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Export performance of Indian fresh onion : A Markov Chain Analysis

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Abstract

The Onion (*Allium cepa*) is the most widely consumed vegetable, which is traditionally used as a food ingredient in the Mediterranean diet. India is the second largest onion growing countries in the world and contributes over 10 per cent of global onion trade. India has exported 1.62 million Metric tonnes of onion worth of 405.99 million US Dollars in the year 2023. The trade restriction on onion export has resulted in a drastic decline in the wholesale trade. With this background, this study has been carried out to estimate the growth trend and instability index in the area, production, productivity and export of fresh onion from India; to analyse the components of change in export value of Indian fresh onion; and to study the export share and direction of trade in fresh onion. The study completely relied on secondary data collected from APEDA. The data were analysed using compound growth rate analysis, cuddy della valle index, percentage change, decomposition analysis and Markov chain analysis. The study revealed that Bangladesh is the largest importer of Indian fresh onion. The decomposition analysis revealed that the export unit value effect has a strong contribution for the growth of onion export in India. The direction of trade has lucidly shown that the exporting trend is stable with Bangladesh and Malaysia. Hence, the onion export has wider opportunities in the international trade.

Key words : export, growth rate, instability, direction of trade.

The Onion (*Allium cepa*) which is also called a bulb onion, common onion and garden onion is the most widely cultivated species of the genus Allium. It is an important vegetable traditionally used as a food ingredient in the Mediterranean diet that has a high production, domestic, and foreign trade worldwide (ICAR). India is the second largest onion growing countries in the world, which contributes over 10 per cent of global onion trade and there is a huge demand for the Indian onion in the world. Indian onions have two

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cycles, first harvesting which starts from November to January and the second harvesting from January to May. The major onion producing states of India are Maharashtra, Karnataka, Madhya Pradesh, Gujarat, Bihar, Andhra Pradesh, Rajasthan, Haryana and Telangana. Maharashtra ranks first in onion production with a share of 42.53 per cent, followed by Madhya Pradesh with a share of 15.16 per cent in 2021-22, as per the source of APEDA.

India has exported only 1.62 million Metric tonnes of onion worth of 405.99 million US Dollars in the year 2023, as against 2.52 million Metric tonnes of onion worth of 561.38 million US Dollars in the year 2022. The trade restriction decision to ban onion export until March 2024 has resulted in a drastic 60 per cent decline in the wholesale trade of onion.

The top exporting countries are Netherland with the share of 15.20 per cent, followed by Mexico (12.91 per cent), India (10.26 per cent), China (6.27 per cent) and Spain (5.80 per cent). India ranks the third position among the top exporting countries in the world. The international market of fresh onion from India expands to the top ten destination countries such as Bangladesh, Malaysia, United Arab Emirates, Sri Lanka, Nepal, Indonesia, Qatar, Vietnam, Oman and Kuwait (APEDA, 2022). As per APEDA, the total export quantity of fresh onion from India was 25,25,258.35 Metric tonnes in 2022-23. At the national level, Maharashtra state contributes the highest export quantity of fresh onion with 14,43,410.69 Metric tonnes, followed by West Bengal (6,94,031.71 Metric tonnes), Tamil Nadu (2,08,789.89 Metric tonnes), Uttar Pradesh (1,13,622.90 Metric tonnes) and Bihar (41,312.88 Metric tonnes).

