

THE FOOD PROCESSING INDUSTRY IN INDIA : A STUDY ON ITS EXPORT PERFORMANCE

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ABSTRACT

The food processing Industry (FPI) of India is often referred to as 'the sunrise sector' due to its huge potential for growth and development taking into account the favourable climatic conditions for food production and the ever-increasing demand for processed food products. During 2018-19, this sector contributed about 1.62% of Gross Value Added (GVA) to the total Gross Value added in the economy. And has a share of 14.28% in the total employment generated by different sectors of the nation. The FPI of India is mainly export oriented, hence, this paper endeavors to study the export performance of the processed food sector. Secondary sources of information like annual reports of different ministries and organizations have been to carry out the study. Total value of export of FPI starting from 2010-11 to 2019-20 are analyzed and it is found that the annual growth rates for the years 2018-19 & 2019-20 declined significantly, however, the Compounded Annual growth rate (CAGR) calculated on the basis of 2010-11 data, is growing at a rate of 5%. Of the different segments of processed food, products like dairy, processed meat, jaggery & confectionary, cucumber & gherkins, miscellaneous products and milled products are growing at CAGR of 10%, 24%, 13%, 12%, 20% and 14% respectively. And poultry products, gaur gum and mango pulp showed negative growth rate. Also, India's share in global food export is found to be just 2.27%. Therefore, emphasis must be given on tapping global markets by reducing food wastage, investing in logistic chains and cold chains, research and development, upgrading the safety of products and complying with international standards of quality, and achieving competitive advantage for processed food products of India.

KEYWORDS: Export performance, food processing industry, processed foods

INTRODUCTION

Processing of food means the transformation or alteration of raw materials into consumable products. This transformation or alteration of foods into different consumable products helps in value addition to the raw materials, increase in the shelf life and making the products marketable through processes like grading, sorting, and packaging. Processing of food takes place at three levels viz., primary processing, secondary processing and tertiary processing. In Primary processing stage cleaning, grading, sorting and packaging of raw materials take place (Saraswati, 2014). In secondary processing, basic value addition to the materials created through primary processing takes place such as grinding, processing of meat (Palanivelu & Apdhulkathar, 2016). While in tertiary processing, high value addition takes place like ready to eat products, bakery products, pizzas and packaged snacks, etc (Saraswati, 2014). Food processing industry covers a wide range of sectors like agriculture, horticulture, animal husbandry and fisheries (ASA & Associates LLP, 2015). As per the MoFPI, food processing industry can be classified into 6 segments. These are –a. Dairy, b. Fruits and vegetables, c. Grains and cereals, d. Fisheries, e. Meat and Poultry, f. Consumer foods.

Food processing industry (FPI) plays a key role in the economy of the nation as this particular sector links and creates synergy among agricultural sector, manufacturing sector and consumers. FPI utilizes the output of agricultural sector to add value to the raw materials and then these value-added products are being sold to the consumers. This indicates that agriculture and food processing are inter-related. Development of Food Processing industry have a direct and positive impact on the agricultural sector because it increases demand for agricultural produce and helps in securing farm gate prices for the outputs, reduce wastages, providing market for food products both at nationally and globally, and thereby contributes in enhancing farmer's income. As FPI is dependent on agriculture for its supply of raw materials, growth in production and productivity in agriculture ensures an uninterrupted supply base for the food processing sector. Indian economy being agri-based and India possessing the second most arable land in the world, there is huge scope for development of the food processing sector here. According to Ministry of Food Processing Industries (2021), in terms of food production, India achieved 1st position in milk and pulses production with 176.27 million Tonnes of milk and 23.24 lakh Tonnes of pulses, 2nd in fruits and vegetable, wheat, rice, sugar and tea production. Although India performs well in food production, the Indian agriculture sector has been dealing with both harvest and post-harvest losses every year. For example, in 2015 total loss of about 92,651rs in agriculture in both harvest and post-harvest was recorded (Central Institute of Post-Harvest Engineering and Technology, 2015). Maximum losses were observed in horticulture crops, fisheries (marine) and poultry. These losses can be managed by a strong and well developed FPI. FPIs play a multi-faceted role in the economy of the country by generating employment opportunities, stimulating diversification of crop varieties, boosting exports of food products, increase in foreign exchange earnings and most importantly in ensuring food security for the nation.

