PERFORMANCE ANALYSIS OF CUMIN EXPORT FROM INDIA

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ABSTRACT

The research study entitled "Performance analysis of cumin export from India" was undertaken with objectives to analyze the growth and instability in export, factors influencing export, comparative advantage in export of cumin, direction of trade and changing pattern, predict future cumin export to importing destination. The secondary data was collected from the various publish sources and website. The different analytical tools like Compound Growth rate analysis, instability index, Multiple Linear Regression, Revealed Comparative advantage, Markov Chain analysis, were employed to study the export trade analysis of cumin. The study time period was 2006-07 to 2017-18. The study revealed that export of cumin from India was mainly focused on Vietnam, USA, UAE, Malaysia and Nepal. The growth of export quantity of cumin was positive and significant. While growth of export value of cumin was positive but non-significant. All countries showed more than 25 per cent instability in cumin export during study period. Nepal remains the most unstable market and Malaysia remains more stable markets in terms of export quantity and value of Indian cumin throughout the study period. USA and Malaysia were the most preferable market for the export of cumin. Indian production and exchange rate were the major factors influencing the export of cumin from India. India has comparative advantage in cumin export with Vietnam, Nepal and UAE. Vietnam and Malaysia were the most loyal markets for Indian cumin while the countries such as Nepal and USA were poorly loyal markets. However, UAE and other countries group were the moderately loyal markets. Prediction of future cumin export showed that Vietnam, USA, Nepal and other countries group shows decreasing trend. However, Malaysia and UAE shows the increasing trend.

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Keywords: Growth, Instability, Comparative Advantage and Direction of Trade.

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Introduction

Indian masala or the spice mixes are the hearts of cooking stews and curries. India is the world's largest producer, consumer, and exporter of spices. Indian spices are known the world over for their aroma, texture, and taste. India produces about 75 of the 109 varieties of spices listed by the International Organization for Standardization (ISO). The global trade of spices is around USD 12 Billion of which around 20% is contributed by India. The key exporters of spices include India, China, and Vietnam. India is the largest spice producer in the world and ranks in top three countries in each spice product category. In terms of production volume, Chilli, Garlic, ginger, and turmeric constitute 75 per cent of the total spice production. Spices producing states in India are Andhra Pradesh, Gujarat, Karnataka, Kerala, Rajasthan, Maharashtra, and Uttar Pradesh. Andhra Pradesh ranks at the top in Chilli production followed by Telangana and Madhya Pradesh. Chilli is the major spice crop occupying about 29 per cent of the area under cultivation and contributing about 34 per cent of total spice production in the country. Projections indicate that by 2025, the Indian Organic food business can be worth INR 75,000 crore, a manifold growth from the current level, if the Industry can develop both export & domestic markets. It is

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estimated that it will generate INR 12,500 crore incomes per annum for farmers, impacting about 5 Mn farming families across about 6 Mn ha. Another 1 Mn jobs can be created in rural and semi urban areas. India can also earn exchange worth INR 50,000 crore per annum.

Spices export board of India and spices export promotion council of India is the best way to promote and export business on a large scale across the world. Indian spices board works towards the development and worldwide promotion of Indian spices. It provides quality control and certification, registers exporters, trade information and also provides input to the central government on policy matters. The board is an international link between the Indian spices exporters and importers abroad (Anon, 2018).

The analysis of growth and instability will give the indication about the expansion or contraction of export business and degree of risk involve in this business. The study of comparative advantage will help the companies

Objectives

- To examine growth and instability in export of cumin
- To identify the factors influencing the export of cumin
- To analyze comparative advantage in export of cumin

Methodology

The data pertaining to various aspects under study were collected from the various secondary sources such as export statistics both in quantity and value terms, average annual prices, international spices and spot price etc. from various publications of Directorate General of Commercial Intelligence and Statistics (DGCI&S), Government of India, Food and Agricultural Organization, Spices Board, Indian Institute of Spices Research, NABARD, Annual Research Report of the Department of Agricultural Economics, Junagadh Agricultural University etc. The growth and instability in export quantity and value, export performance and competitiveness and change in direction of cumin were computed for last 10 years.

Compound Growth Rate

The compound growth rate of export quality, export value and export unit value of cumin were computed for the country level by using following exponential functional forms.

