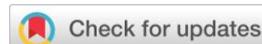


RESEARCH ARTICLE



Competitive Dynamics and Factors Affecting Indonesian Black Tea Exports in the ASEAN Market

Putra Irwandi¹, Ninda Novita¹ and Aulia Adetya²¹Agribusiness Study Program, Faculty of Agriculture and Forestry, Satya Terra Bhinneka University, North Sumatra 20128, Indonesia²Department of Agribusiness, Faculty of Economics and Management, IPB University, West Java 16680. Indonesia

Article History

Received:

13 January 2025

Revised:

19 May 2025

Accepted:

31 July 2025

Published:

31 July 2025

Keywords

Black tea,
Competitiveness, Gravity

ABSTRACT

Indonesian black tea has a unique taste and quality, but its export dynamics in the Association of Southeast Asian Nations (ASEAN) market are influenced by several factors, such as competition from other producing countries, quality comparisons, price fluctuations, and logistical challenges. This study examines the competitiveness of Indonesian black tea exports to ASEAN using panel data from 2010 to 2023. Data from Trademap with HS code 092030 for black tea and macroeconomic data from the World Bank were analyzed using Revealed Comparative Advantage (RCA) and Dynamic Revealed Comparative Advantage (DRCA). Additionally, a gravity model was used to assess the impact of economic and geographical variables on export volume. The results show fluctuating competitiveness, with a declining trend in recent years. DRCA analysis reveals a shift toward lower competitiveness compared to other tea-exporting countries. The gravity model shows that economic distance, inflation in other countries do not have a significant effect on Indonesia's export volume, while the Gross Domestic Product (GDP) of other countries, population, and exchange rate of the destination country, and economic growth have a significant effect on export volume. The study suggests policy implications for expanding market share, improving product quality at the farm level, and strengthening international certifications to enhance competitiveness.

Introduction

Black tea is one of Indonesia's leading export commodities that has an important role in meeting the demand for black tea in the global market (Kusnaedi, 2024). World tea consumption has increased by 3.5% over the past decade, and is projected to grow by 2% in the next decade (Kusnaedi & Ernah, 2024; Rita et al., 2019). This shows great potential for Indonesia to increase its black tea exports in the international market. Indonesia's black tea commodity has long been one of the vital sectors in the country's economy.

The black tea commodity in Indonesia plays an important role in the economy, especially in the agricultural and export sectors. In 2020, Indonesia's agricultural sector contributed around 14.27% to the national Gross Domestic Product (GDP), with the plantation subsector contributing around 4.20% of that GDP. Although black tea's contribution to the agriculture sector's GDP is not as large as other commodities such as palm oil, coffee, or cocoa, tea remains a significant export commodity. In 2022, Indonesia's tea exports reached a value of around USD 89.9 million, with a volume of around 44,979 tonnes (BPS, 2022).

In comparison, Indonesia's other major plantation commodities have larger export contributions. Palm oil, for example, accounted for around 74.48% of total plantation commodity exports in 2021. Rubber followed with a contribution of 10.15%, coconut 4.06%, cocoa 2.97%, and coffee 2.10%. Although black tea's contribution to agriculture sector GDP and export value is smaller than other commodities such as palm oil,

Corresponding Author: Putra Irwandi  putrairwandi@satyaterraabhinneka.ac.id  Agribusiness Study Program, Faculty of Agriculture and Forestry, Satya Terra Bhinneka University, Medan, North Sumatra, Indonesia

© 2025 Putra et al. This is an open-access article distributed under the terms of the Creative Commons Attribution-ShareAlike 4.0 International (CC BY-SA 4.0) license, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited and any derivative works are distributed under the same license.

Please consider the environment before printing this article!

coffee, and cocoa, the tea industry still plays an important role in the Indonesian economy. The industry not only contributes foreign exchange through exports, but also provides employment for many people, especially in tea-producing areas such as West Java and Central Java (BPS,2022).

Indonesia is one of the largest tea producing countries in the world, along with countries such as China, India, and Sri Lanka. Although Indonesian black tea is well-known in the domestic and international markets for its good quality, Indonesia faces great challenges in maintaining its competitiveness, especially in the Association of Southeast Asian Nations (ASEAN) region. Since 2010. ASEAN countries, such as Malaysia, Thailand, the Philippines, Vietnam, and Singapore, have been the main destinations for Indonesia's black tea exports. These countries have a growing demand for tea in line with economic growth and changes in the lifestyle of a more modern society. Tea consumption in ASEAN countries is largely driven by a rising middle class, which is turning to higher quality consumer products. Although the ASEAN market offers great opportunities for Indonesia's black tea exports, there are various challenges that the Indonesian tea industry must face (Chica et al., 2024; Zuhdi et al., 2022).

Indonesia's tea industry, introduced by the Dutch in the 17th century, began with the establishment of the first tea garden in Java in 1684. The industry flourished during the colonial era with large plantations in highland regions such as West Java, East Java, and Sumatra. After independence in 1945, tea remained a key export commodity, growing despite challenges such as global price fluctuations and competition. In the 1980s and 1990s, the government modernized production by improving farming techniques and product quality. Today, Indonesia's tea industry has diversified, with black, green, and oolong tea increasingly in demand both domestically and internationally. The growing awareness of healthy lifestyles has boosted Indonesia's global tea exports, particularly to Asia, Europe, and the Americas. Overall, Indonesia's tea industry has evolved from colonial times to the present day, and continues to adapt to market changes and increasingly diverse consumer demands.

The existence of black tea producers in the world adds to the complexity of competition faced by Indonesia in maintaining its share of the black tea export market. With the increasing demand for tea in ASEAN countries, competition among tea producing countries has intensified. This requires Indonesia to improve product quality and cost efficiency, as well as understand the changing trends of tea consumption in these countries. Therefore, understanding the competitive dynamics of Indonesian black tea in the ASEAN market is very important to strengthen the country's competitiveness in the global market. The quantity and value of Indonesian black tea fluctuate from year to year.

Based on data from International Trademap, the export value and quantity of Indonesian black tea in the Asean market fluctuate. In the period 2010 to 2023. Indonesian black tea exports showed interesting dynamics, both in terms of value and quantity. During the early period (2010 to 2015), both export value and export quantity were relatively stable, with export value hovering around USD 5,000 to 6,000 thousand and export quantity stable at around 40.000 to 50.000 tonnes per year. However, from 2016 to 2019, there was a significant spike in the export value of Indonesian black tea. While the export quantity did not see a sharp increase, the export value saw a rapid rise in 2019, peaking at around USD 25,000 thousand. This may be due to the increased demand for high-quality tea from Indonesia in the global market, as well as a possible increase in tea prices. After 2019, although the value of Indonesian black tea exports showed a decline, the export volume or quantity tended to decrease after reaching a peak in 2020. In the following years (2021-2023), both the value and quantity of Indonesia's black tea exports experienced a sharp decline. This decline could be due to various factors, including changing global market conditions, competition from other tea-producing countries, or even fluctuations in tea prices in the international market that affect the competitiveness of Indonesian tea products. Overall, despite the decline in export volume, the value of Indonesian tea exports experienced a surge, indicating that Indonesian tea products are still able to compete in the global market, especially in the premium tea market segment.

The ASEAN market is a very strategic market for Indonesian black tea exports. Countries in ASEAN have different market characteristics, but in general have a tendency to consume large amounts of tea. Malaysia, Singapore, and Thailand are known to have relatively high tea consumption, both in the form of packaged tea and tea bags. Singapore, as a market with high purchasing power, is an important destination for exports of premium quality black tea, while countries such as Vietnam and the Philippines tend to be more concerned with competitive pricing. However, despite ASEAN being a promising market, the dynamics of the tea market in the region continue to evolve. For example, tea consumption trends in Singapore and Malaysia are more towards premium tea and herbal tea products, which opens up opportunities for Indonesian tea producers

to improve product quality and differentiation. Meanwhile, in the Philippines and Vietnam, demand for more affordable tea is increasing, which means Indonesia needs to present products at more competitive prices while maintaining quality. This suggests that Indonesia needs to conduct a more in-depth analysis to determine its comparative advantage in the ASEAN tea market, as well as to identify factors that affect export volumes. The use of Gravity analysis models, which take into account factors such as GDP, geographical distance, and trade agreements between countries, would be helpful to understand why certain countries prefer tea from Indonesia compared to other countries.