Kusuma[3] in his study on production and export performance of Indian onion using markov chain analysis revealed that the major onion export destination was Bangladesh (36.55 per cent), followed by Malaysis (21.03 per cent) and Other Countries (16.47 per cent) in the year 2010, which insisted the need to explore and exploit the market potential of other countries. Laxmi (2017) has examined the performance of production and trade of onion in India and the trade direction analysis revealed that Malaysia was one of the most stable markets for onion export which has 51.41 per cent probability of retention, followed by United Arab Emirates (39.67 per cent) for the period 1991-2012. Nivetha[5] in her study on the performance of fresh onion in India used markov chain analysis. The results revealed that United Arab Emirates was the highest stable onion market with a probability of retention of 52 per cent, followed by Nepal (45 per cent) during the period 1999-2019. Jadhav (2021) analysed the export performance of onion during the period 1996-2007 using cuddy della valle Index and revealed that the CDI in terms of export quantity and export value was instable with 0.25 per cent and 0.23 per cent, respectively during the reference period. Bhagat[1] has carried out a study on Indian onion export using markov chain approach for 29 years (1990-2018) and revealed that Bangladesh and Malaysia were the most stable onion trade partners, whereas Nepal, United Arab Emirates and Oman were moderately stable countries. With this scenario, this study has been carried out to look into the export performance of Indian fresh onion. The specific objectives were to estimate the growth trend and instability in the area, production, productivity and export of fresh onion in India;

to analyse the components of change in export value of Indian fresh onion; and to study the export share and direction of trade in fresh onion.

Data collection :

This study is based only on secondary data which were collected from APEDA. The country wise annual export data for the period from 1991 to 2022 has been used to analyse the growth trend, direction of trade and changing pattern of export of fresh onion. The time series data has been further classified as three periods namely Period I (1991 to 2000), Period II (2001 to 2010) and Period III (2011 to 2022).

Tools of analysis :

Compound Growth rate analysis :

The growth rate in area, production, productivity of fresh onion in India, also export quantity and value of fresh onion were estimated to capture the changes in the trend values. Exponential function of following form was used to estimate the growth rates

$$Y = a\, b^t$$

$$\log y = \log a + t \log b$$

$$Y = A + B\, t$$

Where,

Y = log y

A = log a

B = log b

Y = Area (hectares), production (metric tonnes), productivity (metric tonnes/hectares),

export quantity (Metric tonnes), export value (Thousand Dollars) and unit value (Thousand Dollars/tonnes)

t = Time elements which takes the value 1, 2...n for various years

B = Regression co-efficient

Compound Growth Rate 'r' = (Antilog of B-1) x 100.

Cuddy Della Valle Index :

Cuddy Della Valle Instability Index (Cuddy and Della Valle, 1978) is a modification of coefficient of variation to accommodate trend present in the data, which is commonly present in economic time series data which was calculated as follows:

$$CDVI = C.V \times \sqrt{1 - Ad\ R^2}$$

Where, CV is coefficient of variation, and Ad R^2 is adjusted coefficient of determination. The ranges of CDVI as given by Rakesh Sihmar, (2014) were followed: Low instability (between 0 and 15); Medium instability (greater than 15 and lower than 30); and High instability (greater than 30).

Decomposition analysis :

The change in the export value was examined by using decomposition model. The total change in onion export value was decomposed into quantity effect, unit value effect and interaction effect.

$$\text{Export Value} = \frac{Q_0\, \Delta P * 100}{\Delta EV} + \frac{P_0\, \Delta Q * 100}{\Delta EV} + \frac{\Delta Q \Delta P * 100}{\Delta EV}$$

Where,

Q_0 = Quantity in base year

ΔQ = Current quantity minus base quantity

P_0 = Price in base year

ΔP = Current price minus base price
ΔEV= Current export value minus base export value

Markov Chain Model :

The trade directions of fresh onion were analyzed using the first order Markov chain approach. Central to Markov chain analysis is the estimation of the transitional probability matrix 'P' whose elements, P_{ij} indicate the probability of exports switching from country 'i' to country 'j' over time. The diagonal element P_{ij}, where i=j, measures the probability of a country retaining its market share or in other words, the loyalty of an importing country to a particular country's exports.

