Competitiveness and Performance of Tea Exports of India

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Abstract

The research paper examined the region-wise production growth and major country-wise export growth of Indian tea and reached the conclusion that North India was producing the larger share of total tea production with a compound annual growth rate of 3.24%. India exported tea to various global markets such as Turkey, Ukraine, the UK, the USA, Canada, Australia, Germany, Italy, Belgium, Singapore, and Japan during the period from 1990 - 1991 to 2013 - 2014. Over the decade, India remained at the top position in international tea exports market. The growth index of North and South India during the year 2013 - 2014 was 150.82% and 118.23%, respectively. Tea production of India met the demand of importing countries as well domestic demand. The total tea export of India in 1990 - 1991 was valued at ₹ 1071.10 crores and in 2013-14, it was valued at ₹ 4509.09 crores. In country-wise analysis, Turkey with 57.81% CAGR obtained the top position out of all major countries importing Indian tea, followed by Ukraine, Saudi Arabia, other CIS, and Iran. On the basis of country-wise analysis, it can be concluded that the export concentration was in a few countries, which is an issue that needs to be addressed with various policy reforms for the growth of the Indian tea sector.

Keywords: **CAGR, exports, performance, production, statistical analysis**

JEL Classification : F1, F14, F17

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Water is the most important in the world and after water, tea is one of the major consumable drinks. As we know that the East India Company promoted tea plantations in Assam to develop trade and Maniram Deewan was the first Indian who started tea plantation in Assam followed by West Bengal, Kerala, and Tamil Nadu. The tea sector is one of the important producing sectors mainly concentrated in North and South regions of the country because of their favourable agro-climatic condition for tea production. Tea is grown in 16 states of India of which West Bengal, Assam, Kerala, and Tamil Nadu account for almost 96% of the total production of tea. Various types of tea such as green tea, black tea, white tea, yellow tea, oolong tea, herbal tea, and even compressed tea are grown and are in great demand across the world. The Indian tea industry plays a vital role in Indian foreign trade. The industry is about 180 years old and has observed fluctuating trends because of long gestation periods, unstable prices, and agricultural nature (Arya, 2013). Huge quantity of tea is produced in India, Kenya, Indonesia, Sri Lanka, China, Argentina, and Vietnam. However, when we compare various countries as tea producers, we find that Sri Lanka, Kenya, China, and India are the largest producers of tea. In India, tea has been consumed almost in every house ; so, domestic demand of tea in India is in large quantity. Tea production of India meets the demand of importing countries as well as domestic demand. South India and North India are the major production hubs of tea. India contributes to 28% of the world tea production and 13% of world tea exports. Certain varieties of tea such as Darjeeling are produced only in India and are in huge demand in various countries (Selvakumar & Jeyaselvam, 2012).

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Tea exports play a strategic role in the economic sector of the country. The Indian tea market has great potential and large numbers of regional and local players contribute to the sector. Tea has been known as export oriented, exchange earner, and a major employment provider product in India. Export is the main factor for the development of the Indian tea industry. India exports tea to various global markets such as Turkey, Ukraine, the UK, the USA, Canada, Australia, Germany, Italy, Belgium, Singapore, and Japan. Over the decade, India remained at the top position in international tea exports market. The total tea exports of India in 1990-1991 was ₹ 1071.10 crores and in 2013-2014, it was ₹ 4509.09 crores, which shows a significant increasing trend.

Review of Literature

Arya (2013) said that India was one of the major consumers and producers of black tea at a global level, and the Indian tea industry was a large employment provider in India. She presented the statistical analysis of exports, imports, consumption, and production of tea in India for the period from 1997 to 2010. She also stated that poor quality and high cost of production and higher prices were the main causes of India's declining tea exports over the study period. Shil and Das (2012) highlighted the importance of Intellectual Property Rights (IPR) and Geographical Indication (GI) to strengthen the Indian tea industry. They also discussed trade - related aspects of intellectual property rights with various legislative changes that need to be brought in from time to time. Bordoloi (2012) analyzed various trends of tea production and exports with special reference to India. The study was based on 30 years of data (1981 to 2010) of country-wise production and exports of Indian tea. India is one of the largest tea producers, and even then it showed diminishing trend in tea exports over the study period.

Hilal (2012) discussed and compared the causes behind positive and negative growth rates of tea exports of major producing countries such as Sri Lanka, Kenya, China, and India. He worked out that India's export share declined during the period from 1999 to 2008 and explained various causes for this decreasing trend of India in tea exports in global markets such as high domestic consumption, high production cost, and low productivity. Hicks (2009) demonstrated global tea production with special reference to current status and future development. He discussed various aspects regarding the tea sector like production, processing, and consumption of tea. Furthermore, he stated that decline in exports from Bangladesh, Kenya, and Indonesia were affected by political uncertainty in Pakistan, and structural constraints plague the tea industry. He also presented his views on several issues such as projected production of tea, projected consumption of tea, projected tea exports, projected tea imports, and minimum tea exports standards for tea. Nasir and Shamsuddoha (2011) focused on global tea production, consumption, and exports. They analyzed domestic and international markets of Bangladeshi tea. They observed that tea production in Bangladesh after 1970 was on a decline due to lack of new technology, appropriate policy, marketing, and financing obstacles, etc.