In India, this sector gradually started growing after liberalization of trade followed by a shift in the consumption pattern of people driven by change in lifestyle, changes in demographic pattern of workforce, increase in disposable income, exposure of media marketing, etc. This shift in consumption choices has increased the share of processed or value-added food products in their food basket. Another important factor fuelling the demand for processed food products is the growth in organized food retail sector. As per Ministry of Food Processing Industries (2021), the food retail sector and organized retail in food service sector is growing at a CAGR of 9.23% and 15%, which indicates the ever-increasing demand for processed food. India stands at fourteenth position in export of food products and occupied 2.6% share in world export in 2010(KPMG, 2021). Since, there is abundant supply of raw materials for FPI and demand for processed food is increasing globally, it is important to study how well the Indian FPI is performing in exports of food products.

RESEARCH METHODOLOGY

As the present study attempts to investigate the performance of Indian Food Processing Industry in terms of export, data has been collected through secondary sources. To collect data related to status of FPI and export of processed food products, annual reports of several years of Ministry of Food Processing Industries, Central Institute of Post-Harvest Engineering and Technology, KPMG report and Annual Survey of Industries report has been used. Again, export data related to different processed food segments for a period of five years are retrieved from official website of APEDA (Agricultural and Processed Food Products Export Development Authority).

To understand export growth rate of FPI, Compounded Annual Growth Rate (CAGR) has been calculated using the formula-

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

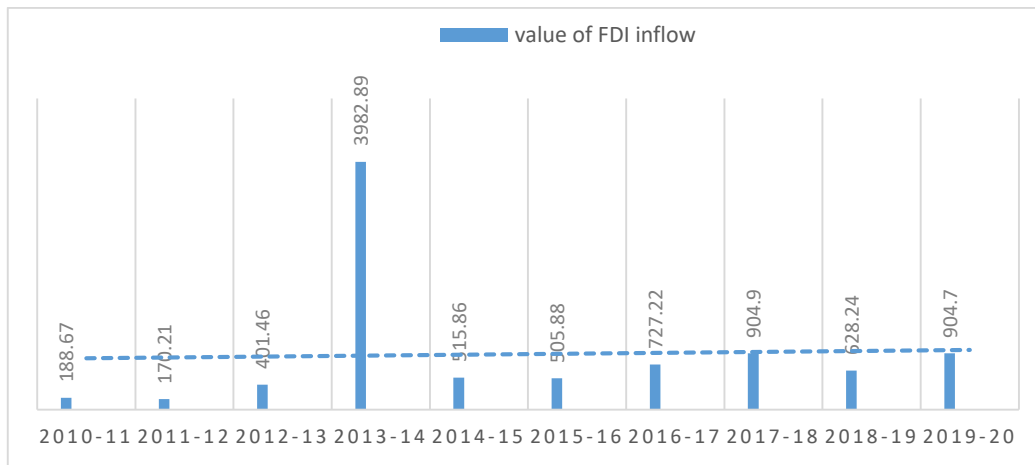
V_{begin} = Beginning value, V_{final} = final Value, t = time (expressed in years)

STATUS OF INDIAN FOOD PROCESSING INDUSTRY

The Indian food processing industry stands at 5th position in terms of production, consumption and export, and holds 32 per cent share in overall food market of the country (ASA & Associates LLP, 2015). The market for FPI valued at USD 263 billion in 2019-20 and is estimated to rise to USD 535 billion in 2025(KPMG, 2021). According to Annual Survey of Industries report, 2017-18, there are about 40,160 registered factories and the total number of un-registered food processing factories stand at about 24,59,929. In case of generation of employment, the registered sector of FPI employs about 19.33 lakhs people which accounts for 12.28% share of employment in total employment created in different sectors of the economy. While in unregistered sector, FPI provides employment to 51.1 lakhs of people, which is about 14.18% of the total employment generated in the country. It means food processing sector has the capability of absorbing large number of workforce available in the country. The contribution of this sector in the economy can be understood from the data related to Gross Value Added by this sector in the total value added in the economy. the Gross Value Added (GVA) by the FPI during 2012-14 was 1.3 lakh crore, in 2014-15 it was 1.34 lakh crore, in 2015-16- 1.61 lakh crore. 1.79 lakh crore, 1.91 lakh crore and 2.08 lakh crore in 2016-17, 2017-18 and 2018-19 respectively. In 2013-14, the percentage share of FPI in total GVA is only 1.44%, 1.38% in 2014-15, 1.53%, 1.58%, 1.58% and 1.62% in 2015-16, 2016-17, 2017-19 and 2018-19 respectively. These data indicates that the contribution of this sector to the total GVA of the country is quite low. However, there is an increase in the percentage share of GVA as compared to 2013-14 data (Ministry of Food Processing Industries).