$Y = ab^t$

Where,

Y = Dependent variable for which growth rate is estimated, a = Constant/intercept

t = Time variable, b = Regression co-efficient

Instability Analysis

For study the variability in the export of cumin, an index of instability was used as a measure of variability. The Co-efficient of variation (CV) was calculated by using following formula:

CV = (Standard deviation /Arithmetic mean) x 100

Matrix of Association between Growth and Instability

Based on analysis of growth rates and instability index the market under consideration was classified into a four category (Jeyanthi and Nikita, 2012).

- **High Growth / High Instability (HG-HI):** The market whose growth rate and instability are greater than the average;
- **High Growth / Low Instability (HG-LI):** The market whose growth rate is higher than the average but the instability is lower;
- **Low Growth / High Instability (LG-HI):** The market whose growth rate is below average and instability is above average; and
- **Low Growth / Low Instability (LG-LI):** The market whose growth rate and instability are below average;

Multiple Linear Regression Analysis

In order to identify the factors affecting the export of cumin from India, multiple regression analysis was carried out, using Ordinary Least Square (OLS) estimation procedure. (Kanan, 2013)

$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + u$

Where,

Y = India's export of cumin (MT)

x_1 = Cumin Production in India (MT)

x_2 = Total world export of cumin (MT)

x_3 = Indian export price of cumin (US$/tone)

x_4 = World export value (US$/tone)

x_5 = Exchange rate (Rs/US$)

a = Intercept, u = error term, b1, b2……b5 = Regression Coefficients

Revealed Comparative Advantage

The revealed comparative advantage (RCA) is an index used in international economics for calculating the relative advantage or disadvantage of a certain country in a certain class of goods or services as evidenced by trade flows. It is based on the Ricardian Comparative advantage concept. A comparative advantage is "revealed" if RCA>1. If RCA is less than unity, the country is said to have a comparative disadvantage in the commodity or industry (Jambor*et al.* 2018).

$RCA_{ij} = (X_{ij} / X_{it}) / (X_{wj} / X_{wt})$

X_{ij} = values of country i's exports of product j,

X_{wj} = world exports of product j,

X_{it} = country i's total exports,

X_{wt} = world's total exports.

Result and Discussion

The data pertaining was accessed from the secondary source for a period of 12 years (2006-07 to 2017-18) for cumin by using an exponential growth model. The annual compound growth rate in export quantity and export value of cumin with standard error are presented in table 1, the results revealed that during the study period, the export of cumin was mainly focused on Vietnam, USA, UAE, Malaysia and Nepal. The compound growth rates of export in terms of quantity and value were found positive and highly significant. Quantity of cumin exported was growing at 8.71 per cent per annum whereas value gained by cumin export was growing at 13.03 per cent per annum. It indicates that export of cumin generates better returns. Among all the countries, the highest growth rate (33.15%) in export quantity was noticed for Vietnam, followed by USA (14.17%), Malaysia (13.41%), Nepal (12.04%), UAE (4.07%) and other countries group (1.44%). The highest growth rate (39.59%) in export value was also recorded for Vietnam, followed by USA (20.64%), Malaysia (18.39%), Nepal (14.74%), UAE (8.72%) and other countries group (3.88%). Vietnam, USA, Malaysia and other countries group registered positive and significant growth rate in terms of export quantity and Vietnam, USA, UAE, Malaysia, Nepal and other countries group registered positive and significant growth rate in terms of export value. While UAE and Nepal registered positive but non-significant growth rate in terms of export quantity. Growth rates for export quantity registered positive and significant which increase in export of cumin from India and growth rate for export value registered positive but non-significant which decrease in export value of cumin from India. The export quantity was highly significant than export value of cumin from India. This may be due to increase in quantity and decline export value.

Table 1 Market wise Growth Analysis of Cumin Export from India

Export Market	Export Quantity		Export value	
	CGR (%)	SE	CGR (%)	SE
Vietnam	33.15**(0.00)	0.56	39.59**(0.00)	0.52
U. S. A.	14.17**(0.00)	0.32	20.64**(0.00)	0.30
U. A. E.	4.07(0.42)	0.57	8.72*(0.09)	0.53
Malaysia	13.41**(0.00)	0.33	18.39**(0.00)	0.31
Nepal	12.04(0.12)	0.80	14.74*(0.07)	0.82
Other countries	1.44**(0.00)	0.32	3.88**(0.00)	0.41
Overall	8.71**(0.00)	0.29	13.03(1.24)	0.25

CGR = Compound growth rate, SE = Standard Error, ** Significant at 1 per cent level, * Significant at 5 per cent probability level. Note: Figures in the parentheses indicate respective p values