Hazarika (2011) demonstrated that the Indian tea industry's status was negatively affected because of low quality and high prices of tea. She also discussed major problems of the sector with special reference to the marketing problems. Kumari and Malhotra (2015) used export-led growth approach to focus on production for exports. They examined the export-led growth hypothesis in South Asian economies such as India, Pakistan, Bangladesh, and Sri Lanka. They recommended that export-led growth hypothesis was valid for India in the short run and for Bangladesh and Sri Lanka, it was valid only in the long run. Goel and Goel (2014) summarized the impact of phasing out of quotas on the textiles business in the year 2005 on textile exports from India and its competing economies. The research paper also delineated the trends in trade of textile industry. Barua and Mazumder (2012) analyzed the growth rates of Indian tea exports and challenges from other global markets for Indian exports of tea. The paper revealed that the trend of India's exports share had declined. On the other hand, export share of other global markets such as Argentina, Kenya, China, Nepal, and Vietnam had increased. Asopa (2011) presented India's stands in the global tea market because of major domestic market and huge production. The book also focused on competitiveness of international tea trade. Shil (2013) explained the crucial position of

India regarding export market performance as well as domestic market performance of tea. He observed that tea export performance of India was declining since the last two decades (1991-2010). Nagoor (2009) analyzed the export performance of Indian tea and found that export trends of Indian tea had been declining over the last three decades. Percentage share of India's tea exports in total world tea exports was 21.9% in 1981 - 1990, which declined to 13.35% in 2001- 2004.

Research Objectives

The present study tries to analyze and evaluate the production and export performance of Indian tea. More specifically, the main objectives of the research paper are :

- To get familiarized with India's tea exports and marketing to global markets, especially to major markets.
- To study the export competitiveness and performance of Indian tea.
- To evaluate the changing direction of tea exports of India.
- To analyze production performance of tea in India.

Framework of Analysis

The data were processed with the help of various statistical tools such as growth index, compound annual growth rate (CAGR), descriptive statistics, and coefficient of variation (CV). In addition, to calculate the concentration of importing countries/markets of tea exports from India, six indices have been considered. These indices are : (a) index of maximum proportion (D_1), (b) Hirschman - Herfindhal index (D_2), (c) entropy index (D_3), (d) concentration ratio of CR_4 (D_4), concentration ratio of CR_8 (D_5), and concentration ratio of CR_{16} (D_6). In the proposed study, these indices are based on the percentage share of the individual countries/markets importing tea.

Let m denote the importing countries and q_{it} indicates the imports of i^{th} partner country at time t. Then the sum of q_{it} from 1 to m will be q_t and the share of each country in the import of tea for year t would be demonstrated as under :

$$S_{it} = \frac{q_{it}}{q_t} \text{ and}$$

$$q_t = \Sigma^{n}_{i=1} \quad q_{it}$$

where,

S_{it} : Share of each importing country at time t,
q_{it} : Imports of each importing country at time t,
q_t : Sum of the total of each importing country.
$i = 1, \quad m$ and $t = 1, \ldots\ldots, T$

All the six concentration measures are calculated on the basis of S_{it}.

(i) Index of Maximum Proportion :

$$D_1 = \max S_{it}$$

(ii) Hirschman - Herfindhal Index :

$$D_2 = \Sigma^{n}_{i=1} S_{it}^{2}$$

(iii) Entropy Index:

$$D_3 = \Sigma^{n}_{i=1} S_{it} \log 1/S_{it}$$

(iv) Concentration Ratio (CR_n):

$$CR_n = \Sigma^{n}_{i=1} S_{it}, n < m$$

In majority of the cases, CR_4 (D_4), CR_8(D_5), and CR_{16} (D_6) have been used in the research study. However, in the present study CR_4 (D_4) and CR_8(D_5) have been used because the study is based on exports to major countries.

Analysis and Results

Total exports of Indian tea in terms of quantity, value, and unit price and their growth indices during the period from 1990 - 1991 to 2013 - 2014 have been presented in the Table 1. It is clear from the Table 1 that during

Table 1. Total Tea Exports of India from 1990 - 91 to 2013 - 14

Year	Quantity (Million Kg)	Growth Index of Quantity	Value (₹ Crores)	Growth Index of Value	Unit Price (₹ per Kg)	Growth Index of Unit Price
1990-1991	199.17	100.00	1071.10	100.00	53.78	100.00
1991-1992	216.45	108.67	1212.27	113.17	56.01	104.14
1992-1993	180.69	90.72	1058.7	98.84	58.59	108.94
1993-1994	161.17	80.92	1080.1	100.84	67.02	124.61
1994-1995	152.16	76.39	986.41	92.09	64.83	120.54
1995-1996	169.47	85.08	1244.52	116.19	74.31	138.17
1996-1997	169.04	84.87	1301.46	121.50	76.99	143.15
1997-1998	211.26	106.07	2003.15	187.01	94.82	176.31
1998-1999	205.86	103.35	2191.84	204.63	106.47	197.97
1999-2000	192.44	96.62	1932.66	180.43	100.43	186.74
2000-2001	203.55	102.19	1889.79	176.43	92.84	172.62
2001-2002	190.00	95.39	1695.79	158.32	89.25	165.95
2002-2003	184.40	92.58	1665.04	155.45	90.29	167.88
2003-2004	183.07	91.91	1636.99	152.83	89.42	166.26
2004-2005	205.81	103.33	1924.71	179.69	93.56	173.96
2005-2006	196.67	98.74	1793.58	167.45	91.19	169.56
2006-2007	218.15	109.52	2045.72	190.99	93.78	174.37
2007-2008	185.32	93.04	1888.68	176.33	101.92	189.51
2008-2009	190.64	95.71	2381.79	222.36	124.94	232.31
2009-2010	213.43	107.15	3038.69	283.69	142.37	264.72
2010-2011	213.79	107.34	2995.79	279.69	140.13	260.56
2011-2012	214.35	107.62	3304.82	308.54	154.18	286.68
2012-2013	216.23	108.56	4005.93	374.001	185.26	344.47
2013-2014	225.76	113.35	4509.09	420.97	199.73	371.38

Source: Tea Board of India, Ministry of Commerce and Industry, Government of India. (n.d.)

