

## Indian exports of food product's in competitive global market

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**Abstract:** India exports to 145 of the world's 195 countries, with the majority of its exports going to SAARC and GCC nations. (The breakups of overall inflation into group/sub-group-wise inflation rates are based on CPI (General) for the Combined Sector and are based on 27 departments. 13 departments are based out of the food industry. The inflation rate of a country is mainly based on food products and their price in the international scenario. In the global marketplace, quality requirement has been prioritised during cross-national trade. The study examines international collaboration in a country's total export and projects its continued prospects in this framework. The integrated method is based on regression and forecast relationship. The study shows some interesting features of India's Food Export pattern based on time-series data. The study predicts values of the overall export for the years 2010-11 to 2019-20. Also Exhibits exponential growth pattern roughly for the same period. The largest markets for India's Food produce are US, China, Bangladesh, the UAE, Vietnam, Saudi Arabia, Indonesia, Nepal, Iran, and Malaysia.

**Key Words:** Forecast Globalization, Quality, Trade, Regression, Export, Food.

### 1. INTRODUCTION:

The Indian food and grocery market is the sixth largest in the world, with retail accounting for 70% of total sales. The Indian food processing sector, which accounts for 32 percent of the country's overall food market and is rated fifth in terms of production, consumption, export, and predicted growth, is one of the country's largest industries. It accounts for 8.80 and 8.39 % of Gross value added in manufacturing and agriculture, respectively, as well as 13 % of India's exports and 6% of overall industrial investment. More food exports are done by the United States than by any other nation in the globe. Canada, Mexico, China, Japan, and Germany are among the major export destinations of the United States. Only US agricultural export markets account for a significant share of total agricultural and processed industrial capitalism.

**2. REVIEW OF LITERATURE:** Saraswati (2014) in her research paper has discussed about the production, processing and wastage of Food products produced in India. The data collected by author was secondary data from ministry of food processing industry, Government of India, DGCIS and the hand book of RBI. The data was analysed using the formula  $AGR = (C-P) * 100 / P$ . Finding of the author was the processing of raw material for value addition is still at a very low level merely 20 per cent as compared to 25-85 per cent in the developed countries. Growth Rate was fluctuating in both of the exports total export as well as FPI's (Food Processing industries) export that was not a good symbol for the economy. The average annual share of FPI's during the study period was 8.81 per cent.

### 3. EXPORT PROSPECTS:

The researcher evaluates a food product's export prospects using the screening indicators such as highest producer, highest consuming country, nutritional value of the product, adulteration, export testing parameter, upcoming countries in production, largest production variation in the last 10 years, machinery advancement, per hectare production value, market establishment in terms of price with associated countries, developed countries and African countries approach to their product, political environment. Regardless of closeness, logistics expenses to reach the destination country influenced some of the perishable product exports, concerns regarding container supply have developed in recent years. Some main financial variables influences the exports are duty drawback, GST, import and export policies between nations, tax claim and return duration. The major investment drawback of an exporter are due to mechanical devices used in the warehousing, processing, filling, and dispatching departments are imported from industrialised countries across the world. Whereas export problems are concerned payment drawback, lack of understanding of export procedures and documents, working capital shortage, competitive pricing, customization of

products to meet the needs of each international market, product seasonality, export assistance, logistics distribution complexity restriction are few problematic inquisition.

**3.1. Export Quality standard:** CODEX is an intergovernmental organisation that collects all worldwide standards administered by the World Health Organization and the United Nations Food and Agriculture Organization. ISO 22000, ISO 9001, FSSC 22000, Safe Quality food, British Retail Consortium, Hazard Analysis Critical Control Point, and Good Agricultural Practice are some of the quality standards followed by the Indian food export business. GAP-GAP INDIA's principles are founded on the concept of "farm to fork." In India, UKAS insignia are more common, although in bordering nations, EA-JAS (Euro-American Joint Accreditation Service) joint venture accreditation is more prevalent. AGMARK, which is granted by the Directorate of Marketing and Inspection in three grades: Standard, General, and Special, is one of the various Quality MARKS recognised domestically and transnationally. There are both Islamic and Jewish quality standards that comply with international religious law. The raw ingredients or substances used in KOSHER are governed by Jewish law, whereas HALAL is unrestricted. When compared to HALAL, KOSHER certified enterprises are significantly less prevalent in India.

