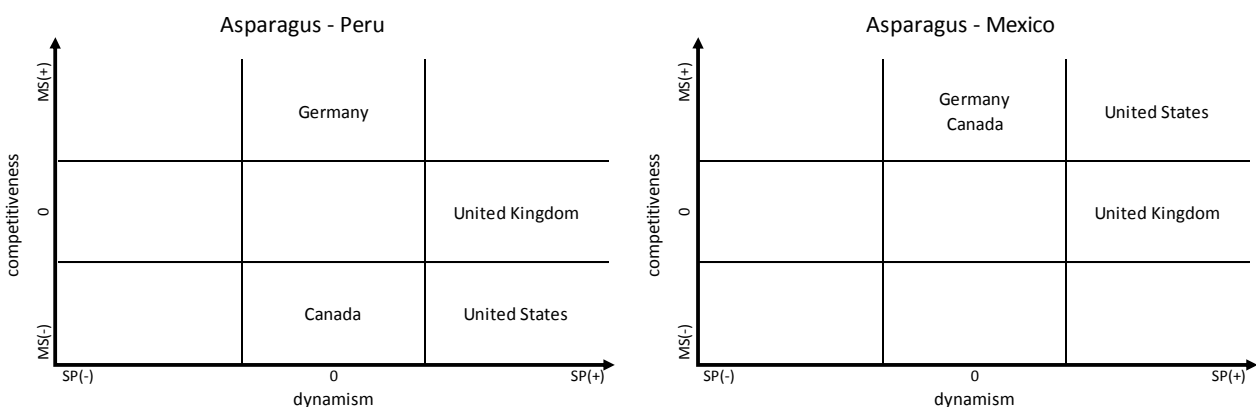
Coffee - Peru

MS(+)

competitiveness — 0

MS(-)

SP(-) — 0 — SP(+)

dynamism

United States
Italy
Japan

Germany

Coffee - Brazil

MS(+)

competitiveness — 0

MS(-)

SP(-) — 0 — SP(+)

dynamism

Germany

Japan

United States
Italy

Coffee - Colombia

Source: Own elaboration, based on statistics from the ITC-Trade Map

For the Coffee category, as shown in **figure 8**, the importing countries that maintain a constant dynamism are the United States, Italy and Japan; while Germany loses dynamism and becomes a depressed market. Peru's competitiveness is stable for the United States, Italy and Japan, but it is consolidated in the losing quadrant in Germany. For Brazil, its competitiveness remains in Japan and in the depressed market of Germany, but it loses competitiveness in the United States and Italy, which are countries with stable dynamism. Colombia is the one that shows the best competitiveness since for countries like the United States and Italy it is consolidated in the winning quadrant in stable markets, but it is also consolidated in the winning quadrant in Germany, which is a depressed market, however, in the market of Japan remains competitive.

The average market share of Peru for the main importers was 4.45% for the United States, Germany 7.48%, Italy 1.68% and Japan 0.81%; for Brazil it was 24.50%, 33.18%, 36.96%, 32.30% and for Colombia 21.91%, 5.57%, 3.63%, 18.86% respectively.

The country that maintains greater competitiveness is Colombia, despite being the second largest exporter of this category in the world.

Figure 9 - Competitiveness Matrices for Peru and the Top Exporter of the Asparagus category.

Source: Own elaboration, based on statistics from the ITC-Trade Map

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47

For the Asparagus category, the countries that show a growing evolution in their Dynamism are the United States and the United Kingdom (they are booming markets). Germany and Canada remain stable. Peru maintains stable competitiveness in the United Kingdom, as seen in **figure 9**, while it loses competitiveness in the United States, this being a booming market. Peru consolidates in the winning quadrant in the German Market, but loses competitiveness in Canada. For Mexico, the levels of competitiveness are better, it gains competitiveness in the United States, but remains constant in the United Kingdom; Mexico is consolidated in the winning quadrant in the stable market for the countries of Germany and Canada, thus demonstrating the level of specialization that it has and the leadership in the world in this category.

The average market share for Peru was: United States 51.09%, Germany 16.59%, Canada 37.30% and United Kingdom 76.05%, for Mexico 47.82%, 1.47%, 51.02% and 13.75% respectively.

The largest amount of Asparagus production is found in the regions of Ica and La Libertad with an average production of with an average production of 12,000 kilograms per planted hectare (Salas Canales, 2020). Peru should consider improving its levels of competitiveness since, to be the second largest exporter in this category, it loses competitiveness in two markets with positive dynamism.

4. Conclusions

Peru showed high competitiveness in all the categories studied; the product that presented the greatest specialization was Blueberry, with an accelerated growth (greater than 480%) and constant since 2014, a fact that predicts a tendency to become the main agricultural export product in value of Peru for coming years. The Grapes and Avocado category present a growth in its competitiveness, while for Coffee and Asparagus said competitiveness shows a slight decrease, but both categories are still very competitive. This information allows us to evaluate the growth trend in a pre-pandemic and pre-energy crisis situation that affected exports in 2020 and the second in 2022; Although activities have now been normalized in a large part of the world, doing post-investigation would help analyze the impact on this sector, although it is important to mention that since these are crops that generally take between 2 to 4 years to produce as soon as it is grown, it could be that the impact has not been much, or due to the very fact that it is food, its demand has remained or grown with the same trend that is evident in the pre-pandemic period, all of this can be analyzed in a later study.

As a final recommendation, we would like to mention that this sector generates many jobs, both direct and indirect, and its importance in day-to-day basis is vital (perhaps we can be without electricity for a couple of days, but not eating for a couple of days would be very serious). Placing greater emphasis on a sector that perhaps in Peru and in general throughout Latin America has been very forgotten and neglected, should be a policy that Latin American states should practice; we also recommend that said growth and competitiveness mentioned in this research be sustainable and equitable both at the environmental level, with the incentive of organic and ecological fertilizers and not with an overexploitation of resources, as well as with fair trade, respect for producers, avoid child labor or exploitation or forms of slavery.

48

We invite researchers from neighboring countries to Peru to place greater emphasis on its agricultural sector because the climatic and geographical conditions in Latin America allow the generation of a global agro-export sector.

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