Table 2. Growth Rates of India's Total Tea Exports During the Period from 1990 -1991 to 2013 - 2014

	CAGR	R^2	*t*-value	*F*-value
Quantity (Million Kg)	0.34	0.2963	3.044*	9.267
Value (₹ Crores)	2.38	0.8251	10.187*	103.786
Unit Price (₹)	2.02	0.8564	11.457*	131.285

Source: Tea Board of India, Ministry of Commerce and Industry, Government of India. (n.d.)

Note: * The coefficients are significant at α = 0.01.

Table 3. Descriptive Statistics of India's Total Tea Exports During the Period from 1990 - 1991 to 2013-2014

	Mean	Standard Deviation	Coefficient of Variation
Quantity (Million Kg)	195.786	19.722	10.073
Value (₹ Crores)	2035.775	931.614	45.762
Unit Price (₹)	101.754	38.452	37.789

Source: Tea Board of India, Ministry of Commerce and Industry, Government of India. (n.d.)

Table 4. Region-Wise Tea Production in India from 2002-2003 to 2013-2014

(Quantity in Million Kg)

Year	North India	Growth Index	South India	Growth Index	All India	Growth Index
2002-2003	639.84	100.00	206.13	100.00	845.97	100.00
2003-2004	647.94	101.26	230.71	111.92	878.65	103.86
2004-2005	673.57	105.27	233.27	113.16	906.84	107.19
2005-2006	721.47	112.75	227.47	110.35	948.94	112.17
2006-2007	748.43	116.97	224.64	108.97	973.07	115.02
2007-2008	758.27	118.50	228.76	110.97	987.02	116.67
2008-2009	734.03	114.72	238.74	115.82	972.77	114.98
2009-2010	734.38	114.77	256.8	124.58	991.18	117.16
2010-2011	728.52	113.85	238.21	115.56	966.73	114.27
2011-2012	865.59	135.28	229.87	111.51	1095.46	129.49
2012-2013	893.38	139.62	241.69	117.25	1135.07	134.17
2013-2014	965.07	150.82	243.71	118.23	1208.78	142.88

Source: Tea Board of India, Ministry of Commerce and Industry, Government of India. (n.d.)

1990 - 1991, the total exports of tea from India was 199.17 million kg, ₹ 1071.10 crores, and unit price was ₹ 53.78 per kg. During 1991-1992, the total export was 216.45 million kg, ₹ 1212.27 crores, and at the same time, the unit price was ₹ 56.01 kg.

Tea exports assumed an increasing trend and reached 225.76 million kg, ₹ 4509.09 crores, and ₹ 199.73 per kg during 2013-14. It is also clear from Table 1 that the indices of growth are 113.35%, 420.97%, and 371.38% at the same time, respectively. All this growth due to increase in quality of Indian tea is a good sign for the Indian tea industry.

Table 2 demonstrates the compound annual growth rates of total exports of tea from India in terms of quantity, value, and unit price for the period from 1990-1991 to 2013-2014. The study analyzed exports of tea in terms of value. It has the highest growth rate, that is, 2.38%. It is clear from Table 2 that the lowest growth rate of India's exports of tea in terms of quantity is 0.34%. The Table 2 demonstrates that all growth rates have been found to be statistically significant at the 0.01 level of significance.

The Table 3 shows that in 24 years, from 1990-1991 to 2013-2014, the mean value of India's exports is ₹ 2035.775 crores, mean volume of India's exports is 195.786 million kg, and for the same period, the mean of unit price is 101.754. The highest coefficient of variation of India's tea exports is ₹ 45.762 crores over the study period.

The Table 4 demonstrates the region-wise production of tea in India during the period from 2002 - 2003 to 2013 - 2014. The total tea production in India was 845.97 million kg during the year 2002-2003. The tea production was 639.84 million kg tea in North India and 206.13 million kg tea production in South India during the year 2002-2003. In the year 2003-2004, the total tea production increased to 878.65 million kg with index growth of 103.86%. The production of tea in North India showed an increasing trend over the study period except in the period from 2008-2009 to 2010-2011. On the other hand, tea production in South India increased continuously during the period from 2002 - 2003 to 2009 - 2010, and after this period, it started to decline. It is also clear from the Table 4 that growth index of North and South India during the year 2013-14 was 150.82% and 118.23%, respectively. The production increased due to great demand in domestic market as well as the global market of Indian tea. Thus, the analysis indicates that both North India and South India played a vital role in tea production in India.

The Table 5 shows the region-wise compound annual growth rates of total tea production in India for the period from 2002-2003 to 2013-2014. The highest growth rate of tea production was in North India (3.24%). Growth rates for all India and North India are found to be statistically significant at $\alpha = 0.01\%$ level of significance. The highest growth rate of tea production in North India is due to favourable agro-climatic condition for tea production.

The Figure 1 shows the value of six different measures of concentration of total tea exports among the 25 major importing countries during the period from 2005-2006 to 2013-2014. These measures of concentration, that is, index of maximum proportion (D_1) ranges from 0.14191 to 0.19415, Herfindhal index (D_2) from 0.07788 to 0.09290, and entropy index (D_3) from 1.16236 to 1.22114. Furthermore, the concentration ratio of four major importing countries CR_4 (D_4), concentration ratio of eight importing countries CR_8 (D_5), and concentration ratio of 16 major importing countries CR_{16} (D_6) ranges from value 0.30396 to 0.50439, 0.52372 to 0.74647, and 0.77493 to 0.95792, respectively.