Annual export data for a period from 1991 to 2022 was used to analyze the direction of trade and changing pattern of fresh onion. The average exports to a particular country was considered to be a random variable which depends only on the past exports to that country, which can be denoted algebraically as

$$E_{jt} = \sum_{i=1}^{n} (E_{i\,t-1})\ P_{ij} + e_{jt}$$

Where,

E_{jt} = Exports from India to the j^{th} country in the year t

$E_{i\,t-1}$ = Exports of 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 $E_{i\,t-1}$

n = The number of importing countries

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

$$\sum_{i=1}^{n} P_{ij} = 1 \text{ And } 0 \le P_{ij} \le 1$$

Thus, the expected export share of each country during period 't' is obtained by multiplying the exports to these countries in the previous period (t-1) with the transitional probability matrix. The transitional probability matrix is estimated using linear programming (LP) framework by a method referred to as minimization of Mean Absolute Deviation (MAD), the formulation is stated as

$$\text{Min, } OP^* + I\,e$$

Subject to,

$$X\,P^* + V = Y$$
$$GP^* = 1$$
$$P^*\,e \ge 0$$

Where,

P^* is a vector of the probabilities P_{ij} to be estimated

O is the vector of zeros

I is an appropriately dimensional vectors of areas

e is the vector of absolute errors

Y is the proportion of exports to each country

X is a block diagonal matrix of lagged values of Y

V is the vector of errors

G is a grouping matrix to add the row elements of P arranged in P* to unity.

The export quantity of fresh onion to major six importing countries and the total of all other countries referred as 'other countries' were taken for analysis.

Currently, the total production of fresh onion in India is 30,205.30 metric tonnes in

1740.50 thousand hectares with a productivity of 17.40 metric tonnes/hectares. However, Indian fresh onion has been exported to various countries in the world, which contributed over 10.26 per cent of global onion trade, which reveals the huge demand for the quality of Indian fresh onion. Considering the objective of this present study, the results of the study are presented in the following sections.

Trends in Area, Production and Productivity of Fresh Onion in India :

The compound growth rate were estimated to understand the trends in the area, production and productivity of fresh onion in India during Period I (1991 to 2000), Period II (2001 to 2010), Period III (2011 to 2022) and overall period (1991 to 2022) and are presented in Table-1.

Table-1. Growth Rates of Area, Production and Productivity of Fresh Onion in India

Particulars	Period I (1991-2000)	Period II (2001-2010)	Period III (2011-2022)	Overall Period
Area (in '000 Hectare)	3.45**	9.15*	4.84*	5.94*
Production (in '000 MT)	-0.13^{NS}	15.48*	5.69*	7.95*
Productivity (in MT/Hectare)	-3.49**	5.79*	0.81	1.89*

*, ** and ***denotes significant at 1 per cent, 5 per cent and 10 per cent

NS denotes Non-significant

From Table-1, it could be seen that the growth rate for area under onion were positively significant in all the three periods, with 5.94 per cent growth in the overall period. However, the growth rate was the highest in Period II (9.15 per cent), followed by Period III with 4.84 per cent and Period I with 3.45 per cent.

It could also be seen that the growth rates in production and productivity were positive in Period II, Period III and in the overall period, as against the negative growth in Period I. The Period II recorded with a highest growth of 15.48 per cent in production and 5.79 per cent growth in productivity. It could be concluded that the higher production was due to expansion in area under onion and also higher productivity, which might be due to higher demand for onion.

Trend in Fresh onion export from India :

The export quantity and export value of fresh onion were 16,26,535 tonnes and 4,06,037.20 thousand dollars, respectively, with unit value of 0.25 thousand dollars/tonnes in the year 2023. The pattern of average export quantity of onion, average export value and unit value and growth rates have been analysed for the three periods, *viz.,* Period I (1991-2000), Period II (2001-2010) and Period III (2011-2023) and the results are presented in Table-2.