During the year 2017-18, the contribution in gross value added (IN USD Millions) by different food processing segments are- a) dairy sector contributed about 2009 USD millions, b) Cereals, grains and oilseeds-4004, c) Meat and marine-959, d) Packaged food-8310, e) Fruits and vegetables- 607, f) Beverages (non-alcoholic)- 925. And the CAGR (compounded annual growth rate) of these segments calculated for 2012-18 are: dairy- 16%, Cereals, grains and oilseeds- 1%, Meat and marine-18%, Packaged food-16%, Fruits and vegetables-11% and Beverages (non-alcoholic)- 12% (KPMG, 2021). However, it is important to note that the change in consumption pattern of consumers have resulted in a variation in the market share occupied by different food segments in overall processed food industry. For example- in 2007-08, the market share of the six sub-sectors were- dairy- 10%, Cereals, grains and oilseeds- 44%, Meat and marine- 3%, Packaged food- 25%, Fruits and vegetables-1% and Beverages (non-alcoholic)- 17%. But in 2017-18, the percentage of market share occupied by dairy increased to 15%, Cereals, grains and oilseeds decreased to 40%. Market share of Meat and marine products, packaged food, and fruits and vegetable sector increased to 6%, 32% and 2% respectively. Whereas, beverages products' share decreased to 6% (KPMG, 2021).

Chart 1: value of FDI inflow in Food Processing Industry (in millions)



Source: Ministry of Food Processing (MoFPI), Govt. of India

The above chart shows the value of FDI inflow to the Food Processing Industry for ten years starting with 2010-11. In 2010-11, the amount of FDI received was 188.67 million dollars. 2013-14 received the highest amount of FDI with 3982.89 million. Though the amount of inflow got declined in the immediate next year i.e., 2014-15, the trendline in the chart shows that in general there is an increase in the amount of FDI inflow into the country in FPI. The increase in the inflow of FDI is a sign for potential growth of the food processing sector.

EXPORT PERFORMANCE OF INDIAN FOOD PROCESSING INDUSTRY

To study the export performance of FPI, export values for a period of ten years are analyzed. Annual growth rates for each year starting from 2011-12 are calculated and Compounded Annual Growth Rate is determined till 2019-20 by taking 2010-11 as the base year. Then percentage share of food processing industry in total exports of the country for six years is determined. Again, percentage share of India in global food trade is also found out and export performance of different food segments are analyzed.

Table 1: Table showing export value of FPI, annual growth rates and Compounded Annual Growth Rate

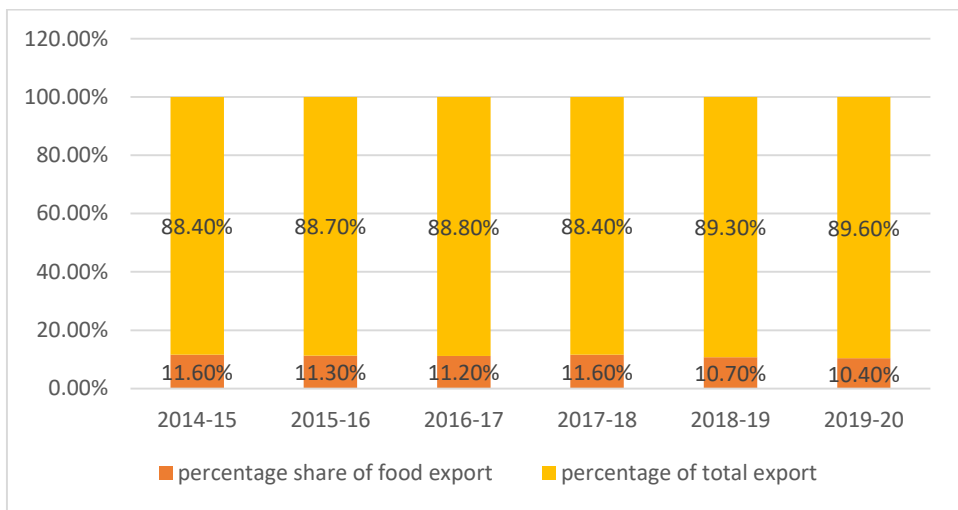
YEARS	VALUE OF EXPORT (IN MILLIONS)	GROWTH RATE (%)
2010-11	20277.60	-
2011-12	31459.58	55.1
2012-13	35898.06	14.10
2013-14	38051.43	6
2014-15	36171.92	-4.9
2015-16	29672.37	-17.96
2016-17	30871.47	4.04
2017-18	35317.79	14.4
2018-19	35303.19	-0.04
2019-20	32731.98	-7.28
COMPOUNDED ANNUAL GROWTH RATE(CAGR)		5%