One important factor affecting tea trade among ASEAN countries is the free trade agreements in place in the region. The ASEAN Economic Community (AEC), which came into effect in 2015, aims to create a single market and a more efficient production base in the ASEAN region. This agreement allows goods produced in ASEAN member countries, including tea, to be traded at lower tariffs or even tariff-free between member countries. However, while the AEC benefits Indonesia in terms of greater market access, trade policies implemented by export destination countries also significantly affect the competitiveness of Indonesian tea. For example, changes in import policies or tariffs imposed by ASEAN countries can directly affect the price and volume of Indonesian tea exports.

In addition external factors such as changes in world tea prices, both from competitor countries and from currency exchange rate fluctuations, can also affect the competitiveness of Indonesian tea in the ASEAN market. The dynamics of competitor countries, such as China, India, and Vietnam, play a significant role in shaping the competitiveness of Indonesian black tea. These countries, with their large-scale production capabilities and lower production costs, often present formidable challenges for Indonesian producers. Moreover, their favorable trade policies and well-established tea industries allow them to maintain a competitive edge in the ASEAN region.

An increasingly important factor that influences the competitiveness of Indonesian tea in global markets is the rise of Non-Tariff Measures (NTMs), which have gained prominence over traditional tariffs in recent years. NTMs, including sanitary and phytosanitary measures, quality standards, and labeling requirements, can create significant barriers to entry for Indonesian tea into international markets. Unlike tariffs, NTMs can be more complex and restrictive, directly impacting the cost, accessibility, and marketability of Indonesian tea. As these measures become more stringent, Indonesian producers face higher compliance costs, which may undermine their price competitiveness, especially in comparison to countries with lower regulatory burdens. This trend is evident in the tea industries of countries like India and China, where policies may offer more favorable conditions for local producers to access international markets.

The social and environmental implications of these competitive dynamics are profound. In the race to remain competitive, Indonesian tea producers may adopt practices aimed at reducing production costs, which could have adverse effects on both environmental sustainability and social welfare. For instance, the use of harmful chemicals in tea cultivation or poor labor conditions may increase as producers strive to maintain profit margins. Over time, such practices could lead to significant environmental degradation, including soil erosion, water contamination, and biodiversity loss. Furthermore, the pressure to remain competitive may result in the exploitation of workers, with inadequate wages and poor working conditions becoming more common in the tea production sector. These social and environmental consequences highlight the need for sustainable practices and ethical labor standards to be integrated into the competitiveness strategies of Indonesian tea producers, ensuring that economic growth does not come at the expense of long-term social and environmental health. Therefore, it is important to analyze and understand how these factors interact with each other in shaping the dynamics of tea trade in the region. Facing increasing competition, analyzing the competitiveness of Indonesian black tea is a crucial step to understand Indonesia's position in the ASEAN market. This is in line with findings showing that the export price of products can have a significant effect on demand and competitiveness in the international market (Elpawati & Utama 2021). When world tea prices increase, Indonesian tea producers may be able to capitalise on this situation to increase their profit margins, but if prices fall, their competitiveness may be jeopardised, especially if production costs remain high. Not only that, when the rupiah weakens against other currencies, the price of Indonesian tea on the international market becomes more competitive, which may increase export volumes. Conversely, if the rupiah strengthens, Indonesian tea becomes more expensive for foreign buyers, which may reduce competitiveness (Wardhani, 2023). Research shows that the competitiveness of Indonesian tea products in the ASEAN market is also influenced by trade and tariff policies implemented by partner countries, which can affect the selling price and accessibility of products (Yafi & Adyanti 2024). Using the RCA and DRCA methods, Indonesia can evaluate whether it still has an advantage in tea trade compared to competing countries. Meanwhile, the

Gravity model will help to better understand the factors that influence Indonesia's tea trade relationship with ASEAN countries, and how these factors can be utilized to increase export volumes. Overall, this study aims to provide a clearer picture of Indonesia's position in the ASEAN tea market, as well as to identify opportunities and challenges, so as to suggest more appropriate policies and strategies for the development of the tea sector in Indonesia.

This study offers several novelties that distinguish it from previous studies, both in terms of the methods used and the context analyzed. One key novelty is the use of a combination of three analytical methods- Revealed Comparative Advantage (RCA), Dynamic Revealed Comparative Advantage (DRCA), and Gravity model- simultaneously to evaluate the competitiveness of Indonesian black tea in the ASEAN market. The RCA method provides an overview of Indonesia's comparative advantage in tea trade, while DRCA measures changes in competitiveness over time, and the Gravity model is used to analyze the influence of macroeconomic factors such as geographical distance, GDP, and trade policy on tea trade flows between countries. The combination of these three methods provides a more holistic and comprehensive approach, which is rarely applied in the analysis of Indonesian tea commodity trade (Karosekali, 2021). The novelty with combination of RCA, DRCA, and the Gravity Model provides a comprehensive framework for analyzing and enhancing the international market potential of Indonesian black tea. By focusing on export strategies, product innovation, and marketing in line with global consumption trends, Indonesian tea producers can effectively navigate the complexities of the international market and capitalize on their comparative advantages (Ristanović et al., 2020; Shahriar et al., 2019).

In addition, this study specifically analyzes the dynamics of Indonesia's tea trade in the ASEAN market during the period 2010-2023. which is an important period in the context of regional economic policy changes, such as the implementation of the ASEAN Economic Community (AEC) in 2015. The AEC opens wider market access for Indonesia, but also increases competition from other tea-producing countries in the region. This study provides new insights into how free trade policies and multilateral agreements affect the competitiveness of Indonesian tea in the ASEAN market. The focus on countries such as Malaysia, Thailand, the Philippines, Vietnam, and Singapore also provide a more in-depth perspective on the varied trends in tea consumption, such as increased demand for premium tea in Singapore and Malaysia, and more sensitive pricing in the Philippines and Vietnam.

In terms of research gaps, this study fills several gaps that are still rarely discussed in the existing literature. Most previous studies have relied on only one method of competitiveness analysis, such as RCA or the Gravity model, but not many have combined the three to obtain a more comprehensive picture. Furthermore, while there are many studies on Indonesia's commodity trade in general, few have focused on analyzing Indonesia's tea market in the ASEAN region by taking into account the dynamics that have occurred over more than a decade. Overall, this study makes a significant contribution to the understanding of the competitive dynamics of Indonesian black tea in the ASEAN market. By incorporating comprehensive analytical methods and paying attention to trade policy as This study offers a new perspective that is highly relevant for Indonesia's export policy in the tea sector.

Research Methodology

This approach was chosen to measure and analyze Indonesia's competitiveness in black tea exports to ASEAN countries, namely Malaysia, Vietnam, Singapore, Philippines, and Thailand, as well as to understand the economic factors that influence the black tea trade. This research focuses on secondary data analysis, specifically international trade data and economic variables of Indonesian black tea export destination countries from 2010 to 2023 with HS code 092030. The main data sources in this study are international trade data of Indonesian black tea and economic data of export destination countries. Indonesian black tea trade data is obtained from the United Nations Comtrade Database or relevant international trade data. Meanwhile, economic data, such as GDP, population, inflation, economic growth, and economic distance between countries, were taken from various public sources, including the World Bank, International Monetary Fund (IMF), and ASEANstats. The data used covers the period 2010 to 2023.

This Research it'ss important to note that the year 2020 witnessed the onset of the COVID-19 pandemic, which significantly disrupted global trade, including the black tea industry. The pandemic created substantial shifts in trade patterns, supply chains, and economic activities, particularly in the export-import sector. Therefore, the analysis of competitiveness and economic factors during this period requires consideration of the pandemic's impact, which may have distorted usual trade trends and economic indicators. This study

takes into account these extraordinary conditions, particularly in the data from 2020 onward, when trade flows were heavily influenced by the pandemic.

