Original Research Article

India's Tea Export Potential: Stirring Up Global Trade Opportunities

Abstract:

India's tea industry, a significant player in the global market, is poised for growth amidst evolving trade dynamics. This paper explores India's tea export potential by examining production, export trends, and competitiveness on a global scale. In 2022, global tea production reached 6,422 million kilograms, with China and India being the largest producers, while Kenya led in exports. India, the second-largest producer and fourth-largest exporter, shipped tea worth approximately USD 706 million, primarily to the UAE, Iraq, Russia, the USA, and the UK. Methodologically, this study utilizes a gravity model with PPML estimation to analyse India's tea exports to 173 trading partners from 2004 to 2021, addressing zero trade observations. Revealed Comparative Advantage (RCA) and Revealed Symmetric Comparative Advantage (RSCA) indices are employed to assess competitiveness, revealing an upward trend in India's comparative advantage. Transitional probabilities provide insights into shifting trade patterns, indicating significant market instability in countries like Germany and the UK. The analysis also includes estimation results highlighting the impact of GDP, geographical distance, population, and other factors on India's tea exports.Results demonstrate that India has considerable potential to expand tea exports to 118 countries, with high prospects in Uzbekistan, the USA, France, Hong Kong, and Italy. Current export strategies focus on saturated markets, underscoring the need to explore untapped regions to maximize trade opportunities. This study highlights the necessity for India to diversify its export destinations to enhance its global trade footprint and leverage its growing competitiveness in the tea sector.

Keywords: Tea, panel gravity model, trade competitiveness, Markov chain model, Transition probability matrix, export potential.

1. Introduction

India's tea industry, one of the oldest in the country with a rich history dating back over 180 years, holds a pivotal role in the global tea market. Tea is the world's second most consumed beverage after water, and India's tea sector is one of the most organized industries, contributing significantly to the nation's economy [1, 2]. India is the largest producer and consumer of tea, accounting for approximately 21% of global production and 12% of global trade. Despite this, the country's share of the world tea export market has seen a decline in recent years, attributed to various factors such as increasing production by other countries, higher domestic consumption, and the availability of substitutes [3, 4 and 5].The global tea market is highly competitive, with major players such as China, Kenya, and Sri Lanka contesting for dominance. China leads in global production, contributing more than 48%of the world's tea output, followed by India, which produced 1.4 million tons in 2022. Despite

India's significant production capacity, only around 20% of its tea is exported, with the majority being consumed domestically[6]. This high domestic consumption, coupled with sluggish growth in production and falling prices, has adversely impacted India's competitiveness in the global tea market [7].

India's tea industry, while still a major global player, faces challenges that threaten its export potential. The decline in India's share of the world tea export market indicates the country's inability to fully capitalize on the expanding global market. The situation is exacerbated by the falling prices of tea in both domestic and international markets, which pose a significant challenge to tea firms and farmers [7].Given the tea sector's importance to India's economy and the challenges it faces, it is crucial to assess the industry's performance and explore strategies to enhance its competitiveness. This study aims to analyse India's tea export potential, focusing on its competitiveness in the global market. By examining India's position relative to other major tea-producing countries, this research seeks to identify opportunities for India to strengthen its role in global tea trade and suggest policy measures to mitigate the industry's current challenges. Through this study, we aim to provide insights into the global tea market dynamics and offer recommendations for enhancing India's tea export potential, ensuring the industry's sustained growth and contribution to the nation's economy.

2. Materials and methods

This study relies entirely on secondary data collected for the period 2020-2023 from various sources, including the WITS database, ITC Trade Map, CEPII database, and FAOSTAT.