It is clear from the Figure 1 that index D_2 has been fluctuating regarding concentration of the group except for the year 2007-2008, which shows the highest value of index D_2. Index D_3 also depicts the fluctuating information about the concentration. The Figure 1 shows that the concentration measure $CR_{16}(D_6)$ gives higher concentration figures in comparison to CR_8 (D_5), and D_5 in comparison to $CR_4(D_4)$ index.

The Table 6 demonstrates the major country-wise growth rates of the exports of Indian total tea exports to 25 major importing countries during the period from 2005-2006 to 2013-2014. From the Table 6, it is clear that the countries namely, Turkey (57.81), Ukraine (39.62), Other CIS (33.05), Saudi Arabia (29.78), and Iran (26.01) showed more than 25% compound annual growth rate (CAGR), which is an indication of an increasing trend of the exports of tea from India to the above - mentioned importing countries. Undoubtedly, there is a great potential for exports of tea in the markets of the above-mentioned countries. Furthermore, Pakistan, A.R.E., USA, Ireland,

Table 5. Growth Rates of India's Total Tea Production During the Period from 2002 - 2003 to 2013 - 14

(Quantity in Million Kg)

	CAGR	*t*-value	*F*-value	R^2
North India	3.24	6.922*	47.915	0.827
South India	1.39	0.472	0.223	0.021
All India	2.72	8.278*	68.53	0.872

Source: Tea Board of India, Ministry of Commerce and Industry, Government of India. (n.d.)

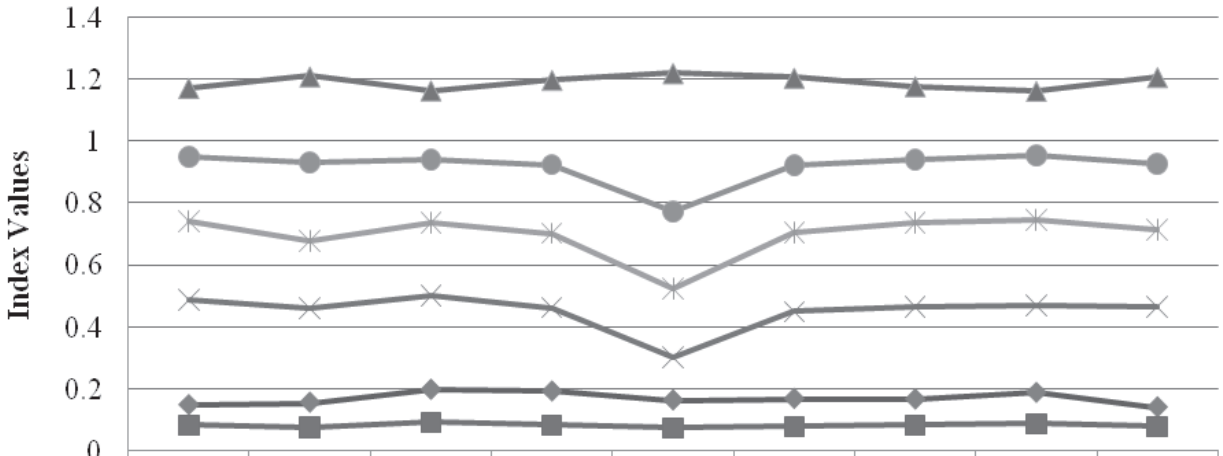
Note:* The coefficients are significant at $\alpha = 0.01$.

Japan, Russian Federation, Netherlands, Germany, and Canada showed between 10% and 25% growth rate, which can be considered as moderate growth rate. Therefore, demand of Indian tea exports can be increased in these importing countries through various methods such as improvement in tea quality, low prices, and more production. Most of the growth rates are statistically significant at the 1% ($\alpha = 0.01$) level of significance. However, the *t*-values of growth rates of Kazakhstan, Iraq, and Afghanistan are negative and statistically insignificant and all these values are confirmed by *t*-value and R^2.

To understand the consistency and variability for exports, coefficient of variation (CV) was calculated for each tea importing country. These are shown in the Table 7. It is clear from the Table 7 that among all the tea importing countries, minimum coefficients of variation are for Australia, Singapore, UK, Poland, Netherlands, Russian Federation, and UAE. This presents lower amount of variation in export of tea to these seven countries over the study period. The high levels of coefficients of variation for Turkey, Ukraine, Afghanistan, ARE, Other CIS, and Saudi Arabia indicate wide fluctuation in tea exports during the entire study period from 2005-2006 to 2013-2014. Therefore, it can be said that export of tea from India to various importing countries is very consistent, which is a very good sign for Indian tea trade as well as the Indian economic sector.

The Table 8 represents descriptive statistics of tea exports to various major importing countries during the period from 2005 - 2006 to 2013-2014. The mean value of year-wise exports of tea increases from 71.743 to 180.363, which is more than two and half times increase from the year 2005-2006 to 2013-2014. Furthermore, absolute dispersion measured by standard deviation increases from 78.395 to 182.542, which is more than two

Figure 1. Country Concentration Indices of Total Tea Exports During the Period from 2005-2006 to 2013-2014



	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
D1	0.14954	0.15750	0.19989	0.19415	0.16485	0.16988	0.16788	0.18960	0.14191
D2	0.08585	0.07788	0.09290	0.08486	0.07682	0.08029	0.08394	0.08918	0.07933
D3	1.17230	1.21004	1.16456	1.19858	1.22114	1.20573	1.17791	1.16236	1.20781
D4	0.48970	0.46354	0.50439	0.46488	0.30396	0.45244	0.4667	0.47234	0.46868
D5	0.74024	0.67893	0.73722	0.70205	0.52372	0.70523	0.73619	0.74647	0.71422
D6	0.95284	0.93484	0.94451	0.92767	0.77493	0.92509	0.94338	0.95792	0.92935

Years

Sources: Calculated on the basis of results given in Appendix Table A2, Appendix Table A3, and Appendix Table A4.