This research involves two main approaches in measuring Indonesia's competitiveness in black tea exports, namely Revealed Comparative Advantage (RCA) and Dynamic Revealed Comparative Advantage (DRCA), as well as analyzing the factors affecting Indonesia's black tea trade through the Gravity Model.

Revealed Comparative Advantage (RCA)

RCA is an index developed by Balassa (1965). This method is used to measure a country's comparative advantage in producing and exporting certain products. This index compares the proportion of exports of a product to the country's total exports with the proportion of exports of the same product in the global market. In other words, RCA shows how specialized a country is in producing and exporting a particular product compared to other countries. A high RCA value indicates that the country has a strong comparative advantage in the product, so it can be used as a reference to determine the specialization of international trade. The formula used in this calculation is:

$$RCA = (X_{ij}/X_{it}) / (W_{ij}/W_t) \dots\dots\dots(1)$$

Description =

- X_{ij} : Export value of commodity j from country i
- X_{it} : Export value of all commodities of country i
- W_{ij} : World export value of commodity j
- W_t : Export value of all world commodities

The RCA index developed by Balassa has a range of values between 0 and infinity. If the RCA value of a product is more than 1, then Indonesia has a larger market share for that product at the global level compared to other countries. In other words, Indonesia has a comparative advantage in producing and exporting the product).

Dynamic Revealed Comparative Advantage (DRCA)

The RCA index introduced by Balassa in 1965 has limitations in explaining changes in a country's comparative advantage over time. To overcome this, Edwards & Schoer (2002) developed a new index called DRCA. The DRCA index (is a further development of the RCA index designed to analyze changes in comparative advantage dynamically. Whereas the RCA index only provides a static picture at a point in time, the DRCA index allows us to see how a country's comparative advantage changes over time. This is done by calculating the growth of the RCA index, which shows whether a country's comparative advantage is increasing, decreasing, or remaining stable. This is very useful for analyzing trade policies, industrial development strategies, and trends globalization. The formula used to calculate DRCA is as follows:

$$DRCA = \frac{\Delta RCA}{RCA_j} = \frac{\Delta \left(\frac{X_{ij}}{\sum_j X_{ij}} \right)}{X_{ij} / \sum_j X_{ij}} - \frac{\Delta \left(\frac{X_{wj}}{\sum_j X_{wj}} \right)}{X_{wj} / \sum_j X_{wj}} \dots\dots\dots(2)$$

Description =

- DRCA : Dynamic competitiveness
- ΔRCA : Comparative advantage of commodity
- RCA_j : Comparative advantage of commodity j of a country
- X_{ij} : Total exports of commodity j from Country i (USD)
- X_{wj} : Total exports of commodity j from all countries (world) (USD)
- $\sum_j X_{ij}$: Total exports of all commodities from country i (USD)
- $\sum_j X_{wj}$: Total exports of all commodities from all countries (world) (USD)

In the competitiveness analysis conducted by DRCA, there is a placement matrix developed by Edwards & Schoer (2002). This matrix serves as a visual tool that enables an in-depth understanding of the dynamics of comparative competitiveness among countries. By utilizing the matrix, we can obtain a more comprehensive picture of a country's

position in the context of global competition so as to formulate appropriate policies to improve national competitiveness. The export market position matrix is described in Table 1 as follows:

Table 1. Export Market Position Matrix

RCA	Commodity Share Growth		World Share Growth	Export Market Position	Export Evaluation
Up	↑	>	↑	<i>Rising stars</i>	<i>Successful restructuring</i>
	↑	>	↓	<i>Falling stars</i>	<i>Poor restructuring</i>
	↓	>	↓	<i>Lagging retreat</i>	<i>Poor restructuring</i>
Down	↓	<	↑	<i>Lost opportunity</i>	<i>Poor restructuring</i>
	↓	<	↓	<i>Leading retreat</i>	<i>Successful restructuring</i>
	↑	<	↑	<i>Lagging opportunity</i>	<i>Poor restructuring</i>

Source: Edwards & Schoer (2002).

Gravity Model

This study uses gravity model as an analytical framework to identify factors affecting the export value black tea. Gravity model, is an approach in international economics used to predict the flow of trade between two countries or regions (Li et al., 2008). The basic concept of the model is inspired by the law of gravity in physics, which states that the gravitational force between two objects is directly proportional to their masses and inversely proportional to the square of the distance. In the context of economics, the gravity model of trade states that trade flows between two countries or regions are a function of the size of their economies (usually measured by Gross Domestic Product or GDP) and the geographical distance between them. The model assumes that the volume of trade between two countries will be greater the larger their economies are (measured by GDP) and the closer the geographical distance between them. Therefore, the gravity model is chosen in this study because it is able to capture the effect of economic size, and other factors on international trade patterns. (The variables used in this model are selected based on international economic theory and previous empirical studies. These variables together are expected to explain variations in the value of Indonesian black tea exports in the ASEAN market.

The research model used in gravity analysis is estimated using three method approaches, namely Pooled Least Square (PLS), Fixed Effect Model (FEM), and Random Effect Model (REM) with the help of Stata 17 software.

1. PLS Method: is a simple method by combining all data. However, it has the disadvantage of biased parameter estimation. This is because PLS is unable to distinguish between different observations in the same period or vice versa, unable to distinguish between the same observations in different periods.
2. FEM method: is an approach that arises when there is a correlation of the error component with the explanatory/independent variables or it can be said to have a non-random nature pattern. The individual and time error components of this assumption make it part of the intercept. This model assumes that each individual unit (cross section) has its own intercept but with a constant slope between individuals. The estimation of this model uses the OLS method, so it is necessary to test classical assumptions to obtain BLUE results. With FEM, unbiased estimation results are obtained but the model becomes inefficient.
3. REM: occurs when there is no correlation between the residual or error term and the regressor or independent variable. The error components of the individual and time effects of this assumption make it included in the error. The intercept of this model shows the average value of the cross sectional intercept and time series. The estimation results with the REM model use the Generalized Least Square (GLS) method, so that the classical assumptions are met from the transformed model. With REM, estimation results are obtained which may be biased but more efficient.

The best model is selected with the aim of determining which model has the best approach. Therefore, the following tests are required:

1. Chow test: Statistical testing to determine the best model between the PLS model or the FEM is using the chow test. The hypothesis is as follows:

H0: Pooled Least Square (PLS)

H1: Fixed Effect Model (FEM)

When the probability < the real level ($\alpha = 5\%$), then reject H0. This proves that the best model is the FEM model. Conversely, if the probability > real level ($\alpha = 5\%$), it means not rejecting H0 so that the best model chosen is PLS.

2. Hausman Test: Statistical testing in determining the best model between the FEM or REM is called the Hausman test. In this test, the hypothesis is formulated as follows:

H0: Random Effect Model (REM)

H1: Fixed Effect Model (FEM)

When the probability of the hausman test is significant with the probability criterion < the real level ($\alpha = 5\%$), then reject H0. So the best model of the estimation results is FEM. Conversely, if the results of the Hausman test are not significant or the probability > real level ($\alpha = 5\%$), it can be concluded that reject H0 so that using REM as the best method.

3. Langrange Multiplier (LM) Test: Statistical testing by selecting the best model between the PLS model and the REM, known as the LM test. The test can be formulated hypothesis as below:

H0: Pooled Least Square (PLS)

H1: Random Effect Model (REM)

When the LM test results produce a probability value < real level ($\alpha = 5\%$), then reject H0. This indicates that the best model chosen is REM. Conversely, if the probability value > real level ($\alpha = 5\%$), then do not reject H0 so that the PLS model is chosen as the best model.