2.1. Competiveness indices

The trade competitiveness of major tea exporters was analysed using the Revealed Comparative Advantage (RCA) index, a widely recognized method developed by Balassa [8] for assessing international trade competitiveness. The RCA index measures a product's competitiveness by comparing its share in a country's exports with its share in global trade. A high RCA value indicates a competitive product with strong export potential to countries with lower RCA values.The RCA index is computed by Equation:

$$RCA = \frac{(X_{ij}/X_{ik})}{(X_{nj}/X_{nk})}$$

Where,

X_{ij} = Exports by country 'i' of 'j'. I.e. tea

X_{ik} = Exports by country 'i' of a set of commodities 'k'. I .e. agricultural products

X_{nj} = Exports by a set of countries 'n' of commodity 'j'. I.e. teaand

X_{nk} = Exports by a set of countries 'n' of a set of commodities 'k'.I .e. agricultural products

However, the RCA index has limitations due to its asymmetry, making it difficult to compare values on either side of unity. To address this, the index was made symmetric using the methodology proposed by Dalum *et al*. [9], resulting in the Revealed Symmetric

Comparative Advantage (RSCA) index, which ranges from -1 to +1 and is free from skewness issues.

Mathematically,

RSCA=(RCA-1)/(RCA+1)

2.2. Markov chain analysis

Dynamics in direction of tea exports was examined using stationary form of the first order Markov chain model. This model assumes that:The probability of an outcome on the t^{th} trial depends only on the outcome of the preceding trial, andthis probability is constant for all time periods. Markov chain analysis tells about transitional probability matrix 'P' whose diagonal elements indicate the retention probability and off-diagonal elements represent switching-over probability.The general form of the first order Markov model is (Angles et al. [10])

$$E_{jt} = \sum_{i=1}^{r} E_{it-1} P_{ij} + e_{jt}$$

Where,

E_{jt} = exports from India during the year t to j^{th} country,

E_{it-1} = exports to i^{th} country during the year t-1,

P_{ij} = the probability that exports will shift from i^{th} country to j^{th} country,

e_{jt} = the error-term which is statistically independent of E_{it-1} , and

r = the number of importing countries.

The transitional probabilities P_{ij}, which can be arranged in a (c × r) matrix, have the following properties:

$$0 \leq P_{ij} \leq 1$$

$$\sum_{i=1}^{n} P_{ij} = 1 \quad for\ all\ i$$

The minimum absolute deviation (MAD) estimation procedure was employed to estimate the transitional probability, which minimizes the sum of absolute deviations [11, 12]. The conventional linear programming technique was used, as this satisfies the properties of transitional probabilities of non-negativity restrictions and row sum constraints in estimation. The linear programming formulation is stated as:

Min OP* + Ie

Subject to, XP* + V =Y, GP* = 1, P*e ≥ 0

Where,

O = Vector of zeroes,
P*= Vector in which probability P_{ij} is arranged,
I = Appropriate dimensioned column vector of unit,
e = Vector of absolute error (|U|),
Y = Vector of export to each country,
X = Block diagonal matrix of lagged values of Y,
V = Vector of errors, and
G = Grouping matrix to add the row elements of P as arranged in P* to unity.

2.3. Panel gravity model

The gravity model, essential for analysing bilateral trade flows and potential, was first empirically studied by Tinbergen [13] and Poyhonen[14]. Its use surged with further developments by Anderson [15], Bergstrand [16], and Helpman and Krugman [17]. Based on Newton's law of gravitation, the model posits that trade flows between two countries are proportional to their economic mass (GDP) and inversely proportional to the distance between them. GDP indicates market size, promoting trade as economies grow. Distance suggests higher transport costs and cultural barriers, reducing trade. To capture qualitative trade aspects, dummy variables like shared borders, languages, and colonial ties are included. Such factors reduce transaction costs and strengthen trade relations, enhancing trade, especially among Free Trade Agreement members [18]. By keeping these things in mind, the traditional gravity model is augmented following Irshad *et al*[19] as:

$$\mathbf{Texp_{ijt} = \alpha_1 + \alpha_2\ ln(Dist_{ijt}) + \alpha 3 lnY_{jt} + \alpha 4 lnY_{it} + \alpha 5 EU_{jt} + \alpha_6 ln(Trade\_Flow)_{ijt} + \alpha_7 Comrelig_{ij} + \alpha_8 Com\_lang_{ij} + \alpha_8 Comcol_{ij} + \alpha_9 WTO_{ijt} + \alpha_{10} ln(Exr_{ijt}) + \alpha_{11} TA_{ijt} + \varepsilon_{ijt} + \mu_t}$$

