DIVERSIFICATION AND CORPORATE STRATEGY OF AGRICULTURAL PRODUCTS EXPORTS FROM A DEVELOPING COUNTRY

Jose Carlos Montes Ninaquispe [*], Hugo Daniel García Juárez [**], Eduardo Ygnacio Arraya Celis [***], Karol Melissa Arbaiza Godos [****], Erik Omar Escalona Aguilar [*****], Luis Edgardo Cruz Salinas [**], Gary Christiam Farfán Chilicaus [**], Antony Esmit Franco Fernández-Altamirano [**]

* *Corresponding author*, Universidad de San Martín de Porres, Chiclayo, Peru
Contact details: Universidad de San Martín de Porres, Calle Nazareth 621 esq. con Av. Balta, Chiclayo, Peru
** Universidad César Vallejo, Chepen, Peru
*** Universidad de San Martín de Porres, Chiclayo, Peru
**** Universidad Tecnológica del Perú, Chiclayo, Peru
***** Universidad Bernardo O'Higgins, Santiago, Chile

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Abstract

This study explores the diversification of avocado exports from Peru during the period from 2018 to 2022, recognizing Peru's significant export potential. It analyzes export patterns and market concentration levels. Using a quantitative, non-experimental approach, the analysis was conducted with data sourced from the National Superintendence of Customs and Tax Administration (SUNAT). The study applied the Herfindahl-Hirschman index (HHI) to assess the degree of market concentration. The findings reveal an average annual growth in avocado exports of 12.5 percent, alongside a decrease in the average price per kilogram of 5.4 percent. These metrics indicate not only an expansion of the market base through diversification into new markets but also reduced vulnerability to price fluctuations and external demand. The conclusions underscore a significant improvement in the local economy due to diversification, which has subsequently increased Peru's economic resilience. To foster continued growth in this sector, the implementation of a comprehensive strategy is recommended, encompassing infrastructure, human capital, innovation, and the development of a robust business environment, aligned with the growth of other agricultural products in Peru.

Keywords: Economics, Exports, International Trade, Comparative Advantage, Avocado, Peru

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1. INTRODUCTION

Peru stands as a novel contribution to the existing body of literature in the realm of economic development and export strategy. Despite the plethora of research on agricultural exports, there is a significant bibliographic gap concerning the evolution and analysis of diversification indicators, particularly within the Peruvian context during the 2018–2022 period. This manuscript addresses this gap by providing a quantitative and non-experimental perspective on how Peru has diversified its avocado export markets and how this has impacted price structures and market concentration, as indicated by the Herfindahl-Hirschman index (HHI). Furthermore, by identifying shifts in primary export destinations and the decline in prices, this work complements the existing literature by emphasizing the need for additional measures to sustain industry growth.

Global economies are predominantly anchored in the trade of both tangible goods and a myriad of services. Central to comprehending this intricate dynamic is the application of the Heckscher-Ohlin (H-O) theorem, which postulates that countries gravitate towards exporting commodities that are intensive in their abundant factors, whilst importing goods intensive in their scarce factors (Kunroo & Ahmad, 2023). Transactions rooted in these differential factor endowments elucidate the multifaceted nuances of international trade, subsequently molding production structures and comparative advantages (Massini et al., 2023). Within this paradigm, extractive products emerge as pivotal, serving as foundational elements in the fabrication of more advanced goods (Tejeda-Villanueva et al., 2019). These primary resources not only underpin the fabric of production and consumption but also serve as catalysts for producer-centric economic augmentation (Sorroche-del-Rey et al., 2023), especially when there is strategic alignment with evolving consumer predilections.

Within the spectrum of globally traded commodities, the avocado (Persea Americana) has ascended as an item of significant pertinence (Cheng et al., 2023; Ospina Parra et al., 2022). It is proliferation can be attributed to its myriads of health and economic ramifications (de Oliveira et al., 2023; Galván & Freedland, 2023). From a physiological perspective, it serves as an efficacious agent in attenuating specific biochemical markers implicated in cardiovascular pathogenesis (Durocher, 2023; Ericsson et al., 2023; Monge et al., 2023). Economically, its adoption in markets such as the United States of America (USA), the Netherlands, France, and Spain underscores its preeminence in the international fruit and vegetable commerce sector (International Trade Centre [ITC], n.d.). Such growth is concurrently reinforced by advancements in logistical frameworks, market liberalization protocols, and an augmented demand trajectory for salubrious consumables (Guevara et al., 2021; Ospina Parra et al., 2022).

The export trajectory of the avocado delineates a robust and effervescent dynamic (Henao-Rojas et al., 2019). A consortium of nations, with a focus on Mexico, Colombia, and Peru, facilitates a perennial supply equilibrium (Food and Agriculture Organization of the United Nations, n.d.; Mokria et al., 2022). These geopolitical entities epitomize the avocado's significance within the broader realms of international commerce and nutrition (Al-Otaibi et al., 2023).

Strategic export paradigms are meticulously architected to diminish dependence on singular markets (Lee & Ho, 2022), thereby alleviating the concomitant risks associated with demand concentration (Alkhathlan et al., 2020; Young, 2022). Consequently, diversification emerges as an indispensable fulcrum for economic amplification. This paradigm is discernible across both macroeconomic and microeconomic spectra (Vivoda, 2022).

Corporate entities endeavor to magnify their imprints within international arenas (Grebenkin, 2018), so much so that in some Asian countries they have focused on the knowledge and adoption of fintech in addition to reducing credit risks (Nguyen et al., 2022). Such endeavors invariably cascade into aggregated growth, resonating at both corporate and national echelons (Lee et al., 2022). Diversification within international commerce is enshrined as an intrinsic mechanism to fortify global economic robustness (Guo et al., 2020).

The diversification of exports is a pertinent subject within scholarly literature, with various studies elucidating its implications and trends across different nations and sectors. For instance, an investigation conducted in Poland from 2004 to 2015 examined export specialization at the county level. The findings suggest that specialization significantly augments the value of exports per capita, underscoring the pivotal role of product concentration and specialization in the country's export success (Nazarczuk et al., 2018). Analogously, research on the exportation of Erva-mate in Brazil from 2005 to 2015 centered on quantifying export concentration and inequality, employing the HHI and the Bain index. This study observed pronounced stability over the evaluated duration, accompanied by marked inequality (Oliveira et al., 2017). In a different milieu, an inquiry into the diversification of exports in Lithuania's traditional technology industries revealed a moderate export concentration in the nation's low-tech sector, in terms of both geographical regions and product clusters (Laskiene et al., 2017). Collectively, these investigations underscore the significance of appraising export diversification and concentration to fathom trade dynamics, vulnerabilities, and opportunities in various national and sectoral contexts.

The current study enriches the academic literature by elucidating the role of the diversification of Peruvian avocado export destinations in the face of global demand and international competition. The findings underscore the significance of export diversification as a mechanism for economic strengthening and the imperative to incorporate it within a broader development strategy. This strategy should consider complementary initiatives such as the pursuit of new markets, export pricing strategies, and promotion at international trade fairs, among others.