**3.2. Export Testing:** product quality is examined by means of testing. According to developed nations only 2% of the food products undergo testing from the randomized sampling done by concern departments of the industry. Indian testing labs has its own set of constraints customer holding to result verification. NABL, BIS, APEDA, FSSAI, and EIC are the regulatory bodies involved in the accreditation of testing labs for export. The FSSAI's testing turnaround time for approved labs is unparalleled. Most small scale industry adopts FSSAI due to leverage prices; FSSAI may use the opportunity in the long term if not in the short term to guide the food industry in a better way without adulteration and hazard practises to ensure the safety of the country and consumers. Where future exports relay mainly on nurturing MSME sectors. NPOP, Water, Soil based testing are coping up in the modern tentative ambitious consumer pattern.

**3.3. Global Competitiveness:** Considering that the importing countries of groundnut from India and African countries are nearly identical, African countries' groundnut output is fast increasing in conformity with international standards, and they could become a major competitor for India in the future. In a short period of time, Sudan has increased peanut production by a factor of 10. Aflasafe bio pesticides, which are used to lower aflatoxin levels in Sudan, have had their output reversed by a factor of ten. Senegal and Ethiopia are the different countries that export considerable amounts of goods to China. The majority of Indian groundnuts fail to meet the mycotoxin analysis. India had been almost non-existent from the global wheat export market until 2011. Due to a boom in imports from Bangladesh and other Gulf Cooperation Council countries, 2012 was a watershed year for exports, soaring from 4, 13,563 MT to 20, 52,937 MT.

African countries, on the other hand, are unable to meet domestic demand, with domestic production accounting for only 5% of overall consumption. The remaining needs are met by imports from developed countries. India can extend its arms to meet its needs if price norms stay constant. Despite the fact that money has been a constraint in recent years as a result of COVID, the government should enable free flow of trade without financial catastrophes in order to simplify trade and take advantage of the Ukraine situation. Since the previous few years, Ukraine has experienced an agricultural revolution in terms of value and exports. Russia, Australia, and Nigeria are major countries that have not been exploited for trade. Effective trade balance is more virulent for a country to sustain in the world growth. NCML is way forwarding to increase the storage capability of the country with Food safety Initiatives of MOFPI. India has managed to become a consistent exporter of honey to global markets; sustainability in future is reliable on dollar price per unit. Staple foods export in huge quantity with neighbouring nations fulfils the requirement. Due to uneven supply during the COVID era, Bangladesh is exploring for alternatives from other countries when India bans wheat exports to self-sustain demand in early May 2022. India should always support exports above domestic demand, regardless of the situation, because a future trade imbalance could jeopardize the pursuit of reserves. In comparison to export demand products, India has a vast array of food options and variety.