Source: calculated from annual report of various years of MoFPI

The above table depicts the value of exports of FPI from 2010-11 to 2019-20 i.e., for a period of ten years. It is seen that during financial year 2010-11, the exports of processed food products valued at about 20277.60 US million dollars. Exports worth 31459.58 dollars took place in 2011-12. The total value of export of processed foods for the next subsequent years are- 35898.06(year 2012-13), 38051.43(year 2013-14), 36171.92(2014-15), 29672.37(year 2015-16), 30871.47(year 2016-17), 35317.79 (year 2017-18), 35303.19(year 2018-19) and 32731.98(2019-2020). Again, the annual growth rates of exports are calculated for a period of nine years taking export value of 2010-11 as a base. The growth rate of export is highest for the year 2011-12 i.e., 55.1%, followed by 14.10% and 14.4% for the years 2012-13 and 2017-18. While the growth rates declined to -4.9%, -17.96%, -0.04% and -7.28% in

2014-15, 2015-16, 2018-19 and 2019-20. Again, compounded annual growth rate is calculated for these years are calculated on the basis of 2010-11 data, which shows a positive growth rate of 5%. A careful investigation of the value of exports and export growth rates indicate that the industry has been witnessing fluctuations in its export performance rather than steady and consistent growth.

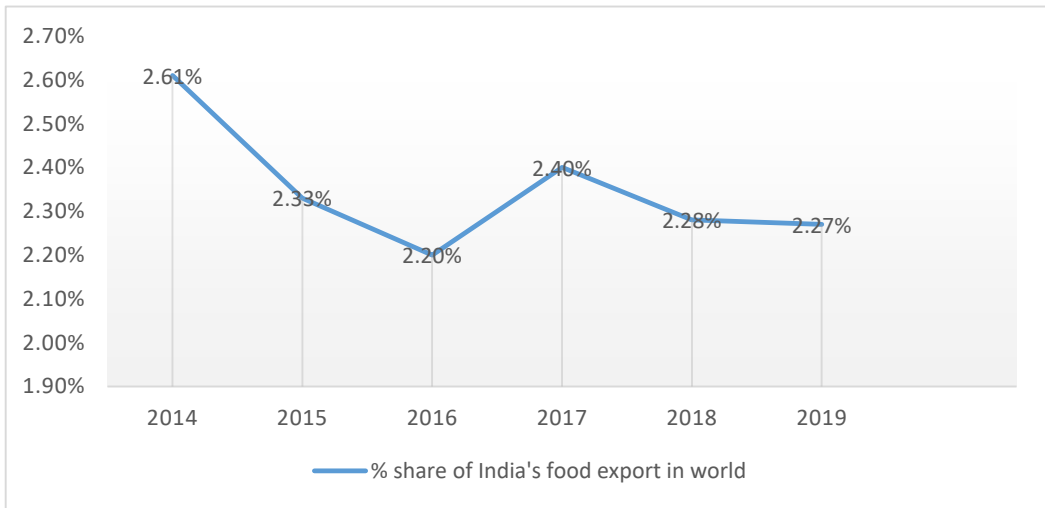
Chart 2: Percentage share of processed food export in total exports of the country



Source: calculated from annual report of various years of MoFPI

According to the data presented in the bar chart, the percentage share of Food Processing Industry in total exports from 2014-15 to 2019-20 are 11.6%, 11.30%, 11.20%, 11.60%, 10.70% and 10.40% respectively. It is observed that the Food Processing sector contributes moderately in total export of the nation though not significantly.