Where,

$Texp_{ijt}$= India's tea export to country j in year t
$Dist_{ijt}$= distance between India and partner country
Y_{jt} = GDP of partner country j
Y_{it}= GDP of exporting country i.e. India
EU_{jt} = 1 if country currently is a EU member
$Trade\_Flow_{ijt}$=Bilateral trade flow (in thousands current US$)
$Comrelig_{ij}$= Religious proximity index
Com_lang
$Comcol_{ij}$=1 if countries share a common colonizer post 1945
WTO_{ijt} =1 if destination country currently is a WTO member
Exr_{ijt}= bilateral exchange rates of India and the partner country.
FTA_{ijt}= dummy variable for trade agreements.

The gravity model results will be used to calculate India's trade potential with various countries, considering factors like distance, GDP, openness, landlocked status, common language, colonial ties, and free trade agreements. The export potential (EP) formula is:

$$EP = \left[\frac{\left\{\left(\frac{Actual}{Potential}\right)-1\right\}}{\left\{\left(\frac{Actual}{Potential}\right)+1\right\}}\right]$$

This formula standardizes export potential between -1 and 1. A positive index (0 to 1) indicates higher-than-predicted tea trade, showing exports have reached or exceeded potential. A negative index (-1 to 0) suggests the opposite [20]. Another method to calculate India's tea exports is the absolute difference between potential and actual trade (ΔT = Potential trade value – Actual trade value), forecasting future trade direction [21]. A positive ΔT indicates trade expansion potential, while a negative ΔT shows India has exceeded its export potential with a specific country. These differentiation indicators help identify countries with potential for expanding India's tea exports.

3. Results and Discussions

3.1. Global tea production and export scenario

In 2022, global tea production reached 6,422 million kilograms, with nearly half originating from China (48.11%), followed by India (21.26%), Kenya (8.25%), Turkey (4.36%), and Sri Lanka (3.92%) (Table 1). In terms of global tea exports, which totalled 1,830 million kilograms, Kenya led with a 24.9% share, followed closely by China at 20.49%, Sri Lanka at 13.50%, and India at 12.40%. These figures highlight the dominant roles played by these nations in both production and export, with China and Kenya leading in their respective categories. Understanding these dynamics is crucial for assessing global market trends and the competitive positioning of key tea-producing countries.

Table 1: Tea production and export statistics of 2022(in Million Kgs)

Country	Tea produced	% share	Tea exported	% share
China	3090	48.11	375.23	20.49
India	1365.23	21.26	226.98	12.40
Kenya	530	8.25	456	24.90
Sri Lanka	251.5	3.92	247.15	13.50
Turkey	280	4.36	NA	NA
Indonesia	125.1	1.95	NA	NA
Vietnam	174	2.71	140	7.65
Others	606.83	9.45	385.61	21.06
World	6422.66	100.00	1830.97	100

Source: Tea Board of India, 2023

3.2. India's tea production and export scenario

India, as the second-largest tea producer and the fourth-largest exporter globally, exported tea worth approximately 706 million USD in 2023 (Table 2). The primary destinations for Indian tea exports include the United Arab Emirates, which accounts for 16.9% of the total exports, followed by Iraq (10.13%), Russia (9.88%), the USA (7.33%), and the United Kingdom (6.01%). These figures underscore India's significant presence in the global tea market, with a diverse range of export destinations that reflect its strategic importance in international trade.