In the context of Peru, export diversification of the avocado emerges as an exigent prerogative to catalyze economic ascendancy (Agosin & Chancí Arango, 2015). As a cardinal avocado exporter, for Peru, diversification is not merely strategic, but rather a sine qua non for economic flourishing (Bedoya Justo & Julca Otiniano, 2020). Through the prism of market diversification, Peru is poised to bolster its economic resilience against capricious foreign market variables (Escalante Yaulilahua et al., 2023), while simultaneously incentivizing corporate ingress into avocado cultivation, distribution, and globalization (Rivera & Pisconte, 2020). Such strategic

maneuvering is instrumental in augmenting prospects for sustainable economic growth trajectories (Dulanto Garay, 2019).

Given this, the current investigation embarks on an exhaustive analysis of avocado export diversification from Peru, interrogating extant export patterns, discerning opportunities, and enumerating challenges within international contexts, ultimately delineating strategies for export conglomerates. The culminating aspiration is to promulgate recommendations, tailored to refine diversification stratagems and accentuate Peru's stature in the global avocado commerce milieu.

The findings reveal that the expansion of avocado export destinations from Peru has mitigated its vulnerability to international price fluctuations and external demand shocks, reflecting an active economic transformation. Despite the observed growth and an average annual increase rate of 12.5% in exports, it is imperative to contemplate export diversification within a broader economic development strategy, given the fluctuations in primary destinations and the average decrease of 5.4% in price per kilogram. Diversification has significantly strengthened the local economy, yet it presents enduring challenges. An all-encompassing strategic approach is required, one that emphasizes not only diversification but also investments in infrastructure, human capital, innovation, and a conducive business environment to ensure sustained growth in the avocado sector.

The structure of this article is as follows. Section 2 reviews the relevant literature on export diversification and its impact on economic development. Section 3 outlines the methodology used, with a focus on the application of the HHI to analyze market concentration. Section 4 presents the empirical findings of the study, while Section 5 discusses the implications of the results in terms of competitiveness and economic development. Finally, Section 6 provides conclusions and recommendations for future research and public policy.

2. LITERATURE REVIEW

Pardo Martínez and León Gómez (2019) embarked on an intricate exploration of Hass avocado export diversification, leveraging surging global demand indices. Through rigorous statistical and market analyses, Santa Bárbara (Antioquia) was demarcated as the optimal locus for production, accompanied by an integrative environmental stewardship blueprint. Their empirical findings accentuate the premise that such diversification can serve as an engine for sustainable economic growth in avocado-rich regions. A parallel investigation delineated the value chain of the Hass avocado in Cauca, Colombia (Ospina Parra et al., 2022). Notwithstanding phytosanitary and logistical impediments, the research emphasized diversification as a cornerstone for export augmentation. Garzón's scholarly foray into the productive chains of the Hass avocado in Tolima, Colombia (Garzón, 2020), spotlighted distributional optimization as a conduit for enhancing export profitability margins. Further, an investigative framework encapsulated a decade of avocado exports from Ecuador (2008-2018) (Álvarez Flores et al., 2021), illuminating the economic significance and avenues for export diversification.

Subsequently, a study spearheaded by Luna Florin and Rodríguez Caguana (2022) scrutinized the international trade dynamics of the Hass avocado in the Mira canton, Carchi province, Ecuador. The research underscored the quintessential advantages proffered by the Ecuadorian Hass avocado and posited potential vectors for export diversification.

2.1. International trade

The global economic edifice is substantively predicated on the tenets of international trade, encompassing the bidirectional flow of commodities and services across geopolitical boundaries (Stadnicki & Oksanych, 2022). The underlying doctrine guiding this is the theory of comparative advantage, postulating that nations, by accentuating their production efficacy in specific commodities and subsequently engaging in trade, derive mutual benefits (Halkos et al., 2021). Such intercontinental commerce avails a more extensive repertoire of resources, facilitating access to commodities and services that may not be intrinsically efficient for localized production (Exbrayat, 2017).

In an archetypical framework, nations gravitate towards a liberalized trade system, underscoring the quintessence of global market immersion (Udbye, 2017). Nonetheless, mere participation is insufficient; diversification of exports across multiple nations is paramount to harness expansive opportunities whilst attenuating risks emanating from single-market reliance (Canh & Thanh, 2022), Competitiveness, particularly within the agri-food sector, is a multifaceted and intricate concept closely intertwined with sustainability. For Peru, it is imperative to delineate competitiveness not merely in terms of production but also in sustainability and added value. Diversification could enhance the nation's competitiveness by tailoring its production and export strategies, prioritizing high-value-added agri-food products over the export of large volumes of low-added-value agricultural raw materials, thereby positioning itself more competitively on the global stage (Constantin et al., 2023). Corollary to this, exports significantly underpin economic proliferation, engendering revenue streams, catalyzing employment, and fostering technological and knowledge transference (Mora & Olabisi, 2023).

2.2. Export-driven economic development *vis-à-vis* diversification

This paradigm has engendered considerable academic and policy discourse (Hamed et al., 2014), predominantly as a potential dynamo for economic augmentation, especially within developing economies (Lotfi & Karim, 2017). These economies, like China and the USA, by having good governance by controlling corruption, being efficient, maintaining regulatory quality, controlling political stability, and having an absence of violence, allow economic growth.

The process entails an expansive diversification of the export product array, fostering economic resilience and diminished susceptibility to economic perturbations. An over-reliance on a singular buyer might tether an economy's fortunes precariously. Diversification, hence, paves avenues not merely for stability but also for innovation and learning (Damijan et al., 2020). Introducing novel products to the export portfolio often correlates with productivity enhancements, thus potentially catalyzing long-term economic growth trajectories (Lemessa et al., 2018).

Yet, export diversification remains a formidable challenge, necessitating resource allocation to sectors sans an evident comparative advantage. Furthermore, empirical studies (Jebli et al., 2022; Brummitt et al., 2020; McIntyre et al., 2018) suggest that geopolitically diminutive states, encumbered by constrained natural and human assets, confront unique impediments to economic progression (Hodey et al., 2015). The restricted territorial expanse often results in an inadequate domestic market and a circumscribed production spectrum (Parteka & Tamberi, 2013). Consequently, they inevitably specialize in a finite array of goods and services, such as primary products or tourism, leveraging their intrinsic comparative advantages for efficacious international market competition (Amare et al., 2019). In addition, they must be attentive to changes that arise as a result of media events such as the exchange rate or variations in international prices.

2.3. Export diversification theory

Market destination diversification: Central to export diversification theory is the tenet that a broad-based spectrum of commodities and services, traded across diverse global markets, can ameliorate the inherent risks of over-reliance on a circumscribed product or destination set (Swathi & Sridharan, 2022). This diversification realization necessitates a meticulously sequenced array of strategies, spanning from discerning nascent business opportunities to hefty investments in research and development (R&D) for innovative product genesis. These stratagems are orchestrated via foreign trade policy paradigms and astute business decision-making processes (Yllescas-Rodríguez et al., 2021). Export diversification is discerned as a pivotal mechanism accentuating economic growth by augmenting revenues, invigorating competition, efficiency, and furnishing a bulwark against market volatilities, including price oscillations (Rodríguez Vázquez, 2016).