The Cuddy-Della Valle Index (CDV) with coefficient of variation of cumin export in terms of quantity and value are depicted in table 2. The results revealed that among all the countries, the highest instability for both in terms of quantity (49.25 %) and value (61%) was found in Nepal. The lowest instability for both in terms of quantity (25.04%) and value (24.21%) was found in Malaysia. In Vietnam instability was in quantity (44.32%) and in value (37.05%), but the co-efficient of variance in terms of export quantity (95.35%) and value (95.97%) was highest in Vietnam. Similarly the coefficient of variation of cumin export in quantity (22.09%) and value term (24.67%) were found lowest in other countries group. All countries showed instability in cumin export during study period. Nepal remains most unstable market throughout the study period followed by UAE, Vietnam, USA and other countries group. Malaysia remains more stable markets in terms of export quantity and value of Indian cumin throughout the study period.

Table 2 Market wise Instability Analysis of Cumin Export from India

Export Market	Export Quantity		Export value	
	CV%	CDV%	CV%	CDV%
Vietnam	95.35	44.32	95.97	37.05
U. S. A.	50.61	27.71	65.17	25.57
U. A. E.	48.24	46.65	49.59	42.76
Malaysia	43.86	25.04	54.83	24.21
Nepal	55.83	49.25	72.13	61.00
Other countries	22.09	24.90	24.67	27.10
Overall	40.70	25.51	48.18	20.25

CV=Coefficient of variance; CDV=Cuddy-Della Valle

Based on analysis of growth rate and instability index the market under consideration was classified in four categories. The average value of growth rate and instability index of cumin export is presented in table3. The average growth value in terms of export quantity and export value are 13.04 and 17.66 per cent respectively, if the growth rate is greater than the average value it shows high growth and less than the average value it shows low growth. The average instability index value in terms of export quantity and export value are 34.76 and 33.99 per cent respectively, if the instability is greater than the average value it shows high instability and less than the average value it shows low instability.

Table 3: Growth and Instability analysis of Cumin Export from India

Country	CGR (%)		Instability (%)	
	Export quantity	Export value	Export quantity	Export value
Vietnam	33.15	39.59	44.32	37.05
U. S. A.	14.17	20.64	27.71	25.57
U. A. E.	4.07	8.72	46.65	42.76
Malaysia	13.41	18.39	25.04	24.21
Nepal	12.04	14.74	49.25	61.00
Other countries	1.44	3.88	24.90	27.10
Average	13.04	17.66	34.76	33.99

- **High growth and low instability** (Highly Preferable): USA and Malaysia were recorded in this category in cumin in terms of quantity and value of export. These two countries were found under most desirable category. USA and Malaysia were the loyal toward the Indian cumin export; their efforts should be more concentrated towards the falling under highly preferable category which has high growth and low instability.

- **High growth and high instability** (This category is preferable based on the greatness of growth over instability index): Only Vietnam in terms of quantity and value of export placed in this category. In this category, both growth rate and instability were high. This necessitates primary concern to export stabilization because higher growth in export along with high instability will not be much useful to farmers. So, to reduce risk, trade diversification is required in Vietnam because of ever fluctuating demand of cumin due to its own domestic production.

- **Low growth and low instability** (Less Preferable): Among the several countries, other countries group in terms of export quantity and value were reported under this classification. This country was the less desirable for Indian cumin export.

- **Low growth rate and high instability** (Not Preferable): UAE and Nepal in terms of both quantity and value of export fall under this category. So, strategies to increase growth rate and reduce instability are required to overcome this unusual situation.

Matrix of Association between Growth and Instability in Export of Cumin from India

Risk Assessment	High Instability	Low Instability
High Growth	Vietnam	USA, Malaysia
Low Growth	UAE, Nepal	Other countries

To identify the factors affecting export of cumin, regression analysis was carried out using time series data for the period 2006-07 to 2017-18. The coefficient and p value of the factors like Indian export price of cumin, domestic production of cumin, world export of cumin, world export value and exchange rate affecting on the cumin export are presented in table 4. Among the all factors only world export value are shows normal distribution values, so except this factor all the factors are converted into normal distribution with the help of natural log. Major factors which determine cumin export from India were Indian production, world export of cumin, Indian export value, world export value and exchange rate existing during the export. The result revealed that coefficient of multiple determinations (R^2) was found 0.91which indicated that 91 percent variation in the dependent variable was explained by the independent variables. Similarly adjusted R^2 was found 0.85 which indicated that 85 percent higher proportion of variation in the dependent variable by taking care of degrees of freedom. The factor influencing in the export of cumin the coefficient of Indian production and exchange rate were found statistically significant. However, world export, world export price and Indian export value were the non-significant. Indian production was found at 5 per cent level significant, which 1 per cent increasing in the production is affect 1.20 per cent to the Indian cumin export. Exchange rate was also found 5 per cent significant. Which 1 per cent decreasing in exchange rate is affect 2.75 per cent to the Indian cumin export. World export of cumin and Indian export value are not having theoretically a correct sign; however, it was non-significant. Therefore, it could be concluded that world export and Indian export value does not play any significant role in the export of cumin from India.