Table 2: Major destination for Indian tea in 2023

Country	Export value (in US $ 1000)	% share

United Arab Emirates	119712	16.95
Iraq	71534	10.13
Russia	69778	9.88
USA	51759	7.33
United Kingdom	42423	6.01
Germany	31824	4.51
Iran	29395	4.16
Saudi Arabia	25300	3.58
Turkey	22491	3.18
China	17658	2.50
World	706351	100

Source: ITC trade map, 2024.

In India, tea cultivation is predominantly concentrated in the North-eastern regions and the Western Ghats. Annually, India produces approximately 1,500 million kilograms of tea, with Assam and West Bengal being the leading contributors (Table 3). Assam accounts for 48% of the total production, with the Assam Valley emerging as the primary tea-producing area, contributing 45% to the country's overall tea output. West Bengal follows with a 32% share, notably from the Dooars region, which alone produces 17% of India's tea. The Southern states, including Tamil Nadu, Kerala, and Karnataka, also contribute to the nation's tea production, with shares of 12%, 5%, and 0.4%, respectively. These regions collectively ensure India's strong position in global tea production.

Table 3: Tea production in India across major tea growing regions (in Million Kgs)

District / state	**2023**	**% Share**	**2022**	**% Share**	**2021**	**% Share**
Assam Valley	653.96	45.25	647.77	47.41	623.79	46.45
Cachar	41.13	2.85	40.93	3.00	43.94	3.27
Total Assam	**695.09**	48.10	**688.7**	50.40	**667.73**	49.72
Dooars	245.91	17.02	234.81	17.19	235.75	17.55
Terai	207.69	14.37	172.34	12.61	165.41	12.32
Darjeeling	6.29	0.44	6.93	0.51	7.01	0.52
Total West Bengal	**459.89**	31.82	**414.08**	30.31	**408.17**	30.39
Others	36.59	2.53	31.76	2.32	32.14	2.39
Total North India	**1191.57**	82.45	**1134.54**	83.03	**1108.04**	82.50
Tamilnadu	179.54	12.42	159.02	11.64	168.67	12.56
Kerala	68.22	4.72	67.7	4.95	61.11	4.55
Karnataka	5.89	0.41	5.1	0.37	5.24	0.39
Total South India	**253.65**	17.55	**231.82**	16.97	**235.02**	17.50
All India	**1445.22**	100.00	**1366.36**	100.00	**1343.06**	100.00

Source: Tea Board of India, 2023

3.3. Trade competitiveness

To evaluate India's competitiveness in the global tea trade, the Revealed Comparative Advantage (RCA) and Revealed Symmetric Comparative Advantage (RSCA) indices were calculated for the major tea-exporting countries. The findings, as presented in Table 4, indicate that the average RCA values for all reference countries exceeded one, while the

average RSCA values were positive. This suggests that the major tea exporters possess a high level of competitiveness in tea exports. Notably, Sri Lanka exhibits the highest comparative advantage, as evidenced by its superior RCA and RSCA values.The data further reveal that China's average RCA increased from 4.31 in 2014 to 5.18 in 2023, while Kenya's RCA rose significantly from 67.07 to 89.05 during the same period. India also demonstrated an upward trend in RCA, indicating an improving comparative advantage in tea export. These results underscore India's relative specialization in tea production and exportation compared to other leading tea-exporting countries. The RCA index for Indian tea consistently remained above one, reflecting the growing share of tea exports in the country's total agricultural exports.

Overall, the analysis affirms that India, along with other major tea-exporting nations, is highly competitive in the global tea market. The increasing RCA values highlight India's strengthening position, suggesting that the country is increasingly specializing in tea production and gaining a larger share of the global tea trade. These trends emphasize the importance of continued focus on enhancing productivity and competitiveness to maintain and further improve India's standing in the global tea industry.

Table 4: RCA and RSCA Index for major tea exporters in the world.