Table-2. Trends in Fresh Onion Export from India

Particulars		Period I (1991-2000)	Period II (2001-2010)	Period III (2011-2023)	Overall Period
Export Quantity	Average (tonnes)	3,44,996	10,62,537	16,68,158	10,83,679
	CGR (per cent)	-3.80***	13.06*	2.10^{NS}	6.85*
Export Value	Average (Thousand Dollars)	58,823	2,39,903	4,35,952	2,62,262
	CGR (per cent)	-2.11^{NS}	23.88*	0.96^{NS}	9.06*
Unit Value	Average (Thousand Dollars/tonnes)	0.17	0.21	0.27	0.22
	CGR (per cent)	1.76***	9.56*	1.11^{NS}	2.07*

*, ** and ***denotes significant at 1 per cent, 5 per cent and 10 per cent, NS denotes Non-significant

From Table-2, it could be inferred that the average export quantity of onion during the entire period was 10,83,679 tonnes worth of 2,62,262 thousand Dollars, with an average unit value of 0.22 thousand Dollars/tonnes. The average export quantity of fresh onion was 3,44,996 tonnes in Period I and it has increased to 10,62,537 tonnes in Period II and reached 16,68,158 tonnes in Period III. Similarly, the average export value of fresh onion was 58,823 thousand dollars in Period I and it has increased to 2,39,903 thousand dollars in Period II and reached 4,35,952 thousand dollars in Period III. Thus, the unit value was 0.17 Thousand Dollar/tonnes in Period I and it has increased to 0.21 Thousand Dollar/tonnes in Period II and reached 0.27 Thousand Dollar/tonnes in Period III.

It could also be seen that the compound growth rate for export quantity and export value were positively significant in Period II, Period III and in the overall period. However, the growth rate of export quantity in Period II was the highest with 13.06 per cent. The export quantity of fresh onion has grown by 6.85 per cent between the period 1991 and 2023. The growth rate of export value of onion in Period II was the highest with 23.88 per cent, which has grown by 9.06 per cent in the overall period.

The trend line in export of fresh onion from India in terms of quantity and value were presented for Period I, Period II, Period III and overall period in Figure 1, 2, 3 and 4, respectively. The exponential trend line witnessed an upward trend in both overall quantity and value during the period 1991 to 2023.

Instability in Export Trade of Fresh Onion:

The fluctuation or instability in the export performance of fresh onion from India has been analysed and coefficient variation (CV), Adjusted R Square and Cuddy Della Valle Instability Index in terms of export quantity and export value are presented in Table-3.