Table 6. Major Country-Wise Growth Rates of Total Tea Exports During the Period from 2005-2006 to 2013-2014

(Values in ₹ Crores)

Sr. No.	Name of the Country	*CAGR*	*t* - value	*F* - value	R^2
1	Turkey	57.81	2.798**	7.833	0.528
2	Ukraine	39.62	5.146*	26.485	0.79
3	Other CIS	33.5	5.501*	30.261	0.812
4	Saudi Arabia	29.78	12.838*	164.823	0.959
5	Iran	26.01	8.336*	69.489	0.908
6	Pakistan	23.14	3.950*	15.609	0.69
7	Other Countries	21.38	6.480*	42.001	0.857
8	A.R.E.	20.01	1.715	2.942	0.295
9	USA	15.73	7.042*	49.601	0.876
10	Ireland	13.48	4.319*	18.656	0.727
11	Japan	13.03	5.158*	26.608	0.791
12	Russian Federation	11.96	6.190*	38.325	0.845
13	Netherland	11.57	8.636*	74.593	0.914
14	Germany	11.14	4.666*	21.776	0.756
15	Canada	10.58	2.226**	4.956	0.414
16	Poland	9.35	7.088*	50.244	0.877
17	United Kingdom	9.23	5.326*	28.371	0.802
18	UAE	7.73	5.709*	32.602	0.823
19	Australia	5.08	4.191*	17.565	0.715
20	Kenya	5.02	0.816	0.666	0.086
21	Singapore	4.8	2.307**	5.325	0.432
22	Sri Lanka	0.16	0.027	0.0007	0.0001
23	Kazakhstan	-1.94	-0.263	0.069	0.009
24	Iraq	-27.45	-0.983	0.968	0.121
25	Afghanistan	-4.74	-0.355	0.126	0.017

Sources: Calculated on the basis of data given in Appendix Table A1.

Note * The coefficients are significant at $\alpha = 0.01$; ** The coefficients are significant at $\alpha = 0.10$.

Other CIS = Other Commonwealth of Independent States , A.R.E. = Arabic Republic of Egypt

times increase in 9 years (2005-2006 to 2013-2014). Likewise, I obtain fluctuating values of coefficient of variation during the study period. However, the stability during 2005-2006 to 2013-2014 in the exports of total tea decreased. This is because for the year 2005-2006, the figure is 109.272 and for the year 2013-2014, the figure decreases to 101.208. For the year 2008-2009, the coefficient of variation (CV) value is the highest, that is, 117.375. Obviously, it shows the presence of diversification of tea exports to various countries of the world.

Discussion

The research paper examines the region-wise production growth and major country-wise export growth of Indian tea and reaches the conclusion that North India has been producing the larger share of total tea production with a

Table 7. Country - Wise Coefficients of Variation During the Period from 2005 - 2006 to 2013-2014

Sr. No.	Country	Coefficients of Variation
1	Russian Federation	32.717
2	Kazakhstan	40.976
3	Ukraine	165.887
4	Other CIS	90.298
5	United Kingdom	27.324
6	Netherlands	31.091
7	Germany	45.994
8	Ireland	42.459
9	Poland	27.203
10	USA	44.827
11	Canada	37.684
12	UAE	24.265
13	Iran	66.908
14	Iraq	90.527
15	Saudi Arabia	65.879
16	ARE	66.041
17	Turkey	265.968
18	Afghanistan	74.728
19	Singapore	21.627
20	Sri Lanka	42.537
21	Kenya	47.45
22	Japan	39.343
23	Pakistan	59.377
24	Australia	15.676
25	Other Countries	56.048

Sources: Calculated on the basis of data given in Appendix Table A1.

Table 8. Descriptive Statistics of Total Tea Exports During the Period from 2005 -2006 to 2013-2014

(Values in ₹ Crores)

Sr. No.	Year	Mean	Standard Deviation	Coefficient of Variation
1	2005-2006	71.743	78.395	109.272
2	2006-2007	81.828	81.272	99.320
3	2008-2009	75.547	88.673	117.375
4	2008-2009	108.871	117.673	108.084
5	2009-2010	95.243	93.327	97.988
6	2010-2011	119.831	122.750	102.435
7	2011-2012	137.700	141.682	102.891
8	2012-2013	160.237	181.356	113.179
9	2013-2014	180.363	182.542	101.208

Sources: Calculated on the basis of data given in Appendix Table A1.

compound annual growth rate of 3.24%. On the other hand, South India had less concentration of tea production and registered a growth rate of 1.39% during the period from 2002-2003 to 2013-2014. In country-wise analysis, Turkey, with 57.81% compound annual growth rate, obtained the top position out of all major importing countries of Indian tea followed by Ukraine, Saudi Arabia, other CIS, and Iran. On the basis of country-wise analysis, it can be concluded that the export concentration is in few countries, so it is a matter of concern for the tea sector of India. Total Indian tea exports assumed an increasing trend and reached 225.76 million kg (quantity), ₹ 4509.09 crores (value), and ₹ 199.73 per kg (unit price) in the year 2013-2014. Thus, total exports of tea in terms of quantity, value, and unit price demonstrated great potential. Furthermore, the concentration ratio of four major importing countries CR_4 (D_4), concentration ratio of eight importing courtiers CR_8 (D_5), and concentration ratio of 16 major importing countries CR_{16} (D_6) ranges from value 0.30396 to 0.50439, 0.52372 to 0.74647, and 0.77493 to 0.95792, respectively. The mean value of year-wise exports of tea increases from 71.743 to 180.363 in 9 years only, which is an appreciable sign for India's tea sector. Finally, this analysis can be helpful in understanding the real picture of competitiveness and performance of tea exports and production.