Exporting entity diversification: A cardinal stratagem in the global economic landscape is the diversification of exporting entities, positing that a plethora of firms, all engaging in the international sale of an analogous commodity, can obviate risks associated with over-reliance on a handful of entities (Gnangnon, 2022). This diversification trajectory entails an integration process, bolstering various business stakeholders in the production and international dissemination of the designated commodity. This can be actualized through policies incentivizing enterprise genesis, investments in avant-garde technologies and capacity-building, and refining infrastructures to streamline international trade processes (Karahan, 2017). Such an approach to diversifying export firms is heralded as a linchpin for economic development for a myriad of reasons. Notably, a diverse conglomerate of firms, each vending an identical product on the international stage, can culminate in amplified global production, augmented export revenue streams, heightened competition, and efficacy, and fortified resilience against market shocks, including price fluctuations (Li et al., 2022). This thereby emerges as an indispensable apparatus to cultivate economic stability, propel growth and prosperity, and fortify the overarching robustness of macroeconomic structures.

3. RESEARCH METHODOLOGY

The study was conducted using a non-experimental, cross-sectional approach, focusing on observing and documenting a phenomenon in its natural state without interfering with or manipulating the data. This approach facilitated the calculation of the diversification index based on the export value of avocados from Peru, identified by the national tariff heading 0804.40.00 (Ministry of Economy and Finance, 2022), directed toward various international markets and by exporting companies, following the analysis methodology. The analysis period was set from 2018 to 2022, grounded in empirical evidence indicating an increase in fruit consumption, particularly avocados, partly attributed to the COVID-19 pandemic (Ampofo-Asiama et al., 2021), which has also impacted price variations and market preferences (Denvir, 2023). Although several countries have expanded their production areas, this timeframe provides a contemporary and precise perspective on the supply and demand dynamics in the global avocado market (Das et al., 2024). The study adopted a quantitative approach to describe and analyze the evolution of the diversification indicator over time. The data used in this study was sourced from the website of the National Superintendence of Customs and Tax Administration (SUNAT) in Peru, through customs declarations submitted by exporting companies for the relevant subheading. This publicly accessible information was cross-referenced with commercial intelligence platforms, including Adex Data Trade, Azatrade, and Infotrade, to verify and enrich details on export flows and destinations, and the commercial statistics from the ITC (n.d.), including basic export indicators such as free on board (FOB) value and volume in metric tons, as seen in Arbulú Ballesteros et al.'s (2024) study on ginger exports. This validation process ensures greater accuracy and reliability in the analysis of market diversification. To assess the diversification of export markets, the HHI was employed, a measure commonly used in economics and market analysis. This index quantifies the level of market concentration among companies or commodities by squaring the market share of each competitor and summing the results (Sangita, 2018). An HHI close to 10,000 suggests a highly concentrated market dominated by one or few entities, while an HHI nearer to zero indicates a highly competitive and fragmented market. The utility of the HHI for evaluating export markets lies in its ability to provide insight into the degree of market competitiveness or potential risks associated with excessive dependence on a limited number of exporters. The HHI calculation formula is $HHI = \sum_{i=1}^{N} s_i^2$, where s represents each entity's market share percentage, and N the total number of participants. According to the Antitrust Division U.S. Department of Justice (2024, para. 3), the agencies generally consider markets in which the HHI is between 1.000 and 1.800 points to be moderately concentrated and consider markets in which the HHI is in excess of 1.800 points to be highly concentrated.

The HHI is a crucial metric in this study for understanding the concentration levels within Peru's avocado export markets. By measuring market concentration, the HHI indicates the extent to which Peru relies on specific countries as primary

importers. High HHI values reflect a concentrated market, suggesting significant dependency on a few destinations, whereas lower HHI values indicate a more diversified market structure. This distinction is vital for assessing Peru's economic resilience and the stability of its avocado export sector. A diversified market base, signified by lower HHI values, mitigates Peru's exposure to demand and price fluctuations in individual markets, enhancing competitiveness and reducing overall risk. Thus, the HHI stands as an essential measure for evaluating the effectiveness of Peru's diversification strategy and its impact on the avocado sector's long-term stability.

An alternative methodological approach that could be employed is longitudinal design. This approach allows for the collection of data over an extended period, facilitating the analysis of trends and changes in the diversification of avocado exports. Unlike the cross-sectional design, which captures a single point in time, the longitudinal design would provide a more dynamic view of market behavior, allowing for the identification of growth or decline patterns in diversification, as well as the factors influencing the evolution of exports.

4. RESULTS

The world demand for avocados is analyzed in Table 1. The global demand for avocados, expressed in terms of imports, has experienced significant changes during the period 2018–2022. A variety of dynamics is observed between the different countries, each exhibiting its own trajectory regarding the importation of this fruit.

During the period, the USA, the Netherlands, Spain, France, and Germany emerged as the main avocado importers. The USA experienced an average annual growth of 2.2%. In contrast, the Netherlands demonstrated a robust average annual growth rate of 7.8%. Simultaneously, Spain showed an impressive average annual growth of 11.9%, the highest rate among these five countries. France registered an average annual growth of 6.3%, while Germany saw an average annual growth of 7.6% in its avocado imports. Global demand for avocados exhibited steady growth across multiple countries from 2018 to 2022. Notably, the Netherlands and Spain showed strong average annual growth of 7.8% and 11.9%, respectively, highlighting an expanding market in Europe. This increase underscores avocado's importance in the fruit and vegetable trade, particularly in high-consumption markets like the USA.

Table 1. World demand for avocado (Imports in thousands of tons)

Country	*2018*	*2019*	*2020*	*2021*	*2022*
USA	1038	1105	1116	1213	1133
Netherlands	259	279	351	379	350
Spain	129	136	174	214	202
France	157	165	171	182	201
Germany	94	97	123	122	126
United Kingdom (U.K.)	118	113	122	113	116
Canada	94	95	107	110	98
Chile	24	17	3. 4	72	59
Japan	74	77	80	77	51
Italy	22	24	28	38	47
Others	472	472	536	615	526
World[a]	2480	2581	2841	3135	2909

Note: [a] Includes other importing countries.
Source: Data extracted from Trademap.

Table 2 illustrates various key indicators regarding Peruvian avocado exports during the period 2018–2022. In 2022, the maximum volume of receiving nations for this product was recorded, accounting for a total of 39. In contrast, 2018 had the lowest number, with only 31. These data suggest an average annual increase of 5.9%, underlining an expansion in the diversification of markets for the Peruvian avocado.

At the same time, the number of exporting entities experienced growth, reaching its highest point in 2022 with 276, as opposed to 2018, which presented the lowest record with 189. This trend translates into an average annual growth rate of 10.2%. Regarding the volume exported, 2022 stands out with 584 thousand tons, and an average annual growth of 12.5% is observed in the amount exported during the five-year period.