Furthermore, testing the assumptions of the model has the aim of seeing the effect of the selected variables on the variables under study whether it is real or other purposes to ensure whether it produces the best model. Testing model assumptions in static panel data regression can use econometric criteria, namely: normality test, multicollinearity test, autocorrelation test, and Heteroscedasticity Test. The final stage is the model fit test to test the significance of the variables in the study. The model analyzes the need to test the various hypotheses to be carried out. Statistically, hypothesis testing has the aim of knowing the effect of the variables studied whether real or not which can be seen through the T-Statistic Test, F-Statistic Test, and Coefficient of Determination Test.

Mathematically, the gravity model of this study is:

$$\ln(Trade_{it}) = \beta_0 + \beta_1 GDP_{(jt)} + \beta_2 POP_{(jt)} + \beta_3 EXC_{(jt)} + \beta_4 DIS_{(jt)} + \beta_5 INF_{(jt)} + \beta_6 GROW_{(jt)} + \varepsilon_{ij}..(3)$$

Description =

$Trade_{it}$: Volume export Indonesia

$GDP_{(jt)}$: GDP destination country in year t

$POP_{(jt)}$: Population of destination country in year t

$EXC_{(jt)}$: Exchange rate of destination country in year t

$DIS_{(jt)}$: Economic distance of destination country in year t

$INF_{(jt)}$: Destination country inflation in year t

$GROW_{(jt)}$: Economic growth of destination country in year t

β : Intercept

ε : Error term

Results and Discussion

Competitiveness Analysis RCA Approach

To understand how Indonesia is positioned in the face of this competition, one method used is the RCA, which measures Indonesia's competitiveness in black tea trade compared to other producing countries. RCA provides an overview of whether Indonesia has a comparative advantage in producing and exporting black tea to ASEAN countries. In addition, the DRCA method is used to look at changes in Indonesia's competitiveness from year to year, as well as the factors that cause such fluctuations. The competitiveness of Indonesia's exports to ASEAN market destination countries is seen from various advantages seen from the

resulting RCA value. The RCA value of black tea to the ASEAN market is not a single value, but a series of values that describe the comparative advantage of various countries in exports. RCA measures how large a country's share of black tea exports is compared to the share of black tea exports in the global market. Countries with an RCA of more than 1 are considered to have a comparative advantage in black tea exports. Some countries may have high RCA values for black tea due to favorable climatic and soil conditions, as well as expertise in the production and trade of this commodity. Individual country RCA values may fluctuate over time, influenced by factors such as changes in agricultural technology, trade policies, and global demand dynamics. To understand the position of Indonesian black tea in the ASEAN market, it is necessary to analyze the RCA values of various export destination countries, which will show the pattern of comparative advantage in the black tea market in the ASEAN regional area.

Table 2. The RCA Value of Indonesian Black in the ASEAN Market

No.	Period	RCA					
		Indonesia	Malaysia	Vietnam	Singapore	Philippines	Thailand
1.	2010	0.235	0.041	0.022	0.005	0.059	2.847
2.	2011	0.242	0.033	0.018	0.006	0.068	3.277
3.	2012	0.385	0.050	0.017	0.005	0.072	1.710
4.	2013	0.117	0.023	0.010	0.004	0.046	1.851
5.	2014	0.065	0.003	0.011	0.000	0.051	1.897
6.	2015	0.307	0.101	0.014	0.000	0.073	2.755
7.	2016	0.090	0.038	0.012	0.000	0.074	2.760
8.	2017	0.344	0.148	0.015	0.001	0.006	3.066
9.	2018	0.555	0.080	0.130	0.008	0.018	2.767
10.	2019	1.203	0.107	0.082	0.045	0.109	2.214
11.	2020	1.351	0.101	0.070	0.049	0.180	2.762
12.	2021	1.222	0.075	0.057	0.041	0.140	2.792
13.	2022	1.250	0.065	0.073	0.052	0.170	2.631
14.	2023	0.881	0.088	0.076	0.015	0.122	2.858
Average		0.589	0.068	0.043	0.017	0.085	2.585

Source: Data processed by the author, 2024.

Based on the table, it shows that Indonesia's RCA value is in a fairly good range. The average RCA value of Indonesian black tea is 0.589 which is in the enough. As the RCA of 0.589 is less than 1. this means that Indonesia is reasonably competitive, although not as strong as the world's major tea producing countries. This RCA value shows that Indonesia is in a good position to improve its competitiveness, but there are still opportunities for improvement to be more competitive in the global market. To further improve competitiveness, Indonesia can focus on improving quality, product diversification, and marketing strategies to enlarge Indonesia's black tea export market share.

Research on the competitiveness of Indonesian black tea exports in the global market shows that Indonesia has a good comparative advantage. The RCA index has been widely used to assess the competitiveness of Indonesian tea exports in the international market. Several studies have used RCA analysis to evaluate the competitiveness of Indonesian tea. Findings show that Indonesian tea exports have a positive RCA, indicating a comparative advantage in the global tea trade (Nursodik et al., 2022; Suparmono et al., 2022). However, RCA values do not always show a positive trend, as they can fluctuate below 1 in certain markets, such as India, Malaysia, Singapore, the Netherlands, Italy and Spain (Maulana et al., 2023). The dynamic RCA (DRCA) approach, which considers the time element, has been proposed as a superior method to provide a more comprehensive analysis of Indonesia's tea competitiveness (Suparmono et al., 2022).

The RCA value of Thai black tea is higher than that of Indonesia. The competitiveness of Thai black tea is higher than that of Indonesia due to several factors. Thailand has better control over the production process, resulting in tea with consistent quality and distinctive flavour characteristics. Organised marketing strategies, including premium product branding and targeting specific market segments, also enhance the competitiveness of Thai tea. In addition, more advanced infrastructure and greater government support in tea research and development also favour the Thai tea industry. Climate and soil advantages that are more suitable for tea crops as well as a strong focus on export markets make Thai tea more dominant in the global

market compared to Indonesian tea, which still faces challenges in quality consistency, marketing, and technology adoption.

Competitiveness Analysis of Indonesian Tea in Asean Market with DRCA Approach

Another analysis in identifying commodity competitiveness can be seen from the dynamics of competitiveness. This method uses a dynamic approach to the performance of Indonesian black tea. DRCA is a method of analyzing competitiveness in international trade which is a development of the concept of RCA. Unlike the static RCA, DRCA offers a dynamic approach that considers changes in the competitiveness of a country or industry over time. This method compares the export performance of a product from a country with the export performance of similar products from other countries, producing indicators that show trends of increasing, decreasing, or stable competitiveness. DRCA helps identify factors that influence changes in competitiveness, such as government policies, technological innovation, or changes in global demand, and is often used by policymakers, economists, and researchers to understand competitiveness trends and design effective trade strategies in the context of a changing global economy. Based on the results of the analysis, Indonesia ranks as a rising star in the last period, 2018-2023. This shows that the position of Indonesian black tea is in good condition and competitive within a certain period of time. In the context of DRCA in international trade, the term rising star can refer to Indonesian black tea that shows significant growth potential in international trade, and is expected to become a major player in the future. The third period (2018-2023) recorded in the table shows a significant shift in Indonesia's black tea competitiveness in the ASEAN market. Indonesia saw an improvement in its DRCA value, rising to 0.223. and moved into the rising stars category. While this is a positive achievement, it is important to note that this period coincided with the outbreak of the COVID-19 pandemic, which had a profound impact on global trade dynamics and consumption patterns. The pandemic created enormous uncertainty across various sectors, including the tea industry, affecting supply chains and commodity demand, which could have influenced Indonesia's competitive position in the global black tea market.

Despite these challenges, Indonesia managed to improve its position. One factor that may have contributed to this growth is the rise in domestic tea consumption during the pandemic, as people stayed at home and turned to tea as part of their new routines. Additionally, Indonesia likely capitalized on shifting global demand patterns by increasing its black tea exports to markets that remained open during the crisis. The country's ability to quickly adapt its trade and marketing strategies, particularly through digital channels and other flexible approaches, may have further supported Indonesia's enhanced competitiveness.