Policy Initiatives

Based on the analysis and results of secondary data of tea production and exports from India, various policy implications can be recommended to improve the performance and competitiveness of Indian tea exports :

- Competition is increasing in every sector due to globalization and liberalization. So, traders of tea must think about production and export of tea. Tea producers should establish a marketing department for tea to tackle various constraints regarding tea marketing.
- The total tea exports of India have been growing at a CAGR of 2.38% in terms of value. The growth rate seems low, so the research paper recommends the requirement of additional stimulus for the export of tea.
- The growth rates of some countries for India's tea exports are not so good. So, it is the need of the hour that demand of Indian tea among importing countries be increased. For this purpose, various steps can be taken up such as quality improvement, easy availability, low cost, price management, liberal terms of trade, etc.

Limitations of the Study and Scope for Further Research

The major limitation of this research paper is that due to some data resource constraints, only data till 2013-2014 could be analyzed. The period of the study is from 1990-1991 to 2013-2014. The study is based on country-wise and region-wise export analysis only.

Future studies can analyze the state-wise trade analysis. A comparative study of export and import of tea can be another fruitful research work. A comparative study of various tea products may be taken up as a new research topic. Analysis of consumption, area, and yield of tea can be taken into consideration as a research study. Tea plantations and conditions of labourers in tea gardens in India can also be analyzed. Moreover, post independence and before independence trade position of tea can be examined by using the same tools and techniques.

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Appendix A.

Table A1. Major Country - Wise Exports of Tea from India During 2008-2009 to 2013-2014

(Values in ₹ Crores)

S. No.	Country	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
1	Russian Federation	268.22	322.21	377.54	528.45	392.65	508.94	554.83	759.56	639.91
2	Kazakhstan	114.28	104.67	111.05	163.94	131.49	163.24	196.1	229.09	35.66
3	Ukraine	5.87	8.75	11.03	18.92	15.31	21.95	21.87	36.04	207.69
4	Other CIS	5.31	3.06	7.13	7.88	8.5	9.81	39.93	21.33	37.77
5	United Kingdom	186.17	214.09	166.51	225.33	212.64	247.19	328.89	347.91	338.13
6	Netherlands	36.3	48	46.04	59.15	57.19	68.05	84.88	72.27	98.21
7	Germany	100.84	89.02	97.27	85.21	90.79	129.28	170.03	212.74	259.25
8	Ireland	28.47	46.73	38.56	35.82	33.58	63.17	54.04	78.4	94.44
9	Poland	31.3	35	38.09	44.24	38.33	53.66	52.84	52.02	71.91
10	U.S.A.	136.3	138.99	135.19	178.74	153.4	221.47	333.16	317.63	396.55
11	Canada	19.61	12.5	14.61	36.13	30.71	44.6	32.84	27.21	31.33
12	U.A.E.	265.87	231.22	253.89	295.58	275.85	314.31	325.48	394.93	473.03
13	Iran	65.02	105.79	154.7	196.88	196.22	284.98	216.82	389.77	603.85
14	Iraq	158.06	180.76	0.41	215.96	80.17	39.62	-	1.09	58
15	Saudi Arabia	12.49	11.04	17.13	30.72	35.93	41.17	52.6	63.01	89.54
16	A.R.E.	5.05	25.32	49.66	47.39	99.1	42.12	59.4	107.53	24.81
17	Turkey	1.02	1.27	0.7	0.43	1.05	2.46	1.3	6.63	131.42
18	Afghanistan	16.53	51.76	36.82	95.1	92.91	36.1	7.14	8.63	88.45
19	Singapore	6.92	7.22	6.96	6.44	7.03	6.38	6.92	10.35	10.73
20	Sri Lanka	25.03	29.14	39.82	66.68	48.28	70.67	52.74	27.15	23.16
21	Kenya	11.77	46.45	16.61	16.27	11.52	24.8	24.49	30.12	25.19
22	Japan	69.38	61.83	50.34	77.25	69.52	97.78	102.89	140.69	155.26
23	Pakistan	43.87	90.67	30.21	79.04	60.38	132.63	178.53	203.94	196.01
24	Australia	81.95	89.05	96.24	105.95	114.55	131.45	107.91	129.19	116.71
25	Other Countries	97.95	91.18	92.17	104.28	123.98	239.96	299.19	338.7	302.08
	Total	**1793.58**	**2045.72**	**1888.68**	**2721.78**	**2381.79**	**2995.79**	**3304.82**	**4005.93**	**4509.09**

Sources: Tea Board of India, Ministry of Commerce and Industry, Government of India, New Delhi.