Regarding the FOB value, 2021 was the year with the highest record, amounting to 1,014 million USD, and exhibiting an average annual growth of 5.3%. Finally, in relation to the average price per kilogram, 2019 was at the top with 2.42 USD / kg. However, during the period evaluated, this indicator showed an average annual decrease of 5.4%. Peruvian avocado export indicators reflect an expansion in market diversification, with growth in both destination countries and exporting companies. This trend reinforces avocado's role as a key product in Peru's agricultural exports.

Table 2. Avocado export indicators from Peru

Year[a]	*2018*	*2019*	*2020*	*2021*	*2022*
Destination countries	31	33	36	34	39
Exporting companies	189	193	213	261	276
Weight in thousand tons	361	313	411	526	584
FOB in millions of USD	723	757	758	1,014	890
Average price USD / kg.	2	2.42	1.84	1.93	1.53

Note: [a] Data taken from Trademap and adapted to the table.

The analysis of FOB exports of Peruvian avocado during the period 2018–2022 is presented in Table 3, indicating significant variations in the main destinations. In 2021, the Netherlands recorded the highest value of imports, amounting to 333 million USD, however, they also experienced

a notable decrease of 20.72% in 2022, reflecting an average annual growth of -0.19%. For their part, exports to the USA reached their zenith in 2022, with a value of USD 229 million. Although a steeper drop was seen in 2020, at 32.19%, 2019 marked an increase of 32.39%, resulting in an average annual growth rate of 6.78%. As for Spain, its import peak occurred in 2021, with 171 million USD, but it suffered a decrease of 22.22% in 2022, while its highest annual growth of 13.91% was registered in 2020. This translates into an average annual growth of 4.87%. In relation to Chile, the highest imports occurred in 2021, valued at USD 120 million, despite experiencing a notable drop of 42.50% in 2022. However, the South American country showed the most considerable increase in 2021, with 166.67%, and an average annual growth rate of 18.35%. Finally, the U.K. reached its highest import volume in 2021, with 75 million USD, although it registered the lowest growth rate in 2022, with a decrease of 20%, and the highest in 2021, with an increase of 17.19%, resulting in an average annual growth of -1.57%. Peruvian avocado exports to main destinations show variations in FOB value, highlighting the importance of maintaining multiple markets to reduce dependency on a few. Diversification emerges as a crucial strategy for sector stability.

Table 3. FOB exports of avocado from Peru in millions of USD

Destinations	*2018*	*2019*	*2020*	*2021*	*2022*
Netherlands	266	252	254	333	264
USA	176	233	158	169	229
Spain	110	115	131	171	133
Chile	35	27	45	120	69
U.K.	65	59	64	75	60
China	30	26	26	27	40
Japan	14	12	21	25	27
South Korea	0	0	11	21	19
Hong Kong	12	10	9	30	16
Russian Federation	3	9	23	23	14
Others[a]	11	15	18	20	21
Total	723	757	758	1,014	890

Note: [a] Includes other importing countries.
Source: Data extracted from SUNAT.

Table 4 shows the evolution of the diversification of avocado export destinations. In 2018, the value of the indicator was 1.906 points, which suggests a moderate concentration. In 2019, the value decreased to 1.868 points, remaining within the range of moderate concentration. In 2020, the value increased to 1.988 points, showing continuity in the moderate concentration of destinations. In 2021, the value experienced a significant increase to 2.377 points, again within the range of moderate concentration. Finally, in 2022, the value of the indicator stood at 2.311 points, indicating a persistence of the moderate concentration. The HHI index for destination diversification reflects moderate concentration throughout the studied period, suggesting that while new markets have been added, deeper diversification is necessary to mitigate concentration risks.

Table 4. Diversification of destinations in Peru

Indicator	*2018*	*2019*	*2020*	*2021*	*2022*
HHI	1.906	1.868	1.988	2.377	2.311

Analyzing the FOB avocado exports of the Peruvian companies in Table 5, Avocado Packing Company stands out as the company that registered the highest value of exports, reaching 92 million USD in 2022. However, it experienced its lowest annual growth in 2020 with a variation of -17.87%. Its largest increase occurred in 2019 with 47.04%, and its average annual growth was 12.57%. On the other hand, Westfalia Fruit Perú registered its maximum export value in 2021, amounting to 79 million USD, and its minimum growth in 2019 with 3.61%. However, the greatest growth occurred in 2020 with 62.20%, averaging an annual growth of 21.85%. Viru, in turn, reached its peak in 2022 with exports valued at 54 million USD, and its minimum growth in 2020 with a variation of -11.38%. The year with the highest growth was 2021 with 64.20%, and its average annual growth was 18.06%. These trends indicate the importance of each company in the global Peruvian avocado market and their different growth rates in the analysis period. Peruvian avocado exporting companies display varied growth rates, with some leading in export volume. These variations highlight competitiveness within the sector and the potential for differentiated growth among companies.

The trajectory of the HHI for Peruvian avocado exporting companies can be seen in Table 6, pointing to a stay diversified. In 2018, the HHI stood at 360, reflecting a broad diversification in the avocado export sector. However, the index experienced a constant increase, reaching 416 in 2021 and culminating in 478 by 2022. This progression shows a scenario where the avocado export market has become slightly concentrated, despite this it cannot be affirmed that a reduced set of companies dominates a majority share of exports. This phenomenon would help the competitiveness of the avocado export market. The HHI index for diversification of exporting companies indicates slight concentration in recent years, yet remains at a significant diversification level, suggesting possible consolidation within the avocado export sector.

Table 5. Avocado exporting companies in Peru (FOB millions)

Company	*2018*	*2019*	*2020*	*2021*	*2022*
Avocado Packing Company	57	84	69	84	92
Westfalia Fruit Perú	36	37	61	79	79
Viru	28	29	26	42	54
Camposol	99	48	56	55	47
Sociedad Agrícola Drokasa	64	60	3. 4	72	47
Agricola Cerro Prieto	46	54	53	53	37
Consorcio de Productores de Fruta	24	44	32	28	27
Corporación Frutícola De Chincha	17	31	21	18	22
Exportadora el Parque Perú	0	7	14	22	19
Agricola Pampa Baja.	12	13	15	28	19
The others	339	348	376	530	444
Total	723	757	758	1014	890

Table 6. Avocado exporting companies in Peru (FOB millions)

Indicator	*2018*	*2019*	*2020*	*2021*	*2022*
HHI	360	321	363	416	478

Table 7 shows that the La Libertad region consistently leads, reaching its maximum in 2021 with 324 million FOB, and showing an average annual growth rate of 1%. Lima, in second place, experienced its highest year in 2021 with 295 million FOB, although its average annual growth was -1.9%. Lambayeque shows an impressive average annual growth of 26.8%, with a peak in 2021 of 201 million FOB. However, the Arequipa region experienced the lowest average annual growth of -10.6%, with its lowest FOB value of 9 million in 2022. The total average annual growth for avocado exports from Peru was 5.3%, highlighting the sustained growth of the industry throughout the period analyzed. La Libertad region remains the leader in avocado exports, followed by Lima and Lambayeque, underscoring these regions' significance in avocado production and economic development within Peru.