Chart 3: Chart showing India’s share in world food trade



Source: calculated from annual report of various years of MoFPI

The chart above depicts the percentage share of India in global trade of food. It is observed that in 2014, India’s share in global food trade was 2.61%, then for the following years it started to decline. In 2015 and 2016, export percentage declined to 2.33% and 2.20%. In 2017, export share increased to 2.40% and then got reduced to 2.28% and 2.27% in 2018 and 2019 respectively. From these data it can be interpreted that India’s share in global food trade is low and that it has been decreasing as compared to 2014 data.

Segment-wise analysis of export performance

Processed Products	Value of export in UDS Millions (for the years 2018-19, 2019-20 and 2020-21)					CAGR
	2016-17	2017-18	2018-19	2019-20	2020-21	
Processed vegetables	341.06	343.08	354.65	386.62	501.56	10%
Pulses	191.76	228.32	263.05	214.87	284.23	10%
Processed fruits, juices and nuts	372.75	410.77	402.47	431.98	428.38	4%
Mango pulp	126.41	104.54	93.95	81.88	96.40	-7%
Guar gum	464.15	646.94	676.48	456.96	262.99	-13%
Cucumber & Gherkins (prepared and preserved)	140.05	199.5	205.95	173.50	223.05	12%
Ground nuts	811.59	524.82	473.80	711.38	727.35	-3%
Cereal's preparation	533.03	552.33	553.22	542.54	635.74	5%
Jaggery and Confectionery	219.49	214.2	230.05	227.90	358.92	13%
Cocoa products	162.73	177.47	193.28	178.82	149.74	-2%
Alcoholic beverages	297.61	326.68	301.72	230.96	322.10	2%
Milled products	121.7	136	151.78	149.09	204.04	14%
Miscellaneous products	383.84	457.22	583.33	581.29	793.06	20%
Processed meat	0.69	1.54	1.94	2.03	1.61	24%
Poultry Products	79.33	85.71	98.44	80.34	58.66	-7%
Dairy products	135.36	185.49	345.70	186.71	201.37	10%

Source: Researchers' own calculation based on export data collected from APEDA

The above table highlights the export performance of various processed food products. It is observed that value of export of processed vegetable increased from 341.06USD million in 2016-17 to 501.56 USD million in 2020-21. Other product categories that recorded an increase in value of exports over the years are- pulses (284.23), processed juices and nuts (428.38), Cucumber & Gherkins (223.05), Cereal's preparation (635.74), Jaggery and Confectionery (358.92), Alcoholic beverages (322.10), Milled products (204.04), Miscellaneous products (betel nuts, dried soups & broths, lemonade, custard powders, malt, mineral water, pan masala, ice cream, soft drink concentrate) (793.06) and dairy products (201.37). While, poultry products (58.66), processed meat (1.61), cocoa products (149.74), Guar gum (262.99), Mango pulp (96.40) and Ground nuts (727.35) witnessed a decline in export over the years.

Among all the categories of products ground nuts, processed vegetables, cereals preparation, processed juices and nuts, and miscellaneous products occupies a greater share in total exports of Food Processing sector. In comparison to other processed food categories, processed meat and dairy products' contribution in export is quite low. However, a careful observation of the CAGR data for the above stated categories of products indicates that though export of Guar gum and Ground nuts constitute a major part of total exports of Indian FPI, the growth rates of these two products are negative. Mango pulp, cocoa product and poultry products also showed negative growth rate with -7%, -2% and -7%. Except for these three products, all other food product categories showed positive growth rate. Processed meat, although has a minimum share in total export as compared to other food products, showed highest growth rate of 24% based on 2020-11 exports value. Other segments that recorded high growth rate are milled products (14%), Jaggery and Confectionery (13%) and Cucumber & Gherkins (prepared and preserved) (12%). is has decreased significantly and export of miscellaneous products has increased to a greater extent. Processed vegetables, pulses and dairy products are growing at 10% CAGR.