Table A2. Export Coefficients of Major Countries of India's Tea During the Period from 2005-2006 to 2013-2014

S. No.	Country	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
1	Russian Federation	0.1495445	0.1575044	0.1998962	0.194156	0.164855	0.1698851	0.1678851	0.1896089	0.1419156
2	Kazakhstan	0.0637161	0.0511654	0.0587977	0.0602326	0.0552064	0.0544898	0.0593376	0.0571877	0.0079085
3	Ukraine	0.0032728	0.0042772	0.0058401	0.0069513	0.0064279	0.0073269	0.0066176	0.0089967	0.0460603
4	Other CIS	0.0029606	0.0014958	0.0037751	0.0028952	0.0035687	0.0032746	0.0120824	0.0053246	0.0083764
5	U. K.	0.103798	0.1046526	0.0881621	0.0827877	0.0892774	0.0825125	0.0995183	0.0868487	0.0749885
6	Netherlands	0.0202389	0.0234636	0.0243768	0.0217321	0.0240114	0.0227152	0.0256837	0.0180408	0.0217804
7	Germany	0.0562228	0.0435152	0.0515016	0.0313067	0.0381184	0.0431539	0.0514491	0.0531063	0.057495
8	Ireland	0.0158733	0.0228428	0.0204164	0.0131605	0.0140986	0.0210863	0.0163519	0.019571	0.0209444
9	Poland	0.0174511	0.0171089	0.0201675	0.0162541	0.0160929	0.0179118	0.0159888	0.0129857	0.0159478
10	U.S.A.	0.0759933	0.0679418	0.0715791	0.0656703	0.0644053	0.0739271	0.1008103	0.07929	0.0879446
11	Canada	0.0109334	0.0061103	0.0077356	0.0132744	0.0128937	0.0148876	0.009937	0.0067924	0.0069482
12	U.A.E.	0.1482343	0.1130262	0.1344272	0.108598	0.1158163	0.1049172	0.0984865	0.0985863	0.1049059
13	Iran	0.0362515	0.0517128	0.0819091	0.072335	0.0823834	0.0951268	0.0656072	0.0972983	0.1339184
14	Iraq	0.0881254	0.0883601	0.0002171	0.0793451	0.0336596	0.0132252	0	0.0002721	0.0128629
15	Saudi Arabia	0.0069637	0.0053966	0.0090698	0.0112867	0.0150853	0.0137426	0.0159161	0.0157292	0.0198577
16	A.R.E.	0.0028156	0.0123771	0.0262935	0.0174114	0.0416074	0.0140597	0.0179737	0.0268427	0.0055022
17	Turkey	0.0005687	0.0006208	0.0003706	0.000158	0.0004408	0.0008212	0.0003934	0.001655	0.0291456
18	Afghanistan	0.0092162	0.0253016	0.0194951	0.0349404	0.0390085	0.0120502	0.0021605	0.0021543	0.0196159
19	Singapore	0.0038582	0.0035293	0.0036851	0.0023661	0.0029516	0.0021297	0.0020939	0.0025837	0.0023796
20	Sri Lanka	0.0139553	0.0142444	0.0210835	0.0244987	0.0202705	0.0235898	0.0159585	0.0067775	0.0051363
21	Kenya	0.0065623	0.0227059	0.0087945	0.0059777	0.0048367	0.0082783	0.0074104	0.0075189	0.0055865
22	Japan	0.0386824	0.0302241	0.0266535	0.0283822	0.0291881	0.0326391	0.0311333	0.0351204	0.0344327
23	Pakistan	0.0244595	0.0443218	0.0159953	0.0290398	0.0253507	0.0442721	0.0540211	0.0509095	0.04347
24	Australia	0.0456907	0.0435299	0.0509562	0.0389267	0.0480941	0.0438782	0.0326523	0.0322497	0.0258833
25	Other Countries	0.0546114	0.0445711	0.0488013	0.0383132	0.0520533	0.0800991	0.0905314	0.0845497	0.0669936
	MAX	**0.149544**	**0.157504**	**0.199896**	**0.194156**	**0.164855**	**0.169885**	**0.167885**	**0.189609**	**0.141916**

Sources: Calculated on the basis of data given in Table A1.

Table A3. Hirschman-Herfindhal Index (HHI)

S. No.	Country	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
1	Russian Federation	0.02236	0.02481	0.03996	0.0377	0.02718	0.02886	0.02819	0.03595	0.02014
2	Kazakhstan	0.00406	0.00262	0.00346	0.00363	0.00305	0.00297	0.00352	0.00327	6.3E-05
3	Ukraine	1.1E-05	1.8E-05	3.4E-05	4.8E-05	4.1E-05	5.4E-05	4.4E-05	8.1E-05	0.00212
4	Other CIS	8.8E-06	2.2E-06	1.4E-05	8.4E-06	1.3E-05	1.1E-05	0.00015	2.8E-05	7E-05
5	United Kingdom	0.01077	0.01095	0.00777	0.00685	0.00797	0.00681	0.0099	0.00754	0.00562
6	Netherlands	0.00041	0.00055	0.00059	0.00047	0.00058	0.00052	0.00066	0.00033	0.00047
7	Germany	0.00316	0.00189	0.00265	0.00098	0.00145	0.00186	0.00265	0.00282	0.00331
8	Ireland	0.00025	0.00052	0.00042	0.00017	0.0002	0.00044	0.00027	0.00038	0.00044
9	Poland	0.0003	0.00029	0.00041	0.00026	0.00026	0.00032	0.00026	0.00017	0.00025
10	U.S.A.	0.00577	0.00462	0.00512	0.00431	0.00415	0.00547	0.01016	0.00629	0.00773
11	Canada	0.00012	3.7E-05	6E-05	0.00018	0.00017	0.00022	9.9E-05	4.6E-05	4.8E-05
12	U.A.E.	0.02197	0.01277	0.01807	0.01179	0.01341	0.01101	0.0097	0.00972	0.01101
13	Iran	0.00131	0.00267	0.00671	0.00523	0.00679	0.00905	0.0043	0.00947	0.01793
14	Iraq	0.00777	0.00781	4.7E-08	0.0063	0.00113	0.00017	0	7.4E-08	0.00017
15	Saudi Arabia	4.8E-05	2.9E-05	8.2E-05	0.00013	0.00023	0.00019	0.00025	0.00025	0.00039
16	A.R.E.	7.9E-06	0.00015	0.00069	0.0003	0.00173	0.0002	0.00032	0.00072	3E-05
17	Turkey	3.2E-07	3.9E-07	1.4E-07	2.5E-08	1.9E-07	6.7E-07	1.5E-07	2.7E-06	0.00085
18	Afghanistan	8.5E-05	0.00064	0.00038	0.00122	0.00152	0.00015	4.7E-06	4.6E-06	0.00038
19	Singapore	1.5E-05	1.2E-05	1.4E-05	5.6E-06	8.7E-06	4.5E-06	4.4E-06	6.7E-06	5.7E-06
20	Sri Lanka	0.00019	0.0002	0.00044	0.0006	0.00041	0.00056	0.00025	4.6E-05	2.6E-05
21	Kenya	4.3E-05	0.00052	7.7E-05	3.6E-05	2.3E-05	6.9E-05	5.5E-05	5.7E-05	3.1E-05
22	Japan	0.0015	0.00091	0.00071	0.00081	0.00085	0.00107	0.00097	0.00123	0.00119
23	Pakistan	0.0006	0.00196	0.00026	0.00084	0.00064	0.00196	0.00292	0.00259	0.00189
24	Australia	0.00209	0.00189	0.0026	0.00152	0.00231	0.00193	0.00107	0.00104	0.00067
25	Other Countries	0.00298	0.00199	0.00238	0.00147	0.00271	0.00642	0.0082	0.00715	0.00449
	HHI	**0.08585**	**0.07788**	**0.0929**	**0.08486**	**0.07683**	**0.08029**	**0.08394**	**0.08919**	**0.07933**