Table 7. Exports by the Department of Peru (FOB millions)

Region	*2018*	*2019*	*2020*	*2021*	*2022*
La Libertad	293	240	277	324	305
Lima	198	221	221	295	217
Lambayeque	60	110	161	201	158
Ica	109	146	135	136	139
Ancash	29	22	29	48	49
Piura	11	8	13	14	24
Arequipa	15	17	18	15	9
Ayacucho	6	2	12	9	3
Cuzco	0	0	2	2	3
Huancavelica	0	0	2	3	2
The Others	0	0	0	0	0
Total	723	757	758	1014	890

Table 8 indicates that, in 2018, the HHI was estimated at 2.250, entering the range of moderate concentration. However, the progression of the index rose steadily, with a slight decrease in 2019, reaching 2.708 points in 2022, indicating a high degree of concentration. This systematic increase suggests that certain regions of Peru have gained predominance in exportable production. Despite the global trend towards greater concentration, it is relevant to underline the slight reduction in the HHI in 2019, which indicates a temporary diversification in the regional share of exports. This pattern of increasing concentration, however, is a significant factor for Peru's economic growth, since it implies a regional specialization in certain productive areas. The HHI index for regional diversification indicates increased concentration, suggesting that certain regions have gained prominence in avocado export production, potentially reflecting regional specialization.

Table 8. Diversification of exports by regions of Peru

Indicator	*2018*	*2019*	*2020*	*2021*	*2022*
HHI	2.250	2.302	2.251	2.386	2.708

5. DISCUSSION

In light of these findings, the results clearly align with the broader economic implications and current literature on market diversification in agricultural products. International demand for avocados experienced significant growth from 2018 to 2022, driven by effective diversification in key importing countries such as the USA, the Netherlands, Spain, France, and Germany. This phenomenon corresponds with the expansion of avocado exports, as suggested by studies by Pardo Martínez and León Gómez (2019) and Ospona et al. (2022) in Cauca, Colombia, which highlight diversification as a critical factor in boosting avocado exports.

The analysis of diversification presents a favorable outlook in Latin American countries, particularly in Colombia and Ecuador, where specific studies have identified strategies to diversify both avocado production and exports. Studies by Garzón (2020) in Tolima, Colombia, as well as by Álvarez Flores et al. (2021) and Luna Florin and Rodríguez Caguana (2022) in Ecuador, demonstrate the positive impact of diversification in promoting

exports. The literature suggests that such market expansion may mitigate risks associated with price variability and market concentration, supporting the concept of a more balanced market structure.

In the Peruvian context, the diversification of markets for avocados has increased, aligning with the findings of the aforementioned studies. Peru's main avocado importers, such as the Netherlands, the USA, and Spain, reflect strategies for diversifying trade destinations, consistent with analyses by Halkos et al. (2021), Karahan (2017), Nguyen et al. (2022), and Parteka and Tamberi (2013). This approach has contributed to a moderate concentration in the HHI for Peruvian avocado exports during the 2018–2022 period, suggesting that the diversification strategy has been successful in avoiding high levels of concentration and dependency on specific markets.

Finally, the moderate concentration of destinations for Peruvian avocado is a sign of success in diversification strategies, consistent with practices observed in other Latin American countries (Agosin & Chancí Arango, 2015; Quiñónez Caicedo et al., 2021). These results underscore the importance of combining market expansion with internal economic strengthening to address the challenges of price fluctuations and market concentration in international agricultural product markets.

6. CONCLUSION

The findings indicate that the expansion of the set of destinations to which Peru exports avocados has contributed to mitigating vulnerability to international price fluctuations and external demand shocks. The growth observed in the number of destination countries and exporting companies suggests an active economic transformation, which is aligned with the notion of export diversification as a mechanism for promoting competitiveness and economic resilience. This growth, together with an average annual increase rate of 12.5% in the amount exported, indicates an effective exploitation of the opportunities in the global avocado market.

Given the conspicuous disparities in growth rates among leading exporters, it becomes crucial to scrutinize sectors with heightened potential for value creation, innovation, and enduring competitiveness. The H-O theorem, which underscores nations' inclination to specialize based on their abundant and scarce factors, provides elucidation. As the trend towards increased concentration among exporting firms intensifies, it indicates a market dynamic leaning towards the most endowed and competitively bolstered players, in consonance with this theory.

However, despite the observed growth trajectory, the analysis also highlights the need to consider export diversification within the framework of a broader economic development strategy. The annual average decrease of 5.4% in the price per kilogram and the fluctuations in the main destinations of Peruvian avocado exports underscore the importance of complementary measures, such as infrastructure improvement, investment in human capital, promotion of innovation, and the creation of a favorable business environment.

Finally, the role of the diversification of avocado exports from Peru in strengthening the local economy has been notorious. It has contributed to its resilience against the ups and downs of the international market and has boosted its economic growth. But while diversification has proven its worth, it is not a panacea. Reality shows persistent challenges that require a comprehensive strategy to be overcome.

This comprehensive strategy must go beyond mere export diversification. It must include solid investments in infrastructure, to ensure efficiency in avocado production and transportation. Human capital, which is the heart and mind of any economy, must also be a priority. Training, education, and skills development are vital to maintaining the competitiveness of the avocado sector.

Innovation, for its part, should be encouraged to improve production, packaging, and distribution processes. A healthy business environment, which encourages investment and fair competition, is essential to ensure the sustainable growth of the avocado industry. Therefore, although the diversification of avocado exports has been an effective tool for Peru's economic growth, it is only one piece of the puzzle. For stronger, more sustained growth, a comprehensive strategic approach is required that includes diversification, along with strong investment in infrastructure, human capital, innovation, and a positive business environment.

The study on the diversification of avocado exports in Peru, spanning 2018–2022, exhibits potential constraints including its delimited temporal scope, a predominantly quantitative orientation omitting qualitative insights, an overemphasis on diversification possibly overshadowing other salient factors like climatic or health trends, insufficient exploration behind the declining price per kilogram, the limitations intrinsic to the HHI in capturing market nuances, potential neglect of exogenous determinants like geopolitical shifts or trade pacts, an over-reliance on retrospective data, a concentrated focus on dominant export destinations without adequate attention to emergent markets, and a possible underrepresentation of micro-level operational challenges, all while positing recommendations without comprehensive feasibility assessments.

For a more comprehensive understanding of Peru's avocado export market, future research endeavors might benefit from adopting a mixed-methods approach, integrating both quantitative and qualitative data to capture market dynamics in their entirety. It would be imperative to scrutinize the influence of exogenous factors, such as climatic changes, global health trends, and trade agreements, on export diversification. Furthermore, a deeper dive into emerging markets and potential export destinations beyond the current primary recipients would provide invaluable insights. At the microeconomic level, examining challenges faced by individual farmers, distributors, and logistical stakeholders could paint a more nuanced picture of the industry's complexities.