Table 4: Factors Influencing the Export of Cumin from India

Sr. No.	Factors	Coefficients	P-value
1	Intercept(a)	-10.6887	0.236349
2	Production(x_1)	1.198271*	0.024274
3	World export(x_2)	0.030556	0.938777
4	Indian export value(x_3)	-1.50317	0.188961
5	World export value(x_4)	-0.00061	0.216069
6	Exchange rate(x_5)	-2.74057*	0.027271
7	R^2	0.91	
8	Adjusted R^2	0.85	
9	Observations	12	

*Indicate level of significance at 5 per cent and **Indicate level of significance at 1 per cent

The idea to determine a country's strong sector by analyzing the actual export flows was pioneered by Balassa. It is popularly known as the Balassa Index. Alternatively, as the actual export flows reveal the country's strong sector, it is also known as Revealed Comparative Advantage. Measure of relative export performance by country and commodity, defined as a country's share of world exports of a commodity divided by its share of total world export.The index of RCA has a relatively simple interpretation. If it takes a value greater than unity, the country has a revealed comparative advantage in that product. It considers the intrinsic advantage of particular export commodity and is consistent with changes in an economy's relative factor endowment and productivity. The revealed comparative advantage presented in table 5 indicates that Vietnam had the highest comparative advantages in all periods analyzed among the most important cumin exporter in the world, suggesting high potentials for competitiveness. Malaysia, other countries group and USA had comparative disadvantage in cumin export. In recent year result shows that India has comparative advantage with Nepal and UAE. It means that India is more competitive with Vietnam, Nepal and UAE.

Table 5: Revealed Comparative Advantage (RCA) in Export of Cumin from India

Year	Vietnam	U.S.A.	U.A.E.	Malaysia	Nepal	Other Countries
2006-2007	2.05	0.27	0.71	0.07	0.20	0.27
2007-2008	10.40	1.42	4.93	0.65	2.32	0.63
2008-2009	6.62	0.78	1.85	0.12	1.23	0.83
2009-2010	8.33	0.82	1.05	0.46	2.06	0.87
2010-2011	4.26	0.45	0.36	0.21	1.97	0.55
2011-2012	3.66	0.83	0.90	0.34	0.28	0.47
2012-2013	1.18	0.89	0.97	0.29	1.10	0.38
2013-2014	2.06	0.51	0.84	0.25	0.48	0.50
2014-2015	3.08	0.96	1.90	0.45	1.25	0.88
2015-2016	1.81	0.87	0.56	0.44	0.68	0.66
2016-2017	1.61	1.09	0.78	0.39	1.01	0.69
2017-2018	0.82	0.77	1.13	0.36	1.25	0.79

Thus, if RCA < 1: comparative disadvantage; RCA =1: comparative neutral; RCA >1: comparative advantage

Conclusion

It can be concluded from the study that export of cumin from India was mainly focused on Vietnam, USA, UAE, Malaysia and Nepal. The growth of export quantity of cumin was positive and significant. While growth of export value of cumin was positive but non-significant. Quantity of cumin exported was growing at 8.71 per cent per annum. All countries showed more than 25 per cent instability in cumin export during study period. Nepal remains the most unstable market and Malaysia remains more stable markets in terms of export quantity and value of Indian cumin throughout the study period. USA and Malaysia were the most preferable market for the export of cumin. Indian production and exchange rate were the major factors influencing the export of cumin from India. India has comparative advantage in cumin export with Vietnam, Nepal and UAE. Vietnam and Malaysia were the most loyal markets for Indian cumin while the countries such as Nepal and USA were poorly loyal markets. However, UAE and other countries group were the moderately loyal markets. Prediction of future cumin export showed that Vietnam, USA, Nepal and other countries group shows decreasing trend. However, Malaysia and UAE shows the increasing trend.

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