Country	Index	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
China	RCA	4.31	4.43	4.53	4.66	5.21	5.58	5.94	6.62	5.64	5.18
	RSCA	0.62	0.63	0.64	0.65	0.68	0.70	0.71	0.74	0.70	0.68
Kenya	RCA	67.07	72.85	69.69	74.92	75.28	63.18	65.47	65.63	80.40	89.05
	RSCA	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.98	0.98
Sri Lanka	RCA	114.69	95.89	90.51	96.83		93.05	93.27	92.77	104.90	118.23
	RSCA	0.98	0.98	0.98	0.98		0.98	0.98	0.98	0.98	0.98
India	RCA	3.40	4.16	4.33	4.35	4.57	4.78	3.91	3.35	3.67	4.15
	RSCA	0.55	0.61	0.62	0.63	0.64	0.65	0.59	0.54	0.57	0.61
Poland	RCA	1.69	1.32	1.42	1.19	1.17	1.41	1.39	1.33	1.22	1.16
	RSCA	0.26	0.14	0.17	0.09	0.08	0.17	0.16	0.14	0.10	0.07

Source: Authors' computations.

3.4. Direction of trade

The transitional probabilities presented in Table 5 provide insights into the shifting trade patterns of Indian tea exports, specifically to eight major importing countries: UAE, Iraq, Russia, USA, UK, Germany, Iran, and Saudi Arabia. The remaining countries were grouped under "Other Countries" for this analysis. The data reveals that India was able to retain 49 percent of its previous export share to the UAE during the study period. Of the remaining 51 percent, 39 percent shifted to other countries, 12 percent to Germany, and 9 percent to Iraq. Similarly, Iraq retained 41 percent of its tea imports from India, while 58 percent of the remaining 59 percent shifted to the UAE. Russia, on the other hand, maintained a higher retention rate, holding on to 66 percent of its previous share, with 34 percent redirected to other countries.

The analysis also highlights that Germany and the United Kingdom emerged as the most unstable markets for India's tea exports, with minimal retention of previous export shares.

This instability indicates a significant diversion of exports to other markets, emphasizing the need for India to focus on stabilizing and strengthening its presence in these less secure markets to maintain its global export competitiveness.

Table 5: Transition probability matrix for tea exports from India (2016-2023)

Country	UAE	Iraq	Russia	USA	UK	Germany	Iran	Saudi Arabia	others
UAE	0.4953	0.0931	0.0000	0.0000	0.0025	0.0125	0.0000	0.0025	0.3941
Iraq	0.5861	0.4139	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Russia	0.0000	0.0000	0.6650	0.0000	0.0000	0.0000	0.0000	0.0000	0.3350
USA	0.5653	0.1107	0.0000	0.2811	0.0000	0.0000	0.0000	0.0429	0.0000
UK	0.0000	0.0000	0.0000	0.0000	0.0752	0.0000	0.0000	0.0000	0.9248
Germany	0.0000	0.0000	0.1658	0.0000	0.4176	0.0000	0.4166	0.0000	0.0000
Iran	0.0000	0.0259	0.0356	0.1675	0.0000	0.0000	0.3589	0.0436	0.3685
Saudi Arabia	0.0000	0.0000	0.0000	0.8351	0.0000	0.0000	0.0000	0.1649	0.0000
others	0.0000	0.0000	0.0641	0.0123	0.0971	0.1371	0.1803	0.0221	0.4869

Source: Authors' computations.