As a final recommendation, future research could benefit from a deeper exploration of the study's significance and the identification of potential limitations. The current findings provide valuable insights, but a more detailed examination of the broader implications of avocado export diversification would enhance understanding of its long-term effects on Peru's economic resilience. Additionally, further research could explore other influencing factors, such as infrastructure, innovation, and market governance, which could complement the diversification strategy. Addressing

these aspects would strengthen the foundation for future investigations and help shape comprehensive strategies for sustained growth in the avocado export sector.

It is recommended to expand on the limitations of this study to provide a more robust and nuanced conclusion. One notable limitation is the lack of qualitative exploration, which would have provided subjective insights into the development of the industry. Additionally, the data used in the analysis is limited to what has been reported by the official entity up to the date specified in the manuscript, potentially omitting more recent developments. Another constraint is the relatively short timeframe analyzed, which could be extended to include additional years; however, this decision was based on the sector's consolidation in exports during recent years. Lastly, the study focuses exclusively on Peru, without addressing comparisons to other key countries in the global avocado market, which could have provided a more comprehensive perspective on the industry's competitive dynamics.

REFERENCES

Agosin, M. R., & Chancí Arango, L. D. (2015). Export diversification dynamics in Latin America. In *Handbook on trade and development* (pp. 288–309). Edward Elgar Publishing. https://doi.org/10.4337/9781781005316.00022

Alkhathlan, K. A., Alkhateeb, T. T. Y., Mahmood, H., & Bindabel, W. A. (2020). Concentration of oil sector or diversification in Saudi economy: Consequences on growth sustainability. *Entrepreneurship and Sustainability Issues, 7*(4), 3369–3384. https://doi.org/10.9770/jesi.2020.7.4(52)

Al-Otaibi, T., Hawsah, M. A., Alojayri, G., Mares, M. M., Aljawdah, H. M. A., Maodaa, S. N., Al-Shaebi, E. M., Dkhil, M. A., Thagfan, F. A., Al-Quraishy, S., & Abdel-Gaber, R. (2023). In vivo anticoccidial, antioxidant, and anti-inflammatory activities of avocado fruit, Persea americana (Lauraceae), against Eimeria papillata infection. *Parasitology International, 95*, Article 102741. https://doi.org/10.1016/j.parint.2023.102741

Álvarez Flores, J. J., Vite Cevallos, H., Garzón Montealegre, V. J., & Carvajal Romero, H. (2021). Analysis of avocado production in Ecuador for export to international markets from 2008 TO 2018. *Revista Metropolitana de Ciencias Aplicadas, 4*(S 1), 164–172. https://doi.org/10.62452/0qmq0530

Amare, M., Mariara, J., Oostendorp, R., & Pradhan, M. (2019). The impact of smallholder farmers' participation in avocado export markets on the labor market, farm yields, sales prices, and incomes in Kenya. *Land Use Policy, 88*, Article 104168. https://doi.org/10.1016/j.landusepol.2019.104168

Ampofo-Asiama, J., Kizzie-Hayford, N., Dadzie, R. G., Quayson, E. T., Quaye, B., Zebede, A. A., & Konorde, S. (2021). Influence of COVID-19 pandemic on food choices and consumption in Ghana. *Journal of the Ghana Science Association, 20*(2), 23–28. https://ghanascience.gov.gh/wp-content/uploads/2022/05/kizzie_publication-1.pdf

Antitrust Division U.S. Department of Justice. (2024, January 17). *Herfindahl-Hirschman index*. https://www.justice.gov/atr/herfindahl-hirschman-index

Arbulú Ballesteros, M. A., Montes Ninaquispe, J. C., Ludeña Jugo, D. A., Arbulú Castillo, J. C., Aldana, M. L., Pantaleón Santa María, A. L., Arbaiza Godos, K. M., & Ruiz Chacon, S. V. (2024). Diversification of fresh asparagus exports from Perú. *Journal of Educational and Social Research, 14*(2), 258–272. https://doi.org/10.36941/jesr-2024-0041

Bedoya Justo, E., & Julca Otiniano, A. (2020). Characterization of farms producing avocado cultivation in the Moquegua region, Peru. *Idesia (Arica), 38*(3), 59–67. https://doi.org/10.4067/S0718-34292020000300059

Brummitt, C. D., Gómez-Liévano, A., Hausmann, R., & Bonds, M. H. (2020). Machine-learned patterns suggest that diversification drives economic development. *Journal of the Royal Society Interface, 17*, Article 20190283. https://doi.org/10.1098/rsif.2019.0283

Canh, N. P., & Thanh, S. D. (2022). The dynamics of export diversification, economic complexity and economic growth cycles: Global evidence. *Foreign Trade Review, 57*(3), 234–260. https://doi.org/10.1177/0015732520970441

Cheng, F. W., Ford, N. A., Wood, A. C., & Tracy, R. (2023). Avocado consumption and markers of inflammation: Results from the Multi-Ethnic Study of Atherosclerosis (MESA). *European Journal of Nutrition, 62*, 2105–2113. https://doi.org/10.1007/s00394-023-03134-8

Constantin, M., Sapena, J., Apetrei, A., & Pătărlăgeanu, S. R. (2023). Deliver smart, not more! Building economically sustainable competitiveness on the ground of high agri-food trade specialization in the EU. *Foods, 12*(2), Article 232. https://doi.org/10.3390/foods12020232

Damijan, J., Konings, J., & Yergabulova, A. (2020). Increasing market power in Slovenia: Role of diverging trends between exporters and non-exporters. *The World Economy, 43*(5), 1327–1345. https://doi.org/10.1111/twec.12932

Das, S., Hasan, M. R., & Das, D. (2024). Who is the next China? Comparative advantage analysis from top ten apparel exporting nations. *Competitiveness Review, 34*(6), 1127–1154. https://doi.org/10.1108/CR-06-2023-0143

de Oliveira, E. C. S., Dalmau, L. M., de Almeida Costa, C. A. R., de Almeida Junior, L. D., Ballard, C. R., Maróstica Junior, M. R., Stahl, M. A., Grimaldi, R., Witaicenis, A., & di Stasi, L. C. (2023). Dietary intervention with avocado (Persea americana Mill.) ameliorates intestinal inflammation induced by TNBS in rats. *Inflammopharmacology, 31*, 485–498. https://doi.org/10.1007/s10787-022-01128-2

Denvir, A. (2023). Avocado expansion and the threat of forest loss in Michoacán, Mexico under climate change scenarios. *Applied Geography, 151*, Article 102856. https://doi.org/10.1016/j.apgeog.2022.102856

Dulanto Garay, L. E. (2019). *Cultura exportadora y el tipo de exportación de los productores de palta del valle de lacchas, provincia de ocros, áncash, 2019* [Export culture and the type of export of avocado producers from the Lacchas Valley, Ocros province, Ancash, 2019]. [Thesis, Universidad Nacional José faustino Sánchez Carrión]. https://repositorio.unjfsc.edu.pe/bitstream/handle/20.500.14067/3580/LISBETHE%20DULANTO%20GARAY.pdf?sequence=1&isAllowed=y