Figure 1. Trend Line of Export Quantity of Fresh Onion from India

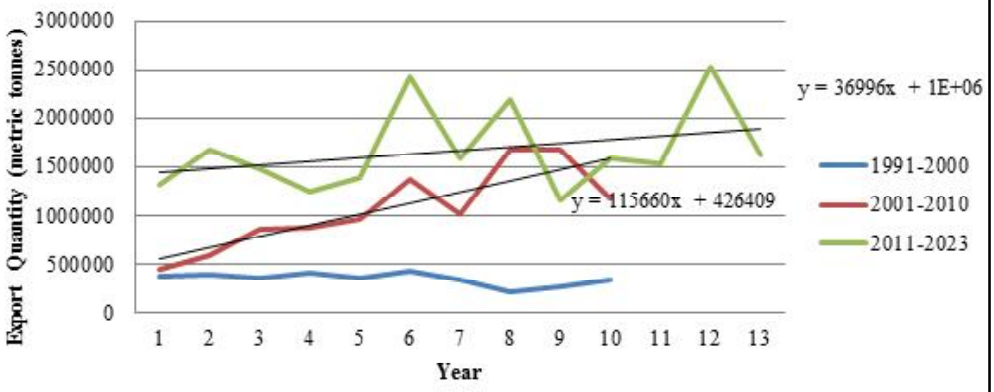


Figure 2. Overall Trend Line of Export Quantity of Fresh Onion from India

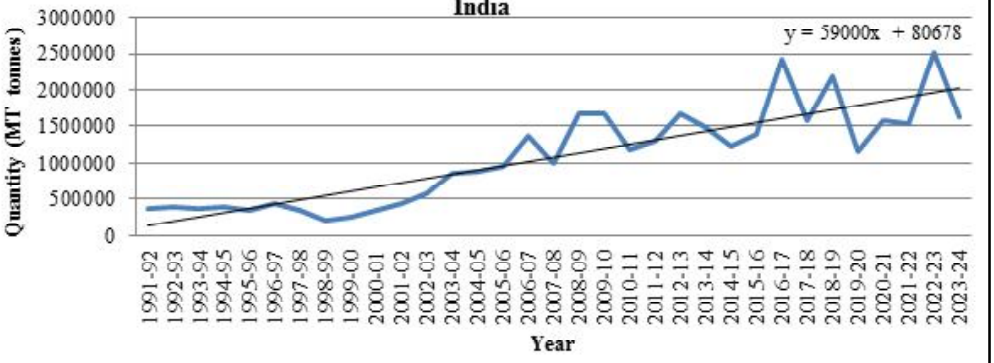
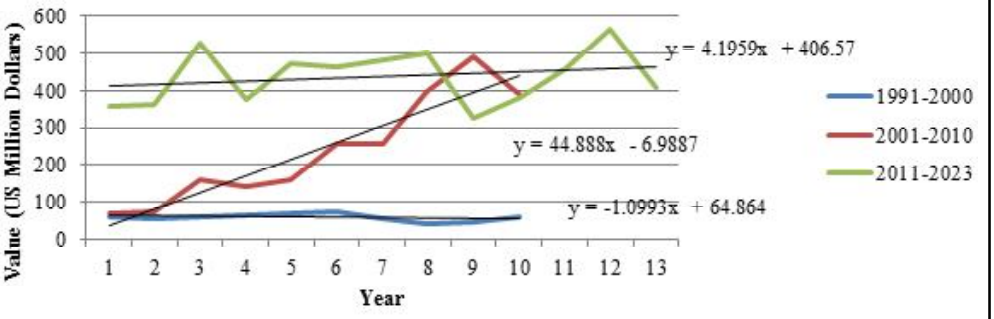


Figure 3. Trend Line of Export Value of Fresh Onion from India



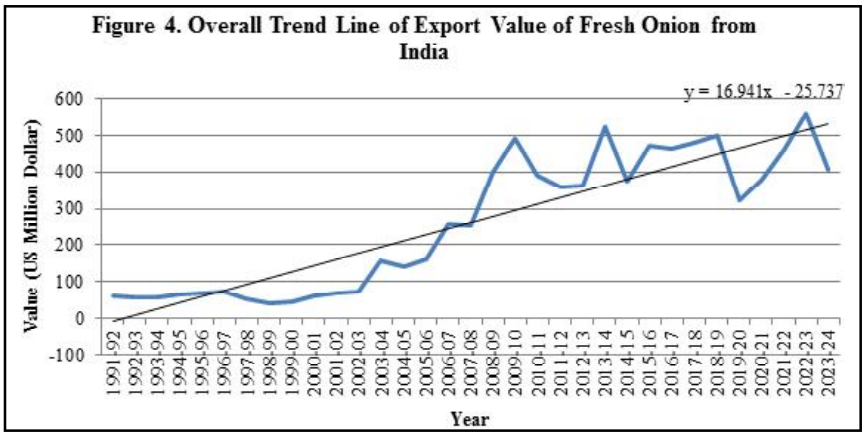


Table-3. Estimates of Instability Index for Indian Onion Export

Variables	Duration	CV	Adjusted R Square	CDVI	Inference
Export Quantity	Period I	18.53	0.24	16.20	Medium instability
	Period II	39.03	0.73	20.41	Medium instability
	Period III	26.19	0.03	25.82	Medium instability
	Overall Period	60.55	0.77	28.84	Medium instability
Export Value	Period I	16.62	0.31	13.77	Low instability
	Period II	60.31	0.91	18.05	Medium instability
	Period III	16.72	- 0.04	17.03	Medium instability
	Overall Period	69.53	0.81	29.98	Medium instability