3.5. Trade potential of Indian tea exports

The gravity model analysis examines India's tea exports to 173 trading partners from 2004 to 2021, addressing zero trade observations using the Poisson Pseudo Maximum Likelihood (PPML) method, as recommended by Silva and Tenreyro[22] and applied in agricultural trade studies by Fadeyi *et al.*[23] and Sun and Reed [24]. The estimation results, presented in Table 6, indicate that most variables exhibit expected signs and significance levels. The GDP of the importing country positively and significantly impacts trade, reflecting higher demand potential, while the GDP of the exporting country signifies greater production capacity, leading to increased exports. Specifically, a 1% increase in trading partners' GDP leads to a 2.04% [exp(0.71)] increase in India's tea exports, underscoring the role of larger economies in driving tea imports from India, ceteris paribus.Geographical distance, a proxy for transportation costs, negatively influences India's tea exports, with a 1% increase in distance resulting in a 0.11% [exp(−2.19)] decrease in exports, suggesting that India engages more in trade with geographically closer countries where transportation costs are lower. The importing country's population also positively influences tea exports from India, with statistical significance at the 10% level. While higher exchange rates are generally expected to boost exports, this study found a negligible effect on tea trade.The dummy variable for common language and ethnicity positively and significantly affects India's tea exports, with a 1% increase in shared language and ethnicity correlating with a 0.43% increase in tea exports. Conversely, the variable for trade agreements exhibits an inverse relationship with India's tea exports, indicating that India primarily exports tea to countries without trade agreements. This finding suggests that such agreements do not significantly impact tea exports, aligning with literature suggesting that free trade agreements and trade liberalization policies can sometimes adversely affect domestic industries, including India's tea sector [25]. Notably, the dummy variable for common colonial history is negative, indicating that countries with a British colonial past tend to import less tea from India.

To enhance global competitiveness, India's tea industry must prioritize high product quality, competitive pricing, and compliance with international labelling and packaging standards [26]. Export growth can play a crucial role in India's economic development and help position the country as a significant player in the global tea market.

Table 6: Results of the panel gravity model for Indian tea exports.

Tea	**Coefficient**	**Std. err.**	**z**	**P>z**	**[95% conf.**	**interval]**
ln_dist	-2.19	0.12	-18.00	0.0000	-2.43	-1.95
ln_gdp_d	0.71	0.05	13.71	0.0000	0.61	0.81
ln_gdp_o	0.16	0.14	1.19	0.2340	-0.11	0.44
ln_popu_d	0.11	0.06	1.69	0.0920	-0.02	0.23
eu_d	-0.06	0.14	-0.43	0.6670	-0.33	0.21
ln_tradeflow_baci	0.33	0.05	6.18	0.0000	0.22	0.43
comrelig	-3.14	1.34	-2.35	0.0190	-5.76	-0.52
comlang_ethno	0.43	0.13	3.40	0.0010	0.18	0.68
comcol	-0.20	0.12	-1.66	0.0970	-0.45	0.04
wto_d	-1.03	0.18	-5.87	0.0000	-1.37	-0.69
exchange_rate	0.00	0.00	-2.70	0.0070	0.00	0.00
FTA	-2.16	0.24	-8.93	0.0000	-2.64	-1.69
_cons	5.00	2.86	1.75	0.0800	-0.60	10.60

Source: Authors' computations.

The gravity model coefficients are utilized to estimate India's predicted tea exports, which are then compared to actual exports to evaluate the export potential. Table 7 presents India's tea export potential across 173 countries. The analysis reveals that India has substantial potential to increase tea exports to 118 countries, with the highest prospects in Uzbekistan, USA, France, Hong Kong, and Italy. Conversely, in markets such as Russia, United Kingdom, Iran, UAE, and Australia, actual exports have already exceeded the estimated potential. Currently, India's primary tea export destinations include UAE, Iraq, Russia, USA, and the United Kingdom, where the export potential is largely exhausted, except for the USA. This indicates a need to shift focus towards untapped markets to fully exploit export opportunities. The results suggest that India is concentrating on saturated markets, thereby missing opportunities in less explored regions. By targeting these untapped markets, India can enhance its global tea trade presence.

Table 7: Trade potential of Indian tea in the global market.