Table 3. DRCA Value and Position of Black Tea in ASEAN Market

No.	Country	Period 1	Period 2	Period 3
		2010-2014	2014-2018	2018-2023
1.	Indonesia	0.044 Lagging retreat	-0.089 Falling stars	0.223 Rising stars
2.	Malaysia	0.034 Lagging retreat	-0.024 Falling stars	0.633 Rising stars
3.	Vietnam	0.061 Lagging retreat	-0.060 Falling stars	-0.693 Lost opportunity
4.	Singapore	-6912.4 Lost opportunity	381.4 Lagging opportunity	11402.6 Lagging opportunity
5.	Philippines	0.191 Lagging retreat	0.487 Lagging retreat	0.028 Rising stars
6.	Thailand	0.090 Lagging retreat	3.965 Lost opportunity	0.837 Rising stars

Source: Data processed by the author, 2024.

On the other hand, Indonesia's improved position in the global market indicates that the country was able to overcome the challenges brought about by the pandemic and transform into a more competitive player in the international black tea market. To maintain and further strengthen this position, Indonesia should continue to focus on improving the quality of its black tea, expanding its export markets, and innovating in marketing and distribution, especially as the global tea market becomes increasingly accessible through technology. Overall, while the pandemic presented significant challenges, Indonesia demonstrated strong

resilience and adaptability, which enabled it to enhance its black tea competitiveness in both the ASEAN and global markets. The following are the results of the DRCA analysis of Indonesia and ASEAN countries.

The condition of Indonesia's black tea exports in the ASEAN market over three time periods 2010–2014, 2014–2018, and 2018–2023 experienced significant fluctuations in competitiveness based on the DRCA values. In the first period (2010–2014), Indonesia was positioned in the lagging retreat category with a DRCA value of 0.044. Although this still indicated a positive comparative advantage, it reflected a declining trend in competitiveness and a failure to maintain a strategic role in the regional market. This suggests that the Indonesian tea sector was not yet able to effectively respond to structural challenges such as low production efficiency, weak product innovation, and limited market penetration within ASEAN.

The situation deteriorated further during the second period (2014–2018), when Indonesia fell into the falling stars category with a DRCA value of -0.089. This decline signified the loss of previously held competitiveness, caused by suboptimal export development policies, a lack of product differentiation in black tea, and Indonesia's lag behind competitor countries like Malaysia and Thailand in strengthening market access and price competitiveness. During this period, Indonesia lost sustainable export momentum, posing a strategic risk to the long-term viability of its national tea industry. However, in the third period (2018–2023), Indonesia experienced a significant recovery, reaching the rising stars category with a DRCA value rising to 0.223. This improvement in competitiveness is particularly notable as it occurred during the COVID-19 pandemic from 2020 to 2022. The pandemic caused global disruptions in trade, logistics, and consumer demand, including for agricultural commodities like tea. Yet, Indonesia managed to demonstrate resilience and adaptability. Amid physical restrictions on international trade, Indonesian tea producers began leveraging digital market opportunities, e-commerce platforms, and global trends toward health-based products, with black tea being one of the preferred choices among consumers during the pandemic. Additionally, the diversification of export markets and quality improvements through organic or fair trade certifications may have further contributed to Indonesia's improved position in the ASEAN tea trade. In this regard, the pandemic served as a turning point that enabled the tea sector to transform positively.

The five-year periodization used in this analysis is both relevant and strategic. A five-year range is sufficiently representative to capture structural changes and medium-term trade trends, including responses to crises such as the pandemic. If the analysis were based on shorter periods, such as three years e.g., 2018–2020 or 2020–2022 the results would likely be distorted by the short-term effects of the pandemic, without capturing the recovery and adaptation that followed. On the other hand, a ten-year period would be too broad and could obscure critical phases, such as the direct impact of the pandemic and the subsequent recovery phase. Therefore, using a five-year timeframe offers a balanced understanding, allowing both the crisis and the recovery to be observed within a single, cohesive analytical cycle. Overall, the transformation in Indonesia's black tea export competitiveness demonstrates the sector's capacity to endure and recover from global pressures, even amid severe uncertainty like a pandemic. The achievement of a rising stars status during a crisis period is a strong indicator that innovation-driven export strategies, logistical resilience, and the utilization of digital markets can serve as key drivers of sustainable competitive advantage in the future.

Gravity Model Analysis

The gravity model in international economics is an analytical tool that explains bilateral trade patterns between countries, inspired by Newton's law of gravity. The model states that the volume of trade between two countries is directly proportional to the size of their economies (usually measured by GDP) and inversely proportional to the geographical distance separating them. In addition to economic size and distance, the model can also incorporate other factors such as language similarity, past colonial relations, or existing trade agreements. In its mathematical formulation, trade between countries i and j is generally expressed as proportional to $(GDP_i * GDP_j) / Distance_{ij}$. Gravity models have proven to be very accurate in explaining actual trade patterns and are often used by economists and policy makers to analyze the impact of various factors on international trade flows, including the effects of trade policies and regional economic integration.

Gravity models play an important role in export analysis as they provide a powerful and flexible framework for understanding and predicting international trade patterns. The importance of these models in the context of exports lies in their ability to explain the factors that influence export flows between countries. Gravity models help identify key determinants of exports such as economic size, geographical distance, and various trade barriers. This allows policymakers and businesses to analyze potential export markets, evaluate the impact of trade agreements, and design effective export strategies. The model's accuracy in explaining actual trade patterns makes it a valuable tool for forecasting future export volumes and identifying new market

opportunities. Moreover, the flexibility of the gravity model allows the incorporation of a wide range of additional variables, such as cultural or institutional factors, which can provide deep insights into export dynamics in a complex global context. In general, the factors that influence the value of Indonesian black tea exports to the ASEAN market are GDP_{jt} , population, exchange rate, conomic distance, inflation, economic growth (Zainal et al., 2021).

The estimation of factors affecting Indonesia's tea exports to neighboring countries is estimated using the gravity model approach. The estimation uses panel data regression using Stata 17 application, which is then carried out Chow test and Hausman test to see which model can explain the estimation better. It was found that the chow test explained the model better with a probability value of 0.5302 which means greater than 0.05 so that the model used was the Common Effect Model (CEM). If the CEM model is chosen, then the Hausman test does not need to be done. Furthermore, when viewed using the LM Test, the probability result is 1.000. which means it is greater than 0.05, so the selected model is the CEM. So that the overall model used in this study is the CEM. After that, if what is chosen is the CEM model, it is necessary to test the classical assumptions. The classic assumption tests used are multicollinearity and heteroscedasticity.

The multicollinearity test value of each X variable is below the value of 0.85, which can be concluded that the variable is free from multicollinearity or passes the multicollinearity test. While the probability value for the heteroscedasticity test is 0.261 which is greater than 0.05, so there are no symptoms of heteroscedasticity or pass the heteroscedasticity test. More complete, the table related to the test is described in Table 4.

Table 4. Chow Test Results, Lagrange Multiplier Test, Classical Assumption Tests

Best Model Test	Test Criteria	Probability Value	Hypothesis Result
Chow Test	CEM : Prob. > 0.05 FEM : Prob. < 0.05	0.5302	Common Effect Model
Legrange Multiplier Test	CEM : Prob. > 0.05 FEM : Prob. < 0.05	1.000	Common Effect Model
Multicollinearity Test	Prob < 0.85	GDP _{jt} = 0.19 POP _{jt} = 0.62 EXC _{jt} = 0.68 DIS _{jt} = 0.21 INF _{jt} = 0.19 GROW _{jt} = 0.12	Passed Multicollinearity Test
Heteroscedasticity Tes	Prob > 0.05	0.261	Passed Multicollinearity Test

Source: Data processed by the author, 2024.

Based on the test results shown in the table, it can be concluded that the best model for panel data analysis is the CEM. This is based on the results of the Chow test and the Legrange Multiplier test which show a probability value of 0.5302 and 1.000. respectively, which is greater than the 0.05 significance limit. This means that there is no significant difference between the Common model and the Fixed or Random model, so the CEM is chosen as the most suitable model.

Furthermore, the multicollinearity test results show that all independent variables have probability values below 0.85, indicating that there are no multicollinearity symptoms, so the regression model can be continued without the problem of high correlation between variables.