#### 4. RESEARCH METHODOLOGY & DATA SOURCES:

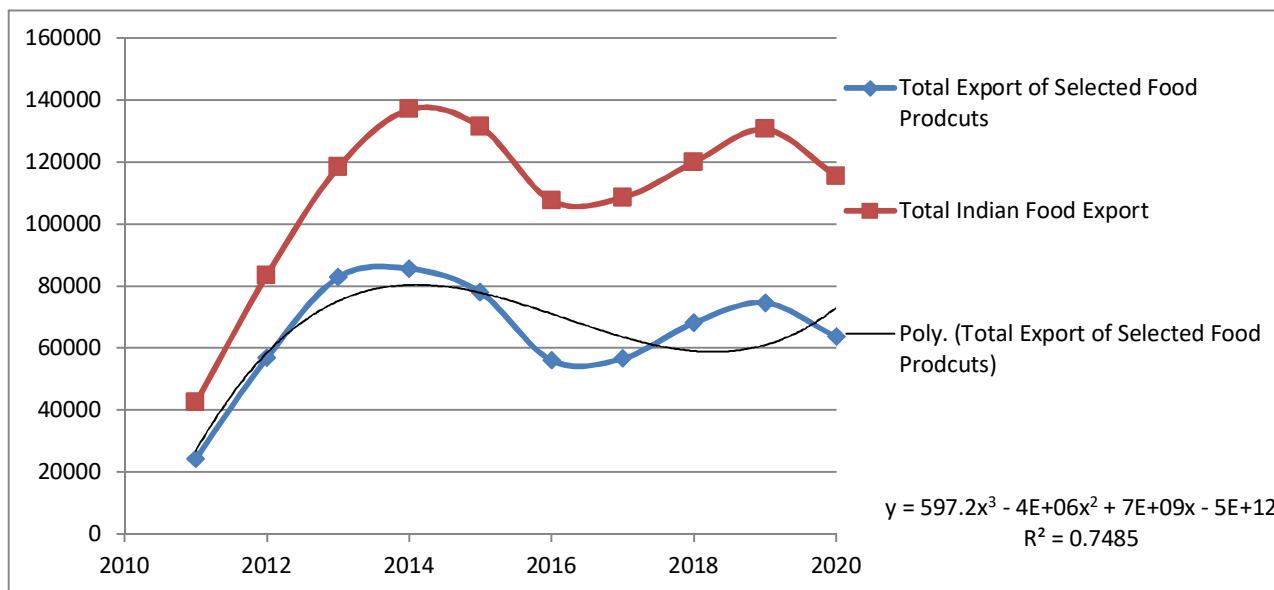
The Present study is of analytical and entirely based on secondary data, which has been collected from APEDA Agri Exchange and various issues of handbook of statistics on the Indian economy. Study period taken for statistical analysis is from 2010-11 to 2019-20. Data resembles has been cross verified with other reliable statistical sources. Descriptive statistics has been formulated to analyse the export primary data. Co-relation analysis has been examined in combination of year and coast of the export. Chi-square probability plots have been refrained by means of NCSS tool.