List of countries with which India has trade potential			**List of countries with which India has exhausted trade potential**		
Country	Export potential Index	export potential in US$ 1000	Country	Export potential Index	export potential in US$ 1000
Uzbekistan	-0.97	19670	Russia	0.43	-56159
USA	-0.15	16878	United Kingdom	0.33	-28989
France	-0.78	13928	Iran	0.19	-26048
Hong Kong	-0.81	13292	UAE	0.26	-24492

Italy	-0.54	11973	Australia	0.67	-16287
China	-0.30	10396	Netherlands	0.41	-9889
Saudi Arabia	-0.24	9530	Sri Lanka	0.82	-7990
Turkey	-0.71	8870	Poland	0.44	-7105
Spain	-0.81	6111	Ireland	0.64	-5380
Israel	-0.60	5949	tunisia	0.92	-5220
Thailand	-0.86	5883	Canada	0.33	-3839
Oman	-0.66	5479	Kazakhstan	0.06	-3567
Iraq	-0.23	5013	Germany	0.05	-3351
Nepal	-0.71	4238	Egypt	0.19	-3115
Bangladesh	-0.31	4069	Ukraine	0.29	-2332
Switzerland	-0.85	3380	Afghanistan	0.31	-1810
Ethiopia	-1.00	3269	Kenya	0.36	-1696
Kuwait	-0.44	3194	Cambodia	0.84	-1455
South Africa	-0.82	3155	Ghana	0.71	-1372
Korea, Rep.	-0.72	3083	Burkina Faso	0.93	-1253

Source: Authors' computations.

4. Conclusions:

India's tea industry plays a significant role in the global tea market, both as the second-largest producer and the fourth-largest exporter. The country's diverse agro-climatic conditions, particularly in regions like Assam, West Bengal, and the Western Ghats, contribute to an annual production of approximately 1,500 million kilograms, solidifying its status as a global tea powerhouse. However, despite this strong production base, India's tea export potential remains underutilized, particularly in emerging and less explored markets.The analysis using the gravity model reveals that while India has made substantial inroads into key markets such as the UAE, Iraq, Russia, the USA, and the United Kingdom, the export potential in these regions is largely exhausted, except for the USA. Conversely, significant untapped opportunities exist in countries like Uzbekistan, France, Hong Kong, and Italy, where India's current exports fall short of their potential. This indicates a need for strategic redirection of India's export focus towards these underexploited markets to maximize trade benefits. India's revealed comparative advantage (RCA) and revealed symmetric comparative advantage (RSCA) indices further affirm the country's strong positioning in the global tea trade, with an upward trend in RCA values indicating increasing specialization in tea production and exportation. However, the study also identifies certain challenges, such as the negative impact of geographical distance on exports and the limited effectiveness of free trade agreements, which have not significantly boosted India's tea exports. Additionally, the analysis highlights the instability in markets like Germany and the United Kingdom, where export retention is low, suggesting the need for targeted efforts to stabilize and strengthen India's presence in these volatile markets.To fully capitalize on its tea export potential, India must adopt a multi-faceted approach. This includes enhancing product quality, ensuring competitive pricing, adhering to international standards, and strategically expanding into less saturated markets. By doing so, India can not only sustain its current market shares but also secure new avenues for growth, thereby enhancing its global trade footprint. In conclusion, while India is well-positioned in the global tea market, there remains considerable scope for growth and diversification, particularly in untapped regions. Focused efforts in these areas will be crucial in driving India's future success in the global tea trade.