It could be inferred from Table-3 that the export quantity and value of fresh onion in the overall period between 1991 and 2023 have shown medium instability, might be due to the domestic market of the country. Eventually, the Cuddy Della Valle Instability Index for overall export quantity and export value were 28.84 per cent and 29.98 per cent, respectively. The variability indices of export quantity during the Period I, Period II and Period III were 16.20 per cent, 20.41 per cent and 25.82 per cent, respectively, which were ranked as medium instability. Also, the export value values in Period II and Period III exhibited a medium instability with the indices of 18.05 per cent and 17.03 per cent, respectively. However, the variability index for export value of onion for Period I was 13.77 per cent, which has low instability.

Export Share of Partner Countries in Indian Fresh Onion :

India has exported about 1.62 million metric tonnes fresh onion worth of 405.99 million US dollar in the year 2023. The trade share in the Indian onion export were analysed and the results are presented in Table-4.

Table-4. Share of Partner Countries in Indian Fresh Onion Export, 2023

Countries	Export Share	Countries	Export Share
Bangladesh	42.74	Kuwait	2.05
United Arab Emirates	11.03	Iraq	1.56
Malaysia	10.89	Saudi Arab	1.49
Sri Lanka	10.06	Singapore	1.14
Nepal	5.06	Baharain	1.03
Vietnam	2.77	Maldives	0.51
Indonesia	2.73	Mauritius	0.36
Qatar	2.55	Philippines	0.35
Oman	2.13	U K	0.33

From Table-4, it could be inferred that among the trade partners of Indian fresh onion, Bangladesh (42.74 per cent) is the largest importer of fresh onion in the year 2023, followed by United Arab Emirates (11.03 per cent), Malaysia (10.89 per cent), Sri Lanka (10.06 per cent), Nepal (5.06 per cent), Vietnam (2.77 per cent) and Indonesia (2.73 per cent). The remaining quantities of fresh onion were exported to many countries such as Qatar (2.55 per cent), Oman (2.13 per cent), Kuwait (2.05 per cent), etc. Thus, it is evident that the neighbour countries from Asia are the major partners of onion export.

Percentage changes in the Onion export to major importing countries :

The export performance of onion was a dynamic activity over a period of time. Since the changes in onion export were determined by the production in both importing and exporting countries, price fluctuation, natural calamities and post-harvest management. These phenomena have led to a steady change of trade in terms of export quantity and export value, to the partner countries. The results of percentage changes over the periods for the major importing countries are presented in Table-5.

Table-5. Fresh Onion Export from India to Major Importing Countries

Countries	Particulars	Period I (1991-2000)	Period II (2001-2010)	Percentage Change over Period I	Period III (2011-2023)	Percentage Change over Period I
Bangladesh	Export Quantity	57,674.37	3,80,099.10	5.59	5,14,005.50	7.91
	Export Value	8.921	91.077	9.21	119.5625	12.40
United Arab Emirates	Export Quantity	89,716.93	1,38,015.90	0.54	2,06,142.50	1.30
	Export Value	12.966	28.199	1.17	52.7875	3.07
Malaysia	Export Quantity	75,860.57	2,24,634.50	1.96	2,69,001.70	2.55
	Export Value	14.34	52.508	2.66	81.58333	4.69
Sri Lanka	Export Quantity	54,351.73	1,21,191.00	1.23	1,83,829.60	2.38
	Export Value	9.392	24.464	1.60	51.86583	4.52
Nepal	Export Quantity	1,166.53	28,380.43	23.33	94,562.81	80.06
	Export Value	0.082	3.882	46.34	21.16	257.05
Indonesia	Export Quantity	509.70	8,048.97	14.79	57,494.10	111.80
	Export Value	0.128	2.965	22.16	16.01333	124.10