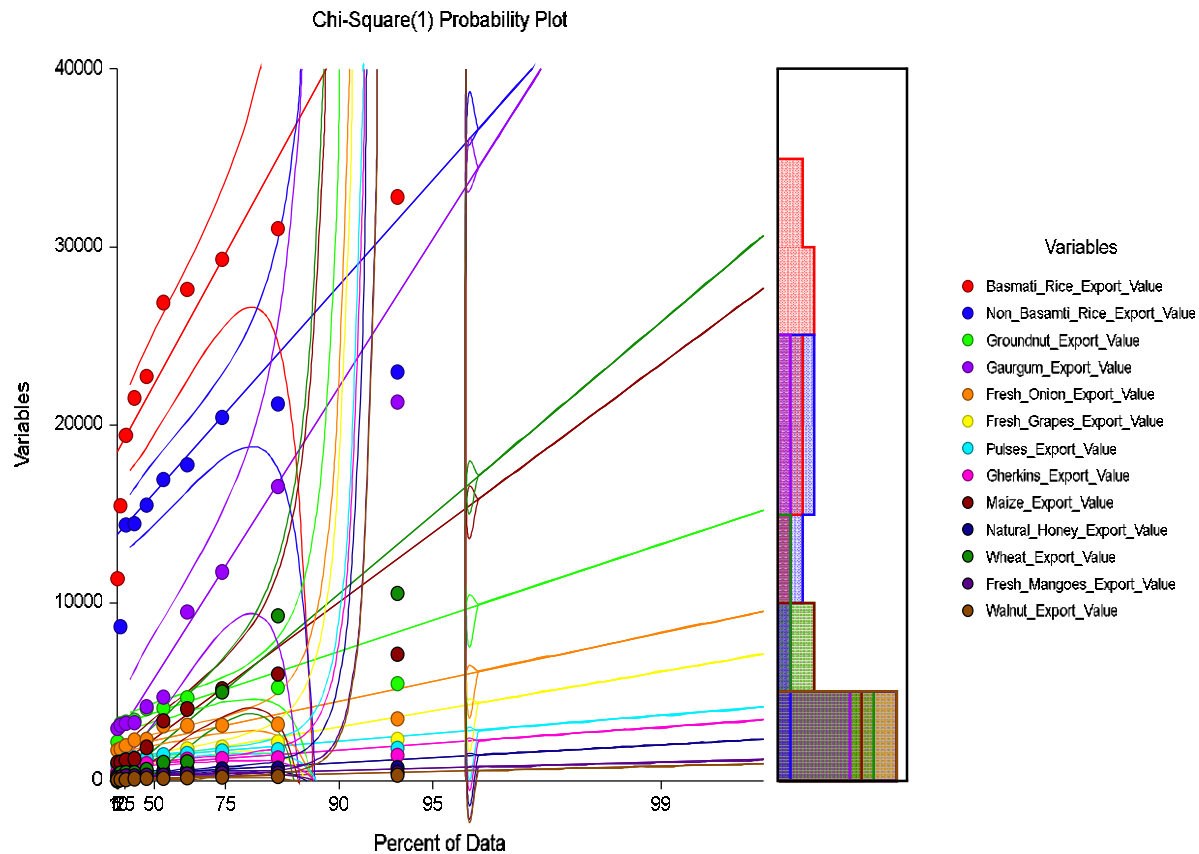
Year	Total Export of Selected Food products (Million USD)	Total Indian Food Export (Million USD)	Overall Contribution of Selected Food products to Food Export (%)	Total Export (Million USD)	Overall Contribution of Selected products to total Export (%)
2011	24250.60	42437.18	57.14	1142922.00	2.12
2012	56874.52	83484.33	68.13	1465959.00	3.88
2013	82747.03	118250.96	69.98	1634318.00	5.06
2014	85581.82	136921.21	62.50	1905011.00	4.49
2015	77879.93	131343.00	59.30	1896445.00	4.11
2016	55996.40	107482.87	52.10	1716384.00	3.26
2017	56631.10	108535.38	52.18	1849434.00	3.06
2018	68157.06	119880.19	56.85	1956515.00	3.48
2019	74561.71	130506.52	57.13	2307726.00	3.23
2020	63566.27	115359.23	55.10	2218233.00	2.87
	Average Contribution		59.041	Average	3.556

Source: (Primary data) Table 1: Total Export Contribution

Forecast prediction, Pearson correlation coefficient, Skewness, Kurtosis, value of the food products were calculated by means of SPSS tool. Assumption test such as Pillai's Trace, Hotelling's Trace, Roy's Largest Root, Wilks Lambda test were performed to determine the hypothesis of the study.

Graph-1  
 Chi Square & Exponential probability chart





Source: (Primary data) Chi Square & Exponential probability chart

**Interpretation:** A Chi square probability plot under distribution fitting analysis was performed for all of the Food products chosen for the study, with a confidence limit alpha value of 0.05. Quartiles were used to display linear regression analysis lines. As a line that goes through the first and third quartiles of the horizontal and vertical variables, Quartiles calculates the intercept and slope reliably. The dotted pattern depicts the Residual Prediction Limits. The horizontal variable here is the percent of data, while the vertical variable is the export value of the study's selected products. The selected products were also subjected to histogram analysis.

According to the forecast model, a projection period of 5 years has been analysed. The dependent and independent variables are used to construct regression estimates. The coast, raw materials, power consumption, currency rates, skilled labour, space area, fuel costs, tax and duty, distance accessibility, and gross domestic product are the independent factors that are export factor orientated. Time, diplomatic relations with friendly countries and their import-export tariff duties, specified export nations, logistics, open account transactions, importer behaviour patterns, and disparity are dependent factors. Using fixed dependent variables, the influence brought about by the independent variable is measured. The value of the food product in crores acts as the independent variable while the year serves as the dependent variable. Metric data formulates the majority of the data collected for the analysis. Due to the nature of the study, categorical data were not analysed. Concepts from surveys and questionnaires are frequently expressed using categorical data. The analysis's kurtosis and Skewness were determined based on the source data's of mean, median, and mode.