1. References:

1. Chatterjee, S. (2005). Examining the inter-linkages between production, consumption and exports of Tea in India. Conf. on Empirical Issues in Intern. Trade and Finance, held in December, 2010.
2. Arya N. (2013). Indian Tea Scenario. : International Journal of Scientific and Research Publications. : ISSN: 2250-3153: 3(7).
3. Uppal, D.K. (1994). Status paper on horticulture and role of National Horticulture Board in creation of infrastructure. Indian Food Packer, 48(8): 22.
4. Talukdar, U., & Hazarika, C. (2017). Production and export of value added tea in India and its global competitiveness. Economic Affairs, 62(4), 705-710.
5. Chaudhary S., (2019). Export Competitiveness of Indian Tea Industry. International Journal for Research in Engineering & Management: ISSN: 2454-9150, 05 (02), 318 323.
6. Chang, K. 2015. World Tea Production and Trade Current and Future Development. Rome: Food and Agriculture Organization of the United Nations.
7. Mitra, N. (1991). Indian tea industry: Problems and policies. Economic and Political Weekly, M153-M156.
8. Balassa B. 1965. Trade liberalization and revealed comparative advantage. The Manchester School 33(2): 99–123.
9. Dalum, B., Laursen, K., & Villumsen, G. (1998). Structural change in OECD export specialisation patterns: de-specialisation and 'stickiness'. International Review of Applied Economics, 12(3), 423-443.
10. Angles, S., Sundar, A., & Chinnadurai, M. (2011). Impact of globalization on production and export of turmeric in India: An economic analysis. *Agricultural Economics Research Review*, 2(4): 301-308.
11. Fisher, W.D. (1967) Note on curve fitting with minimum deviations by linear programming. Journal of the American Statistical Association, 56: 359-363.
12. Wagner, H.H. (1959) Linear programming for regression analysis. Journal of the American Statistical Association, 54: 206-12.
13. Tinbergen, Jan (1962) Shaping the World Economy — Suggestions for an International Economy Policy, The Twentieth Century Fund.
14. Poyhonen, Pentti (1963) A Tentative model for the volume of trade between countries, Weltwirtschaftliches Archive, 90: 93-100.
15. Anderson, James E. "A Theoretical Foundation for the Gravity Equation." American Economic Review 69:1 (1979), 106-16.
16. Bergstrand, J H. 1985. The gravity equation in international trade: Some microeconomic foundations and empirical evidence. Review of Economic Statistics, 67(3): 474– 481. https://doi.org/10.2307/1925976
17. Helpman, Elhanan and Krugman, Paul. 1985. Market Structure and Foreign Trade. Cambridge, MA: MIT Press.
18. Melitz, J. (2007). North, South and distance in the gravity model. European Economic Review, 51(4), 971-991.
19. Irshad, M. S., Xin, Q., & Arshad, H. (2018). Competitiveness of Pakistani rice in international market and export potential with global world: A panel gravity approach. *Cogent Economics & Finance*, *6*(1), 1486690.
20. Mohmand, Y. T., Salmaan, A., Mughal, K. S., Imran, M., &Makarevic, N. (2015). Export potentials of Pakistan: Evidence from the gravity model of trade. European Journal of Economic Studies, 14(4), 212–220.

21. Gul, N., & Yasin, H. M. (2011). The trade potential of Pakistan: An application of the gravity model. The Lahore Journal of Economics, 16(1), 23–62.
22. Silva, J. S., &Tenreyro, S. (2011). Further simulation evidence on the performance of the Poisson pseudomaximum likelihood estimator. Economics Letters, 112, 220–222. doi:10.1016/j. econlet.2011.05.008
23. Fadeyi, O. A., Bahta, T. Y., Ogundeji, A. A., & Willemse, B. J. (2014). Impacts of the SADC free trade agreement on South African agricultural trade. Outlook on Agriculture, 43(1), 53–59. doi:10.5367/oa.2014.0154
24. Sun, L., & Reed, M. R. (2010). Impacts of free trade agreements on agricultural trade creation and trade diversion. American Journal of Agricultural Economics, 92, 1351–1363. doi:10.1093/ajae/aaq076
25. Irshad, M. S., Xin, Q., & Hao, H. (2014). Boon or Bane: Assessing the environment of China's free trade agreements with other nations. International Journal of Business and Management Review, 2(5), 1–13.
26. Irshad, M. S., & Xin, Q. (2015). Pakistan-China free trade agreement (PCFTA) treaty model: Capabilities, pro spects and disputes. Academic Research International, 6(3), 53–60.