From Table-5, it could be inferred that the percentage change in the export of fresh onion during Period II and Period III over Period I have been increased gradually for the six major importing partner countries. In case of Bangladesh, the percentage change in export quantity and value of onion has increased by 5.59 per cent and 9.21 per cent, respectively in Period II over Period I and 7.91 per cent and 12.40 per cent, respectively in Period III over Period I. The same pattern has been exhibited by Malaysia, United Arab Emirates and Sri Lanka.

Whereas, there was a huge betterment in the bilateral trade has been noticed between Nepal and India and also between Indonesia and India. Nepal had shown a drastic change in onion export both in terms of export quantity and export value, *i.e.*, the percentage change in export quantity has been increased from 23.33 per cent to 80.06 per cent between Period II and Period III over Period I. In the same way, the export value has also been changed by 46.34 per cent to 257.05 per cent during this period. The increasing demand of onion might be due very small domestic production scale in Nepal.

Similarly, in case of Indonesia, the percentage change in export quantity has been increased from 14.79 per cent to 111.80 per cent between Period II and Period III over Period I. In the same way, the export value has also been changed by 22.16 per cent to 124.10 per cent during this period. The onion import by Indonesia has been drastically hiked, might be due to erratic weather pattern, crop failure and food inflation in the country. However, this has turned Indonesia into larger trade partner with India for salvation.

Decomposition of Export of Indian Fresh Onion :

The results of contribution of export unit value and export quantity of Indian fresh onion to the growth of trade in India are presented in Table-6.

Table-6. Components of Change in Export Value of Indian Fresh Onion

Effect	Period I (1991-2000)	Period II (2001-2010)	Period III (2011-2023)
Export unit value effect	-622.79	23.50	186.09
Export quantity effect	697.47	37.06	-69.30
Interaction effect	46.50	39.38	-16.76

It could be seen from Table-6 that the change in export value consists of export unit value effect, export quantity effect and interaction effect. This analysis was carried out for Period I, Period II and Period III. The decomposition analysis revealed that the export unit value effect was positively significant in Period II and III, whereas the export quantity effect and interaction effect were positively significant in Period I and Period II. The contribution of unit value in Period III was the highest with 186.09 per cent, followed by Period II with 23.50 per cent. However, the export quantity effect in Period I was the highest with 697.47 per cent, followed by 37.06 per cent. Similarly, the interaction effect in

Period I was the highest with 46.50 per cent, followed by Period II with 39.38 per cent. It could be concluded that the growth of Indian fresh onion export was enhanced by the decreasing export quantity and increasing unit value in the present situation. The crux of the result shows that the increase in the trade of onion over the period betided as the impact of money value and inexorable demand in the international market.

Direction of Trade in Onion Export :

The dynamics in the direction of fresh onion export and changing pattern in the trade were analysed using Markov chain model. The trend in sustaining existing markets, the gains and losses in the export share of fresh onion by importing countries was obtained from the transition probability matrix values. The transition probability matrices for fresh onion were arrived using the export data from 1991 to 2023. Major importing countries of fresh onion were considered for the analysis on the basis of quantity imported. The results of Markov chain analysis are discussed in Table 7.