IDENTIFICATION OF TOP THREE EXPORT DESTINATIONS OF DIFFERENT PROCESSED FOOD PRODUCTS FOR THE YEAR 2020-21 AS PER APEDA -

- A. **PROCESSED VEGETABLES:** The major export destinations for processed vegetables along with quantity and value of export are- 1.USA (45,660.50MT & 102.25 USD million),2. UK (29,225.00 MT & 47.18USD Million), 3. Germany (14,583.90 MT &31.40 USD Million),
- B. **PROCESSED FRUITS, JUICES AND NUTS:** India exported about 428.39 USD millions of fruit products, and the top five destination of fruits, juices and nuts along with quantity and value of export are- 1. USA (43,556.50 Metric Tonnes & 55.01 USD million), 2. Netherland (38,994.94 MT & 47.61 USD Million), 3. Saudi Arab (34,041.90 MT & 36.23 USD Million),
- C. **PULSES:** during 2020-21, India exported pulses worth 284.26 USD million and the top five export destinations are- 1.USA (34,843.53 MT &48.47 USD Million), 2. China (34,538.51MT & 32.10 USD Million), 3. Nepal (19,151.54 MT & 25.82 USD Million),
- D. **MANGO PULP:** Export of mango pulp in 2020-21 valued at 96.43 USD. The top five countries it is exported are- Saudi Arab (27,362.87 MT&23.10 USD Million), Yemen Republic (14,597.10MT& 12.16), Netherland (8,011.23MT& 9.49),
- E. **GUAR GUM:** the value of Guar gum export stood at 262.99 USD Million. And the top five countries are-1.USA (39,994.56MT & 55.54 USD Million), Germany (26,435.17MT& 31.57USD Million), Russia (24,659.69MT& 31.45USD Million),
- F. **CUCUMBER &GHERKINS (PREPARED AND PRESERVED):** During 2020-21 total export of Cucumber & gherkins was worth 223.05 USD Millions. The major export destinations are- 1. USA (57,784.42MT& 56.45), Russia (23,453.46MT& 18.10), France (14,974.81MT& 17.44),
- G. **GROUND NUTS:** 1. Indonesia (211,860.18MT&239.56USD Millions), 2. Vietnam (129,922.00MT& 152.66USD Millions), 3. China (73,190.67MT& 77.34USD Millions),
- H. **CEREALS PREPARATION:** 1.USA (60,568.93MT& 126.49USD Millions), 2. Nepal (24,715.39MT& 57.04USD Millions), 3. Bangladesh (18,518.44MT& 48.50USD Millions)
- I. **JAGGERY AND CONFECTIONERY:**1. Sri Lanka (108,580.21MT&43.44USD Millions), 2. Sudan (73,842.64MT& 30.07USD Millions), 3. Nepal (41,487.68MT& 23.38USD Millions),
- J. **COCOA PRODUCTS:** 1.USA (6,695.08 MT&28.95USD Millions),2.Turkey(1,473.58MT& 14.88USD Millions), 3.Indonesia(1,159.05MT& 13.14USD Millions),
- K. **ALCOHOLIC BEVERAGES:** 1. U Arab Emts(48,928.23MT& 74.84),2. Ghana(36,750.60MT& 35.56USD Millions), 3.Singapore(36,750.60MT& 35.56USD Millions).
- L. **MILLED PRODUCTS:**1.USA(71,510.23MT& 56.00USD Millions),2.U Arab Emts(63,215.83MT& 26.70USD Millions), 3.Australia(19,134.89MT&12.19USD Millions).
- M. **MISCELLANEOUS PRODUCTS:** 1. U S A(54,048.25MT&154.36USD Millions), 2. U Arab Emts(50,709.73 MT&87.42USD Millions),3. Malaysia(118,883.55MT& 46.74USD Millions).
- N. **PROCESSED MEAT:** The major export destinations with quantity and value of export are: 1. Hong Kong (584.94 MT& 0.96USD Million), 2. Qatar (47.00MT& 0.19), 3. Bhutan (61.99 MT& 0.18USD Millions).
- O. **POULTRY PRODUCTS:** 1. Oman (79,698.67 MT& 13.84), 2. Maldives (140,898.79 MT& 8.89USD Millions), 3. Indonesia(1,251.98 MT& 73,842.646.36USD Millions)
- P. **DAIRY PRODUCTS:** 1. U Arab Emts(7,905.70 MT&39.34 USD Million), 2. Bangladesh(8,792.61 MT& 24.13 USD Million), 3. USA(3,805.73 MT&22.80 USD Million),