Finally, the heteroscedasticity test shows a probability value of 0.261 which is greater than 0.05. Thus, the model passes the heteroscedasticity test, which means that the residual variance is constant (homoscedastic), and the classic regression assumptions are met.

Overall, the results of this test indicate that the panel data are eligible for use in estimation with the CEM approach, without experiencing multicollinearity or heteroscedasticity problems.

Table 5. Coefficients of Estimating Variables of Indonesian Black Tea Exports to ASEAN Market

Variables	Coefficient	Standard Error	t	p > t
GDP _{jt}	0.560	0.102	5.46	0.000***
POP _{jt}	0.796	0.084	-9.42	0.000***
Exc _{it}	0.091	0.018	5.09	0.000***
Dis _{jt}	-0.004	0.173	-0.03	0.980
INF _{jt}	0.028	0.042	0.67	0.505
GROW _{jt}	-0.143	0.074	-1.94	0.057**
_Cons	17.626	3.794	4.65	0.000***
R2-Square				0.8026
Prob(F-Stat)				0.000

Note: *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.
Source: Data processed by the author, 2024.

Taken together, these economic factors are interrelated and can affect the competitiveness and volume of Indonesia's black tea exports to ASEAN countries. Indonesia can utilize factors such as economic growth, competitive exchange rates, and geographical proximity to increase its black tea exports to the region. The literature shows that various macroeconomic factors have a significant effect on Indonesia's black tea exports including GDP, population, exchange rate, and inflation variables with significance. In addition, economic distance and economic growth variables have no effect on Indonesian black tea exports. GDP and GDP per capita are often used as proxies for the economic size and purchasing power of importing countries, which can influence tea export demand (Nursodik et al., 2022). Population size can also affect tea demand, as a larger population can lead to higher consumption and, consequently, higher tea exports (Liang, 2023). Exchange rates can affect the competitiveness of tea exports, as depreciation of the domestic currency can make exports more affordable for foreign buyers (Arbella & Widodo, 2023; Hussain et al., 2010). Economic distance, as measured by factors such as transportation costs and trade barriers, can also affect the volume and direction of tea exports, resulting in no effect on Indonesian black tea exports (Jiang, 2023). Inflation and economic growth are also relevant factors, as they can affect overall economic conditions and trade patterns. High inflation can erode consumer purchasing power, potentially reducing demand for tea exports, while economic growth can stimulate trade and increase demand for tea (Agarwal et al., 2022). It is important to note that although has great potential in the tea sector, external factors that affect tea export competitiveness, such as international trade policies, changes in commodity prices, and economic development of export destination countries, must be taken into account. Free trade policies such as the ASEAN Economic Community (AEC) that allow easier access between ASEAN countries may provide opportunities for Indonesia to increase black tea exports. However, this policy also opens up opportunities for competitors to enter the Indonesian market more easily, which can worsen competition (Cakra & Munandar, 2020; Sundalian & Nugrahani, 2018).

GDP of Destination Country Has a Positive Effect on Indonesian Black Tea Exports

GDP has a positive coefficient (+5.46) with a probability of 0.000 which means it is significant at the 1% level. This means that if there is an increase in the GDP of the destination country by 1%, there will be an increase in black tea exports by 54.6% under ceteris paribus conditions. GDP has a positive effect on Indonesian exports because an increase in GDP generally reflects a strengthening of overall economic capacity. When Indonesia's GDP increases, it usually signifies increased productivity, better infrastructure, and greater production capacity across different sectors of the economy. These improvements allow Indonesia to produce more goods and services, including those destined for the export market. Higher GDP is also often associated with improved technology and production efficiency, which can increase the competitiveness of Indonesian products in the global market. In addition, GDP growth can attract more foreign and domestic investment, which can further increase export capacity. A stronger economy can also give Indonesia a better bargaining position in international trade agreements, potentially opening up more export opportunities. However, it is important to note that this relationship may not always be linear and can be affected by various external factors such as global economic conditions, international trade policies, and exchange rate fluctuations (Arifin & Rahman, 2020; Setiawan et al., 2022).

GDP has a significant influence on Indonesian black tea exports, especially in terms of economic relations and international competitiveness. Domestic economic growth reflected in an increase in GDP can affect the

productivity of the agricultural sector, including black tea production. An increase in GDP is generally associated with improvements in infrastructure, investment, and technology, which leads to increased production and quality of black tea, thereby increasing competitiveness in the export market. In addition, GDP also affects the purchasing power of export destination countries. When global GDP increases, especially in major trading partner countries, demand for black tea products can increase as well. Conversely, if global GDP decreases, demand for export products such as black tea may also decrease. On the other hand, strong GDP growth reflects good economic stability, thus increasing the competitiveness of Indonesian products, including black tea, in the international market. Fluctuations in GDP can also affect the exchange rate of the rupiah against foreign currencies, which impacts export profits. A stable or stronger exchange rate will make exports more competitive, while a weaker exchange rate may reduce profits for exporters, even if export volumes increase. Thus, although GDP is not the only factor, economic growth in Indonesia and export destination countries can be an important factor in driving black tea export volumes (Elpawati & Utama, 2021).

There have been many studies related to GDP on export performance, including those conducted by (Ibrahima et al., 2020; Sentsho et al., 2018; Sudari et al., 2021) which predominantly show the results that GDP has a positive effect on increasing a country's exports. Not only that, these studies also show that the relationship between GDP and export performance is still relevant, both in Indonesia and in other countries, where GDP growth directly contributes to improving export performance through increased production capacity and economic efficiency.

Population Affects Indonesia's Black Tea Exports

The destination country population has a negative coefficient of -9.42 with a probability of 0.000. which is significant but lower. Population is not always the main determining factor in export performance, in some cases, population can act as a supporting or constraining factor, depending on how the population affects other aspects such as production capacity, domestic consumption, and competitiveness in the international market. There are many factors that cause population to not have a significant impact on increasing a country's exports. Among others, it is caused by (Zhao et al., 2019) the production capacity and technology produced by a country e.g. small countries with low population, such as Singapore or Switzerland, have excellent export performance because they focus on technology, efficiency and innovation. When compared to Indonesia's exports which are still conventional, it is still far from what is expected. not on population size, 2) The economic structure adopted by the country, high domestic consumption and so on. In some countries with large populations, most of the production may be used to meet domestic consumption, so the amount of goods available for export is limited. This suggests that a large population does not necessarily lead to increased exports. Many studies have been conducted to identify whether population has an impact on agricultural commodity export activity. Among others (Canh et al., 2021; Choi & Kim, 2020) and (Tien et al., 2022) which state that population has no positive and significant effect on export variables often explore the relationship between population size and other aspects of the economy or trade.

Exchange Rate Affects Indonesian Black Tea Exports

The exchange rate of the destination country has a positive coefficient (0.59) with a probability of 0.000 which means it has a significant effect at the 1% level. The exchange rate has a positive and significant effect on Indonesian black tea exports in the international market. Many factors influence, among others, the price competitiveness of each country, the cost of importing each country, the strength of the currency owned, and others. Here are some studies that show that exchange rates do not have a positive and significant effect on export performance, namely (Ahmed et al., 2018; Ma & Chen, 2019; Rao et al., 2021) which is dominated that shows that although exchange rates can fluctuate, their impact on exports can be limited or inconsistent.

Economic Distance Don't Have a Significant Impact on Indonesia's Black Tea Exports in the ASEAN Market.

On the other hand, the assertion that economic distance has no significant effect on Indonesian black tea exports in the ASEAN market is consistent with findings from studies that emphasize the importance of other factors over mere geographical distance. For instance, (Luhur et al., 2019) analyzed trade relations among ASEAN countries and found that trade structures are influenced more by product specifications and market dynamics than by economic distance alone (Luhur et al., 2019). This suggests that while economic distance

might play a role, it is not a decisive factor in determining export volumes, particularly in the context of Indonesian tea exports.