Durocher, M. (2023). 'Healthy' for whom? 'Healthy' food's effectivities, avocados, and the production of differentiated bodies. *BioSocieties, 18*, 389–409. https://doi.org/10.1057/s41292-022-00274-8

Ericsson, C. I., Pacheco, L. S., Romanos-Nanclares, A., Ecsedy, E., Giovannucci, E. L., Eliassen, A. H., Mucci, L. A., & Fu, B. C. (2023). Prospective study of avocado consumption and cancer risk in U.S. men and women. *Cancer Prevention Research, 16*(4), 211–218. https://doi.org/10.1158/1940-6207.CAPR-22-0298

Escalante Yaulilahua, D. A., Olivera Recuay, J. M., Miranda Galván, M. R., & Venegas Rodriguez, P. B. (2023). Peruvian agro-export sector: A competitiveness study on their main products in the period 2010–2019. *The Journal of Globalization, Competitiveness and Governability, 17*(2), 34–50. https://doi.org/10.58416/GCG.2023.V17.N2.01

Exbrayat, N. (2017). Does trade liberalisation trigger tax competition? Theory and evidence from OECD countries. *The World Economy, 40*(1), 88–115. https://doi.org/10.1111/twec.12405

Food and Agriculture Organization of the United Nations. (n.d.). *Food and agriculture data*. https://www.fao.org/faostat/en/#home

Galván, G. C., & Freedland, S. J. (2023). Avocados: A recipe for good guacamole or lower cancer risk? *Cancer Prevention Research, 16*(4), 187–189. https://doi.org/10.1158/1940-6207.CAPR-23-0031

Garzón, A. (2020). Oportunidad de exportación de aguacate Hass a Francia [Opportunity to export Hass avocado to France]. *Revista Colombiana de Ciencias Administrativas, 2*(1), 78–102. https://doi.org/10.52948/rcca.v2i1.164

Gnangnon, S. K. (2022). Effect of economic complexity on services export diversification: Do foreign direct investment inflows matter? *International Journal of Development Issues, 21*(3), 413–437. https://doi.org/10.1108/IJDI-01-2022-0023

Grebenkin, I. V. (2018). The influence of diversification on innovative activity in regional manufacturing industry. *Economy of Region, 14*(2), 600–611. https://doi.org/10.17059/2018-2-21

Guevara, W., Hidalgo-Alcáza, C., & Rojas, J. L. (2021). Analysis of the Chilean avocado (palta) agroindustry in the international market. *Chilean Journal of Agricultural & Animal Sciences, 37*(1), 54–64. https://doi.org/10.29393/CHJAAS37-6AAWG30006

Guo, Q., Zhu, S., & Boschma, R. (2020). Networks of export markets and export market diversification. *Industrial and Corporate Change, 29*(6), 1381–1397. https://doi.org/10.1093/icc/dtaa031

Halkos, G. E., Kyriazis, N. C., & Economou, E. M. L. (2021). Plato as a game theorist towards an international trade policy. *Journal of Risk and Financial Management, 14*(3), Article 115. https://doi.org/10.3390/jrfm14030115

Hamed, K., Hadi, D., & Hossein, K. (2014). Export diversification and economic growth in some selected developing countries. *African Journal of Business Management, 8*(17), 700–704. https://doi.org/10.5897/AJBM2012.397

Henao-Rojas, J. C., Lopez, J. H., Osorio, N. W., & Ramírez-Gil, J. G. (2019). Fruit quality in Hass avocado and its relationships with different growing areas under tropical zones. *Revista Ceres, 66*(5), 341–350. https://doi.org/10.1590/0034-737x201966050003

Hodey, L. S., Oduro, A. D., & Senadza, B. (2015). Export diversification and economic growth in Sub-Saharan Africa. *Journal of African Development, 17*(2), 67–81. https://doi.org/10.5325/jafrideve.17.2.0067

International Trade Centre (ITC). (n.d.). *Trade map: Trade statistics for international business development. Monthly, quarterly and yearly trade data. Import & export values, volumes, growth rates, market shares, etc.* https://www.trademap.org/

Jebli, M. B., Madaleno, M., Schneider, N., & Shahzad, U. (2022). What does the EKC theory leave behind? A state-of-the-art review and assessment of export diversification-augmented models. *Environmental Monitoring and Assessment, 194*, Article 414. https://doi.org/10.1007/s10661-022-10037-4

Karahan, H. (2017). Export diversification in emerging economies. In Ü. Hacioğlu & H. Dinçer (Eds.*), Global financial crisis and its ramifications on capital markets* (pp. 287–296). Springer. https://doi.org/10.1007/978-3-319-47021-4_21

Kunroo, M. H., & Ahmad, I. (2023). Heckscher-Ohlin theory or the modern trade theory: How the overall trade characterizes at the global level? *Journal of Quantitative Economics, 21*, 151–174. https://doi.org/10.1007/s40953-022-00330-x

Laskiene, D., Saboniene, A., Pekarskiene, I., & Susniene, R. (2017). Export diversification in Lithuanian traditional technology industry. In M. Bilgin, H. Danis, E. Demir, & U. Can (Eds.), *Financial environment and business development* (Vol. 4, pp. 137–153). Springer. https://doi.org/10.1007/978-3-319-39919-5_12

Lee, C.-C., & Ho, S.-J. (2022). Impacts of export diversification on energy intensity, renewable energy, and waste energy in 121 countries: Do environmental regulations matter? *Renewable Energy, 199*, 1510–1522. https://doi.org/10.1016/j.renene.2022.09.079

Lee, C.-C., Yuan, Z., & Ho, S.-J. (2022). How does export diversification affect income inequality? International evidence. *Structural Change and Economic Dynamics, 63*, 410–421. https://doi.org/10.1016/j.strueco.2022.06.010

Lemessa, S. D., Watabaji, M. D., & Yismaw, M. A. (2018). The analysis of entry of Ethiopian enterprises into the export-markets and the associated factors: The duration approach. *Journal of Small Business and Enterprise Development, 25*(2), 241–255. https://doi.org/10.1108/JSBED-01-2018-0003

Li, E., Ma, Y., Wang, Y., Chen, Y., & Niu, B. (2022). Competition among cities for export trade brings diversification: The experience of China's urban export trade development. *PLOS One, 17*(9), Article e0271239. https://doi.org/10.1371/journal.pone.0271239

Lotfi, B., & Karim, M. (2017). Export diversification and economic growth in Morocco: An econometric analysis. *Applied Economics and Finance, 4*(6), 27–35. https://doi.org/10.11114/aef.v4i6.2673

Luna Florin, Y. C., & Rodríguez Caguana, T. H. (2022). Análisis del comercio internacional del aguacate Hass ecuatoriano, producción agrícola y la exportación del 2018–2021 [Analysis of the international trade of ecuadorian Hass avocado, agricultural production and exports from 2018–2021]. *Revista Carácter, 10*(1). https://upacifico.revistasjournals.com/index.php/up/article/view/112