Sources: Calculated on the basis of data given in Table A2.

Table A4. Entropy Index

S. No.	Country	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
1	Russian Federation	0.12341	0.12643	0.13977	0.13821	0.12906	0.13079	0.13011	0.13692	0.12034
2	Kazakhstan	0.07619	0.06606	0.07236	0.07349	0.06945	0.06886	0.07279	0.07107	0.01662
3	Ukraine	0.00813	0.01013	0.01304	0.015	0.01409	0.01564	0.01442	0.01841	0.06157
4	Other CIS	0.00749	0.00423	0.00915	0.00735	0.00873	0.00814	0.02317	0.01211	0.0174
5	United Kingdom	0.10212	0.10259	0.09299	0.08958	0.09368	0.0894	0.09973	0.09217	0.08436
6	Netherlands	0.03428	0.03824	0.03932	0.03614	0.03889	0.03734	0.04085	0.03146	0.0362
7	Germany	0.07028	0.05924	0.06634	0.0471	0.05408	0.0589	0.0663	0.0677	0.07132
8	Ireland	0.02856	0.03749	0.0345	0.02475	0.02609	0.03534	0.02921	0.03343	0.03516
9	Poland	0.03068	0.03023	0.03419	0.02908	0.02886	0.03129	0.02872	0.0245	0.02866
10	U.S.A.	0.08505	0.07935	0.08197	0.07766	0.07671	0.08363	0.10046	0.08728	0.09285
11	Canada	0.02144	0.01353	0.01633	0.02492	0.02436	0.0272	0.0199	0.01473	0.015
12	U.A.E.	0.12289	0.10702	0.11716	0.10471	0.10843	0.10273	0.09914	0.0992	0.10272
13	Iran	0.05223	0.06652	0.08901	0.08251	0.08932	0.09719	0.07762	0.09846	0.11693
14	Iraq	0.09296	0.09311	0.0008	0.08732	0.04958	0.02484	0	0.00097	0.02432
15	Saudi Arabia	0.01502	0.01224	0.01852	0.02198	0.02748	0.02559	0.02862	0.02836	0.0338
16	A.R.E.	0.00718	0.02361	0.04155	0.03063	0.05745	0.02604	0.03137	0.04217	0.01243
17	Turkey	0.00185	0.00199	0.00127	0.0006	0.00148	0.00253	0.00134	0.0046	0.04475
18	Afghanistan	0.01876	0.0404	0.03334	0.0509	0.05496	0.02312	0.00576	0.00574	0.03349
19	Singapore	0.00931	0.00865	0.00897	0.00621	0.00747	0.00569	0.00561	0.00669	0.00624
20	Sri Lanka	0.02589	0.0263	0.03534	0.03946	0.03432	0.03839	0.02868	0.0147	0.01176
21	Kenya	0.01433	0.03733	0.01808	0.01329	0.0112	0.01724	0.01579	0.01597	0.01259
22	Japan	0.05464	0.04593	0.04196	0.04391	0.0448	0.04851	0.04691	0.05108	0.05038
23	Pakistan	0.03942	0.05998	0.02873	0.04463	0.04046	0.05994	0.06847	0.06584	0.0592
24	Australia	0.06123	0.05925	0.06588	0.05488	0.06338	0.05958	0.04852	0.0481	0.04108
25	Other Countries	0.06896	0.06021	0.06401	0.05428	0.06681	0.08782	0.09444	0.09071	0.07865
	Entropy	**1.17231**	**1.21005**	**1.16456**	**1.19858**	**1.22115**	**1.20573**	**1.17791**	**1.16236**	**1.20781**

Sources: Calculated on the basis of data given in Table A2.

About the Author

Dr. Naresh Kumar has presented seven research papers in various national seminars/conferences. His eight research papers have been published in various international and national journals. Presently, he is working as an Assistant Professor of Economics at Government College, Barwala (Hisar), Haryana.