Inflation Not Have a Significant Affects Indonesian Black Tea Exports

Inflation can't affect Indonesia's black tea exports to ASEAN markets through various mechanisms. An increase in inflation tends to raise production costs, particularly labour, raw materials, and energy inputs. This can make Indonesian black tea more expensive, reducing competitiveness in the highly competitive ASEAN market. In addition, inflation can also have an impact on the rupiah exchange rate; if inflation causes the currency to weaken, the price of Indonesian black tea becomes cheaper for export destinations, which could lead to increased exports. However, if inflation is uncontrollable, the resulting economic instability can reduce consumer purchasing power in export destination countries, which in turn can reduce demand for tea. On the other hand, government policies of importing countries, such as the imposition of higher tariffs or import duties, may be enacted to protect their domestic products, which also impacts export volumes. Finally, inflation can affect global commodity prices, including tea, which could affect the export price of Indonesian black tea. With a coefficient value of 0.054, this indicates that every 1% change in the inflation rate could potentially lead to a 0.054% change in the export volume of Indonesian black tea, with a significance level of 10%, indicating a significant albeit not very strong relationship.

The assertion that inflation positively affects Indonesian black tea exports in the ASEAN market is supported by various studies that highlight the relationship between macroeconomic variables and export performance. For instance, (Hassan et al., 2024) found that fluctuations in inflation rates are positively correlated with export volumes in emerging economies, suggesting that higher inflation can lead to increased export levels due to various market dynamics, including price adjustments and competitiveness in international markets. Similarly, Sumantri & Latifah's research indicates that inflation significantly influences export and import dynamics in Indonesia, reinforcing the notion that inflationary pressures can enhance export activities. Furthermore, (Anshari et al., 2017) demonstrated that inflation rates have a significant effect on exports in ASEAN-5 countries, including Indonesia, thus supporting the claim that inflation can boost export performance in the region.

Economic Growth Have a Significant Impact on Indonesia's Black Tea Exports in the ASEAN Market

Moreover, the claim that economic growth have a significant effect on Indonesian black tea exports in the ASEAN market is supported by research that indicates a complex relationship between economic growth and export performance. However, the reference to (Radhika et al., 2024) is not relevant to Indonesian tea exports, as it focuses on the Indian tea market. Therefore, this claim should be revised to reflect the lack of direct evidence. Additionally, the findings of (Nursodik, Santoso, et al., 2022), suggest that while Indonesian tea has competitive advantages, economic growth alone does not guarantee an increase in export volumes, as other factors such as market demand and product quality play a more critical role. This aligns with the broader literature indicating that economic growth does not always translate into proportional increases in exports, particularly in niche markets like tea.

In conclusion, the relationship between inflation and Indonesian black tea exports in the ASEAN market is characterized by a positive correlation, while economic distance does not significantly influence export performance. The claim regarding economic growth requires further clarification due to the lack of relevant evidence. These findings are supported by a range of studies that collectively illustrate the complexities of export dynamics in the context of macroeconomic variables.

Conclusions

Based on the results of the research that has been conducted, it can be concluded that study shows that Indonesia's black tea export competitiveness in the ASEAN market experienced significant fluctuations during the period 2010-2023. Based on the results of RCA analysis, Indonesia's competitiveness tends to decline in recent years, which is influenced by several external factors such as competition from other tea producing countries, quality comparison, and product standards. The DRCA analysis shows the dynamics of Indonesia's competitiveness position compared to other tea-producing countries, with an indication of a decline in Indonesia's competitiveness. Meanwhile, the gravity model shows that economic and geographical variables, such as destination country GDP, population, and exchange rate, and growth economic have a significant positive influence on Indonesia's black tea export volume. However, economic distance and inflation rate

have no significant effect on exports. In addition, the depreciation of the rupiah against partner countries' currencies can increase the competitiveness of Indonesian exports.

Based on the findings of this study, it is suggested that Indonesia should pay attention to several aspects of black tea trade policy, in order to increase its export competitiveness. First, the expansion of export markets to new countries, such as Central Asian, Middle Eastern, and Asia Pacific countries, can be a strategic step to reduce dependence on the competitive ASEAN market. Second, to strengthen competitiveness, Indonesia needs to focus on improving product quality at the farm level, such as with the use of superior seeds and training in more efficient cultivation techniques. The implementation of international certification can also be an important step towards meeting global standards and increasing international consumer confidence in Indonesian tea products. In addition, policies to maintain the stability of the rupiah exchange rate against the currencies of trading partner countries need to be considered, as significant fluctuations can affect the competitiveness of export products. Improved efficiency in the distribution and logistics chain can also help reduce costs and improve product price competitiveness in the international market.

Author Contributions

PI: Conceptualization, Writing, Methodology, Data Processing; NN: Review, Manuscript Editing, Manuscript Administration; AA: Writing, Review, and Editing.

AI Writing Statement

During the preparation of this work authors used Grammarly in order to paraphrase and proofread the sentences. After using this service, the needed and take full responsibility for the content of the publication.

Conflicts of interest

The authors declare that there are no conflicts of interest related to the publication of this article. There are no financial, personal, or other relationships that could influence the objectivity of this research.

Acknowledgments

The authors would like to express their deepest gratitude to the Research and Community Service Institute (LPPM) of Satya Terra Bhinneka University for their support in conducting this research. Special thanks also go to IPB University for their valuable collaboration in the development of this study. The close cooperation between both institutions has made a significant contribution to the success of this research.

References

- Agarwal, M., Azim, R., & Kumar, S. (2022). BRICS: The 2008 financial crisis and economic performance. *BRICS Journal of Economics*, 3(2), 21–49. <https://doi.org/10.3897/brics-econ.3.e86488>
- Ahmed, Khan, & Singh. (2018). Exchange rate volatility and export performance: Evidence from emerging economies. *International Journal of Economic Sciences and Applied Research*, 11(2), 27-44.
- Anshari, Khilla, & Permata. (2017). Analisis pengaruh inflasi dan kurs terhadap ekspor di negara asean 5 periode tahun 2012-2016. *Info Artha*, 1(2), 121-128. <https://doi.org/https://doi.org/10.31092/jia.v1i2.130>
- Arbella, S.D., & Widodo, P. (2023). Indonesia's tea competitiveness with Russia. *International Journal of Research in Business and Social Science* (2147- 4478), 12(3), 548–556. <https://doi.org/10.20525/ijrbs.v12i3.2574>
- Arifin, & Rahman. (2020). The role of GDP and exchange rate on export performance in Indonesia: A time series analysis. *Journal of Economics, Business, and Management*, 8(3), 75-89.
- Aslam, Khan, & Javed. (2018). The impact of GDP per capita on export performance: Evidence from emerging markets. *The Journal of International Trade & Economic Development*, 27(5), 618-633.
- Baier, Bergstrand, & Clougherty. (2019). GDP per capita, trade openness, and export performance in developing countries. *Journal of Economic Integration*, 34(4), 642-664.
- Bojnec, & Ferto. (2021). The role of GDP per capita in export competitiveness in Central and Eastern European countries. *Economics & Business*, 34(2), 55-72.