Massini, S., Piscitello, L., & Shevtsova, Y. (2023). The complementarity effect of exporting, importing and R&D on the productivity of Ukrainian MNEs. *International Business Review, 32*(3), Article 102055. https://doi.org/10.1016/j.ibusrev.2022.102055

McIntyre, A., Xin Li, M., Wang, K., & Yun, H. (2018). *Economic benefits of export diversification in small states* (IMF Working Paper No. 18/86). https://doi.org/10.5089/9781484351017.001

Ministry of Economy and Finance. (2021). *Arancel de aduanas 2022* [Customs tariff 2022]. https://cdn.www.gob.pe/uploads/document/file/2676619/DS404_2021EF.pdf.pdf

Mokria, M., Gebrekirstos, A., Said, H., Hadgu, K., Hagazi, N., Dubale, W., & Bräuning, A. (2022). Fruit weight and yield estimation models for five avocado cultivars in Ethiopia. *Environmental Research Communications, 4*, Article 075013. https://doi.org/10.1088/2515-7620/ac81a4

Monge, A., Stern, D., Cortés-Valencia, A., Catzín-Kuhlmann, A., Lajous, M., & Denova-Gutiérrez, E. (2023). Avocado consumption is associated with a reduction in hypertension incidence in Mexican women. *British Journal of Nutrition, 129*(11), 1976–1983. https://doi.org/10.1017/S0007114522002690

Mora, J., & Olabisi, M. (2023). Economic development and export diversification: The role of trade costs. *International Economics, 173*, 102–118. https://doi.org/10.1016/j.inteco.2022.11.002

Nazarczuk, J. M., Umiński, S., & Gawlikowska-Hueckel, K. (2018). The role of specialisation in the export success of Polish counties in 2004–2015. *Entrepreneurial Business and Economics Review, 6*(2), 91–109. https://doi.org/10.15678/EBER.2018.060205

Nguyen, P. C., Nguyen, B., & Thanh, S. D. (2022). The importance of export diversification for national entrepreneurship density. *Structural Change and Economic Dynamics, 62*, 114–129. https://doi.org/10.1016/j.strueco.2022.05.003

Oliveira, G. S., da Silva, M. T. S., Dreyer, T. C., Schneider, C. R., & Nicoletti, M. F. (2017). Analysis of the indices of concentration and inequality of the Brazilian exports of Erva-mate (Ilex paraguariensis St. Hill). *Espacios, 38*(44). https://www.revistaespacios.com/a17v38n44/a17v38n44p18.pdf

Ospina Parra, C. E., Garavito, L. V., & Correa, D. L. (2022). Hass avocado value chain: Interinstitutional process towards exportation in Cauca, Colombia. *RIVAR, 10*(28), 235–252. https://doi.org/10.35588/rivar.v10i28.5333

Pardo Martínez, G. E., & León Gómez, N. L. (2019). *Proyecto productivo de aguacate hass tipo exportación* [Export-type Hass avocado productive project, Master's thesis, Universidad Piloto de Colombia]. https://repository.unipiloto.edu.co/handle/20.500.12277/5038

Parteka, A., & Tamberi, M. (2013). Product diversification, relative specialisation and economic development: Import-export analysis. *Journal of Macroeconomics, 38*, 121–135. https://doi.org/10.1016/j.jmacro.2013.09.011

Quiñónez Caicedo, L. N., Quiñónez Cabeza, B. M., Custode Quiñónez, J. A., & Rodríguez Lara, J. J. (2021). Geographical diversification of Ecuadorian mango exports. *Revista de Ciencias Sociales, 27*(3), 432–442. https://www.redalyc.org/journal/280/28068276033/html/#:~:text=De%20acuerdo%20a%20cifras%20del,igual%20que%20en%20al%20menos

Rivera, C., & Pisconte, C. (2020). *Distribución física internacional en relación a las exportaciones de palta de las empresas Peruanas 2018* [International physical distribution in relation to avocado exports from Peruvian companies 2018] [Bachelor's thesis, Technological University of Peru]. https://alicia.concytec.gob.pe/vufind/Record/UTPD_5caefa60828e12b931772b0f8e98aad2/Details

Rodríguez Vázquez, F. (2016). Commitments for a diversified economy: The insertion of Mendoza grape (Argentina) in foreign markets (1907–1930). *América Latina En La Historia Económica, 23*(1), 152–183. https://www.scielo.org.mx/pdf/alhe/v23n1/2007-3496-alhe-23-01-00152.pdf

Sangita, S. (2018). India's exports through the lens of diversification. In *Changing the Indian economy: Renewal, reform and revival* (pp. 21–35). Elsevier. https://doi.org/10.1016/B978-0-08-102005-0.00002-2

Sorroche-del-Rey, Y., Piedra-Muñoz, L., & Galdeano-Gómez, E. (2023). Interrelationship between international trade and environmental performance: Theoretical approaches and indicators for sustainable development. *Business Strategy and the Environment, 32*(6), 2789–2805. https://doi.org/10.1002/bse.3270

Stadnicki, J., & Oksanych, O. (2022). International trade theories and decision-making areas in the field of development strategy. *WSEAS Transactions on Business and Economics, 19*, 521–530. https://doi.org/10.37394/23207.2022.19.47

National Superintendence of Customs and Tax Administration (SUNAT). (n.d.). *Consulta de declaración de importación* [Import declaration query]. https://www.aduanet.gob.pe/servlet/HPSGDec10A

Swathi, M., & Sridharan, P. (2022). Determinants of export diversification: Evidence from fractional logit estimation model. *Foreign Trade Review, 57*(2), 160–177. https://doi.org/10.1177/00157325211072922

Tejeda-Villanueva, A., Blanco-Jiménez, M., & Guerra-Moy, S. (2019). Factores que impulsan las importaciones de las empresas de alimentos procesados, mejorando su competitividad [Factors that drive imports by processed food companies, improving their competitiveness]. *Investigación Administrativa, 48*(124). https://doi.org/10.35426/IAv48n124.02

Udbye, A. (2017). The United States free trade agreements: How successful have they been? *The International Trade Journal, 31*(5), 457–478. https://doi.org/10.1080/08853908.2017.1362365

Vivoda, V. (2022). LNG export diversification and demand security: A comparative study of major exporters. *Energy Policy, 170*, Article 113218. https://doi.org/10.1016/j.enpol.2022.113218

Yllescas-Rodríguez, P. M., Espinoza-Casco, R. J., & Macha-Huamán, R. (2021). Diversification of the exportable offer and Peruvian exports. *Revista Arbitrada Interdisciplinaria Koinonía, 6*(1), 322–341. https://doi.org/10.35381/r.k.v6i1.1510

Young, A. O. (2022). Specialization versus diversification as alternative strategies for sustainable growth in resource-rich developing countries. Case of Nigeria. *Studia Universitatis "Vasile Goldis" Arad — Economics Series, 32*(3). https://doi.org/10.2478/sues-2022-0011