CHALLENGES FACED BY THE FOOD PROCESSING SECTOR

India being the second largest populous nation of the world has the demographic advantage of a young population. This makes India an investment hub as it invites opportunities for both local as well as foreign businesses. India is one of the largest consumer markets for food products, hence the food processing sector has tremendous potential to grow and thrive in Indian environment. Since the FPI in India is still in its nascent stage: the government has introduced many initiatives in order to support the growth this industry has witnessed over the last decade. However, there are some challenges which pose barriers to its growth that needs to be addressed

as soon as possible. One of the major issue the industry faces in terms of export is complying with international standards for food products like the Sanitary and Phytosanitary (SPS) standards of the WTO (World Trade Organization), the CODEX standards of FAO(Food and Agriculture Organization) and WHO and Hazard Analysis and Critical Control Point(HACCP) standards developed in order to ensure food safety and minimize health hazards for consumers globally. But there is a gap between the standards applicable within India and the internationally accepted standards. Apart from the international standards, many developed countries have set more stringent health standards in order to protect their nations from health hazards while importing from developing countries, however, many a times these standards are also used as a protectionist measure by these nations for their domestic market. These standards act as barrier in accessing global markets for Indian exporters as many products of India do not meet the required standards and are rejected by the developed nations. Quality of Indian food products fail to achieve international standards due to lack of knowledge of farmers regarding the availability and applicability of modern technology that could be applied in farming,increasing use of pesticides and fertilizers in production of raw materials due to lack of awareness of farmers and manufacturers on food safety and quality standards, dearth of upgraded food quality testing laboratories and lack of uniformity in food safety standards that are to be followed.Also, there is no central authority which regulates food safety of both domestic market as well as exported goods. For example, the FSSAI has no regulation over the food products that are exported from India, however, it has control over the Indian market and imported food products. While exporting the Indian products are required to comply the standards of the importing country and imports of India are required to comply with the Indian standards (Export-Import Bank of India, 2017). This creates a scenario of confusion. Cumbersome and costly process of pre-shipment investigation of exported products which is compulsory and no comparative advantage of Indian processed foods are also problems faced in exports of processed foods. According to the Export-Import Bank of India(2017)other challenges faced by the Indian FPI are- infrastructure and logistics issues, financial constraints as food processing industry is capital intensive, lack of skilled manpower,low rates of productivity of agriculture, lack of technological developments, inadequate irrigation facilities and water management, no proper investments in research and development, inadequate cold chain infrastructure for storage and transportation of food products to protect the products and increase the shelf life, high agricultural wastage both at the production and post-harvest stage, lack of processable varieties of raw foods, no cost competitiveness as the units use inefficient processing technologies which affects cost of production.

CONCLUSION

The food processing industry of India has huge potential for growth and development considering the existing agro-climatic conditions, which enables the production of varied range of crops, and the rise in demand for processed foods across the globe. Also, India stands at 2nd position in global food production. In this backdrop, the Government of India has been implementing various schemes to give impetus to this sector. One such scheme is the Pradhan Mantri KishanSampada Yojana, an umbrella scheme under which different schemes are implemented like Mega Food parks, cold chain and infrastructure development, creation of food processing and preserving capacities, infrastructure for agro-processing clusters, creation and backward and forward linkages, food safety and quality assurance infrastructure, human resource and institutions and operation greens. These schemes aim at establishment of infrastructure needed for food processing, facilitate value addition to the farm produces, ensures sustained supply of raw materials, training people and creating skilled man-power for each and every level of processing. The Government of India has also identified this sector as the priority sector in its 'MAKE IN INDIA' programme. Yet, the level of processing in India is much lower than many other countries, also it is observed in the present study that India has a share of only 2.27% in global export of food products. Processed food products like dairy, poultry, jaggery & confectionary, cucumber & gherkins, miscellaneous products and milled products' share in exports are growing positively, which indicates that there is need for more investments in these sectors.To address the drawbacks faced by this sector special attention must be given in Research and development, and investment in upgradation of technology at each step of the value chain is must to reduce wastage and maximize the level of processing which would help in gaining competitive advantage for Indian processed foods at international market. Also, there is a need to explore potential destinations globally for different food products of India.

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