Table-7.Transition Probability Matrix for Export of Onion from India (1991 to 2023)

Countries	Malaysia	United Arab Emirates	Sri Lanka	Bangla-desh	Nepal	Indonesia	Other Countries
Malaysia	**0.2140**	0.0963	0.1126	0.3506	0.0522	0.0327	0.1416
United Arab Emirates	0.2524	**0.1050**	0.1255	0.3305	0.0462	0.0278	0.1126
Sri Lanka	0.0362	0.1094	**0.0689**	0.3552	0.0888	0.0563	0.2853
Bangladesh	0.0793	0.1331	0.0877	**0.3207**	0.0735	0.0433	0.2623
Nepal	0.0195	0.0619	0.0394	0.3835	**0.1876**	0.0948	0.2132
Indonesia	0.0042	0.0300	0.0201	0.4118	0.2348	**0.1255**	0.1737
Other Countries	0.1917	0.1524	0.1232	0.2838	0.0411	0.0236	**0.1843**
Steady State Probability	0.1279	0.1167	0.0941	0.3303	0.0785	0.0450	0.2075
Current Share	10.89	11.03	10.06	42.74	5.06	2.730	17.49

The diagonal elements represent the probability of retention of existing quantity of trade in fresh onion in the future. It could be seen from Table 7 that the probability of retention of existing quantity of fresh onion trade by Bangladesh was estimated with the highest share as 32.07 per cent, followed by Malaysia with 21.40 per cent, Nepal with 18.76 per cent, 'Other Countries' with 18.43, Indonesia with 12.55 per cent, United Arab Emirates with 10.50 per cent, and Sri Lanka with 6.89 per cent.

Bangladesh had retained a major share

of 32.07 per cent in the onion export. It had gained mainly from Indonesia with 41.18 per cent, followed by Nepal (38.35 per cent), Sri Lanka (35.52 per cent), Malaysia (35.06 per cent), United Arab Emirates (33.05 per cent) and Other Countries (28.38 per cent). It also had majorly lost to 'Other Countries' with 26.23 per cent, followed by United Arab Emirates (13.31 per cent), Sri Lanka (8.77 per cent), Malaysia (7.93 per cent) Nepal (7.35 per cent) and Indonesia (4.33 per cent).

The current share of onion export from India to Bangladesh has the highest share with 42.74 per cent, followed by 'Other Countries' with 17.49 per cent, United Arab Emirates with 11.03 per cent, Malaysia with 10.89 per cent, Sri Lanka with 10.06 per cent, Nepal with 5.06 per cent and Indonesia with 2.73 percent. The steady state probability estimated from the diagonal elements reveals that if this export pattern continues, in future around 33.03 per cent of the fresh onion will be exported to Bangladesh, followed by 'Other Countries' will assume 20.75 per cent, Malaysia will assume 12.79 per cent, United Arab Emirates will assume 11.67 per cent, Sri Lanka will assume 9.41 per cent, Nepal will assume 7.85 per cent and Indonesia will assume 4.50 per cent. This ensure that the scope of Indian fresh onion in the international market. Markov chain analysis has lucidly shown that the existing trend in fresh onion from India is stable with Bangladesh and Malaysia.

The present study has examined the growth trends of area, production, productivity and export of fresh onion in India, decomposition analysis and direction of trade for fresh onion exports among major trading partners for the period from 1991-92 to 2022-23. The markov chain analysis revealed that Bangladesh and Malaysia exhibited a strong export steady state probability for Indian fresh onion. Since, it is a perishable commodity, the neighbouring countries play a vital role in the Indian economy. However, the study also showed medium instability both in terms of export quantity and export value in the overall period. This might be due to the impact of unseasonal monsoon, price risk, inflation and post-harvest losses on the trade. The decline in production and increasing demand for onion in the domestic market may lead to trade restriction to reduce the impact of price surge on food inflation. The huge demand for the quality and size of Indian fresh onion, will retain the constant trade partners in the international market. Hence, the onion export has wider opportunities in the international trade. The decomposition analysis revealed that the export unit value effect has a strong contribution for the growth of onion export in India. Government policies should focus on increasing the productivity, post-harvest techniques and trade standards to maintain stable export. This would give ample scope for India to restore its trade partners and opportunities for refinement of fresh onion export in the global market. Therefore, this would also develop a friendly and diplomatic relation between India and trading partner countries.

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