- Cakra, G.A., & Munandar, J.M. (2020). Analisis Daya Saing Komoditas Teh Hitam Curah Indonesia di Pasar Global (Studi Kasus di Negara Russia). *Jurnal Manajemen dan Organisasi*, 11(1), 57–70. <https://doi.org/10.29244/jmo.v11i1.28556>
- Canh, Tran, & Vu. (2021). The impact of population growth on trade: Evidence from developing countries. *Journal of Development Studies*, 58(8), 1257-1275.
- Chica, B.N.A., Yépez, S.I.Z., Morales, M.A.Z., Castro, A.B.M., & Yamuca, J.L.B. (2024). Factores determinantes de la exportación de camarón ecuatoriano. *LATAM Revista Latinoamericana de Ciencias Sociales y Humanidades*, 5(5), 894–912.
- Choi, & Kim. (2020). Does population size influence export performance? Evidence from East Asian countries. *Journal of Economic Policy*, 35(4), 289-304.
- Edwards, & Schoer. (2002). Measures of competitiveness: A dynamic approach to South Africa's trade performance in the 1990s. *The South African Journal of Economics*, 70(6), 1008–1046.
- Elpawati, E., & Utama, B. (2021). Daya Saing Teh Hitam Ekspor Indonesia Di Perdagangan Internasional. *Sharia Agribusiness Journal*, 1(2), 135–152. <https://doi.org/10.15408/saj.v1i2.22283>
- Hassan, Ismael, & Haji. (2024). Measuring and analyzing the impact of some macroeco-nomic variables on exports in emerging countries for 2000-2020: a panel data analysis. *Z. Zanco Journal of Humanity Sciences*, 28(2), 1–12. <https://doi.org/https://doi.org/10.21271/zjhs.28.2.16>
- Hussain, B., Ashfaq, M., Abbas, M., Mahmood, K., & Ather Mahmood, M. (2010). Market Integration of Gram in Pakistan. *Pakistan J. Agric. Res*, 23(2), 78–82.
- Ibrahima, Diallo, & Sow. (2020). The relationship between GDP, exports and imports: Evidence from the Economic Community of West African States (ECOWAS). *Economic Research*, 33(1), 45-60.
- Jiang, S. (2023). The Determinants of Chile's Aquatic Products Export: A Gravity Approach. *ICEMME*, 1(1). <https://doi.org/10.4108/eai.18-11-2022.2326839>
- Karosekali, A. (2021). Dampak Sanitary and Phytosanitary (Sps) Dan Technical Barrier To Trade (Tbt) Terhadap Ekspor Komoditas Teh Di Indonesia. *Agriprimatech*, 5(1), 45–56. <https://doi.org/10.34012/agriprimatech.v5i1.2077>
- Kusnaedi, P.M., & Ernah. (2024). Mimbar Agribisnis: Jurnal Pemikiran Masyarakat Ilmiah Berwawasan Agribisnis Analisis Daya Saing Komoditas Teh Hitam Indonesia di Pasar Global Competitiveness Analysis of Indonesian Black Tea Commodity in Global Market. *Mimbar Agribisnis: Jurnal Pemikiran Masyarakat Ilmiah Berwawasan Agribisnis*, 10(1), 1580–1588.
- Liang, Z. (2023). Relationship between Tea Export and Major Macroeconomics Variables in China. *Advances in Economics, Management and Political Sciences*, 22(1), 283–290. <https://doi.org/10.54254/2754-1169/22/20230323>
- Luhur, Mulatsih, & Puspitawati. (2019). Competitiveness analysis of indonesian fishery products in asean and canadian markets. *Signifikan Jurnal Ilmu Ekonomi*, 8(1), 105-120. <https://doi.org/https://doi.org/10.15408/sjie.v8i1.7301>
- Ma, Z., & Chen. (2019). The impact of exchange rate on export performance: Evidence from Asian economies. *Journal of Economic Integration*, 34(3), 356-374.
- Maulana, F.R., Sukiyono, K., Nusril, & Sriyoto. (2023). Analysis of Indonesian Palm Oil Competitiveness in the Main Export Destination Countries. *Indonesian Journal of Agricultural Research*, 6(2), 68–78. <https://doi.org/10.32734/injar.v6i2.11420>
- Nursodik, H., Imam Santoso, S., & Nurfadillah, S. (2022). Competitiveness of Indonesian Tea Export in Southeast Asia Markets. *SOCA: Jurnal Sosial, Ekonomi*
- Nursodik, Santoso, & Nurfadillah. (2022). Competitiveness of indonesian tea export in southeast asia markets. *Soca Jurnal Sosial Ekonomi Pertanian*, 16(1), 12.
- Radhika, Hoti, & Raju. (2024). Tea trade scenario in the pre and post liberalization period in india. *Academic Journal of Interdisciplinary Studies*, 13(3), 150.
- Rao, Kumar, & Singh. (2021). Exchange rate fluctuations and export performance: Evidence from selected developing countries. *Economic Modelling*, 94, 318-328.
- Ristanović, V., Primorac, D., & Kozina, G. (2020). Applying gravity model to analyse trade direction. *Tehnicki Vjesnik*, 27(5), 1670–1677. <https://doi.org/10.17559/TV-20200217101315>

- Rita, P., Oliveira, T., & Farisa, A. (2019). The impact of e-service quality and customer satisfaction on customer behavior in online shopping. *Heliyon*, 5(10), e02690. <https://doi.org/10.1016/j.heliyon.2019.e02690>
- Rodrik, Wacziarg, & Ocampo. (2020). Structural change, productivity, and export growth: The role of GDP per capita. *Journal of Development Economics*, 145, 102-117.
- Sentsho, Moffat, & Shapshak. (2018). The Relationship between Economic Growth, Export and Import in Botswana. *Journal of Economics and Business Research*, 24(1), 45-62.
- Setiawan, Prabowo, & Yuliana. (2022). Pengaruh produk domestik bruto dan nilai tukar terhadap kinerja ekspor di Indonesia. *Jurnal Ekonomi Dan Bisnis Indonesia*, 20(2), 123-137.
- Shahriar, S., Qian, L., Lea, S., & Abdullahi, N. M. (2019). Review of Innovation and Competitiveness a Journal of Economic and Social Research Volume. *Review of International Competitiveness*, 5(1). <https://doi.org/10.32728/ric>
- Sudari, Harun, & Ahmad. (2021). The impact of GDP on exports in Malaysia: An empirical analysis. *International Journal of Business, Economics and Law*, 24(2), 112-128.
- Sumantri, & Latifah. (2020). The influence of interest rate, money circulation, inflation, and cpi against export and import in indonesia 2012-2018. *Jurnal Ekonomi Pembangunan*, 17(2), 108.
- Sun, Zhang, & Li. (2022). The impact of income per capita on export specialization and competitiveness: Evidence from Asian economies. *Journal of International Economics*, 136, 103-120.
- Sundalian, M.-, & Nugrahani, I.-. (2018). Determinasi Kadar Kafein Produk Teh Hitam Indonesia Dengan Menggunakan Spektrofotometer Fourier Transform Infrared. *Jurnal Sains Dan Teknologi Farmasi Indonesia*, 7(1), 41-49. <https://doi.org/10.58327/jstfi.v7i1.73>
- Suparmono, S., Suandana, E., & Ilmas, F. (2022). Determining Competitiveness of Indonesian Export Commodities using Revealed Comparative Analysis. *Jurnal Ekonomi & Studi Pembangunan*, 23(1), 66-80.
- Tien, Nguyen, & Hoang. (2022). Population dynamics and export performance: An empirical study of ASEAN countries. *Asian Economic Journal*, 36(1), 92-110.
- Wardhani, A. A. (2023). Analisis Daya Saing Ekports Teh Indonesia Di Pasar ASEAN Tahun 2017 - 2021 Dengan Pendekatan RCA, RSCA DAN ISP. *Jurnal Ekuilnomi*, 5(2), 350-360. <https://doi.org/10.36985/ekuilnomi.v5i2.799>
- Yafi, M. A., & Adyanti, A. S. (2024). Kinerja Daya Saing Teh Hijau Indonesia di Pasar Internasional. *SEPA: Jurnal Sosial Ekonomi Pertanian Dan Agribisnis*, 21(2), 289-301.
- Zainal, S. M., Tarumun, S., & Tety, E. (2021). Analysis of Competitiveness and Factors that Affect Indonesian Pineapple Exports. *Journal of Agribusiness and Community Empowerment (JACE)*, 4(2), 134-145.
- Zhao, Wang, & Liu. (2019). Population size and trade performance: A comparative analysis of large and small economies. *International Trade Journal*, 33(4), 567-584.
- Zuhdi, F., Rambe, K. R., & Rahmadona, L. (2022). Analysis of Competitiveness and Forecasting of Indonesian Tea Exports to Main Destination Countries. *Media Ekonomi Dan Manajemen*, 37(2), 240. <https://doi.org/10.24856/mem.v37i2.2888>