	Basmati Rice	Non-Basmati Rice	Groundnut	Wheat	Fresh Onion	Fresh Grapes
Mean	27535.670	14222.444	6379.841	13984.070	2205.746	1847.351
SD	7872.732	5562.587	4365.777	22322.590	907.922	874.716
Skewness	-0.730	-0.789	1.797	2.092	-0.552	-0.255
Kurtosis	-0.432	1.887	2.897	4.023	-0.226	-1.133
CAGR	10.570	51.120	8.870	90.440	2.690	18.730
R Square	0.800	0.712	0.656	0.719	0.719	0.924
Adjusted R Square	0.800	-0.054	0.570	0.439	0.026	0.960
Significant Value	0.000	0.002	0.591	0.043	0.043	0.000
Regression Equation	Power	Logarithmic	Cubic	Cubic	Cubic	Power
Pearson Correlation	0.8093	0.6873	0.2666	-0.3706	0.6554	0.9547
Wilks Lambda	0.3449	0.5276	0.9289	0.8626	0.5704	0.0885
T value	3.8975	2.6763	0.7823	1.1284	2.4545	9.0728

Source: (Primary data) Table 2: Computed Analysis of Selected Food Products

	Walnut	Pulses	Maize	Honey	Mangoes	Gherkins	Guargum
Mean	260.623	1523.335	9076.122	486.923	369.778	1167.552	28349.283
SD	255.631	309.654	11903.350	174.070	105.700	315.237	40108.117
Kurtosis	2.015	-0.823	2.075	-0.212	-0.569	-0.619	2.059
Skewness	4.062	-0.453	3.979	-1.261	-0.799	-0.603	3.832
CAGR	-10.830	5.830	-11.240	7.730	9.280	5.830	29.39
R Square	0.680	0.638	0.844	0.892	0.944	0.868	0.720
Adjusted R Square	0.270	0.615	0.403	-0.083	0.894	0.836	0.435
Significant Value	0.063	0.006	0.008	0.003	0.000	0.000	0.043
Regression Equation	Cubic	Power	Cubic	Cubic	Power	Power	Cubic
Pearson Correlation	-0.7155	0.6741	-0.7337	0.8997	0.9271	0.8755	-0.5583
Wilks' Lambda	0.4880	0.5455	0.4617	0.1905	0.1405	0.2334	0.6933
T value	2.8966	2.5815	3.0539	5.8288	6.9955	5.1250	1.8810

Source: (Primary data) Table 3: Computed Analysis of Selected Food Products

**Interpretation:** Linear, Logarithmic, Inverse, Quadratic, Cubic, Compound, Power, Growth, Exponential, and Logistic regression equation estimations are some instances. To be feasible, the R Square value of the estimates should be more than 0.6. The estimated values of all Food goods were greater than the standard value. The significance value determined using regression estimates analysis was less than 0.05, indicating that the model is fit for all selected Food products. Canonical co-relation analysis was performed to calculate the Wilks' Lambda value. Compounded Annual growth rate was calculated using the formula

$$CAGR = \left( \frac{V_{\text{final}}}{V_{\text{begin}}} \right)^{1/t} - 1$$

V Final - Final Value of the coast of the export

V Begin - Begin value of the coast of the export, T - Time in Y

## 5. CONCLUSION:

This study's targeted Food commodity accounts for 59.041 percent of total Food exports and 3.556 percent of total Indian exports. India has endeavoured climatic Zones comparing any other commodity nations in the world. It does probably will be tough for India to be an industrialist capital in global scenario, comparing the innovations,

lending rates, tumbling rights. Whereas India has high capability to become a food capitalistic of the world in a planned outcome due to diversity and raising infrastructure project all over the country, Indian broad-gauge is self-sufficient and meticulous to make the short wall of transport. Maize and groundnut have a negative compounded annual growth rate among the Food products chosen for assessment. According to Linear forecast Model equation Trend Reversal may occur in the Food Products such as Groundnuts, Guargum, Fresh Onions, Maize, Honey, Wheat, Fresh Mangoes and Walnuts. whereas Basmati Rice, Non-Basmati Rice, Pulses, Fresh Grapes and Gherkins export has outperformed both in terms of quantity and value of export.

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