

PRESENT STATUS AND FUTURE OPPORTUNITIES IN PROCESSED FOOD EXPORTS INCLUDING SPS RELATED ISSUES IN INTERNATIONAL MARKETS

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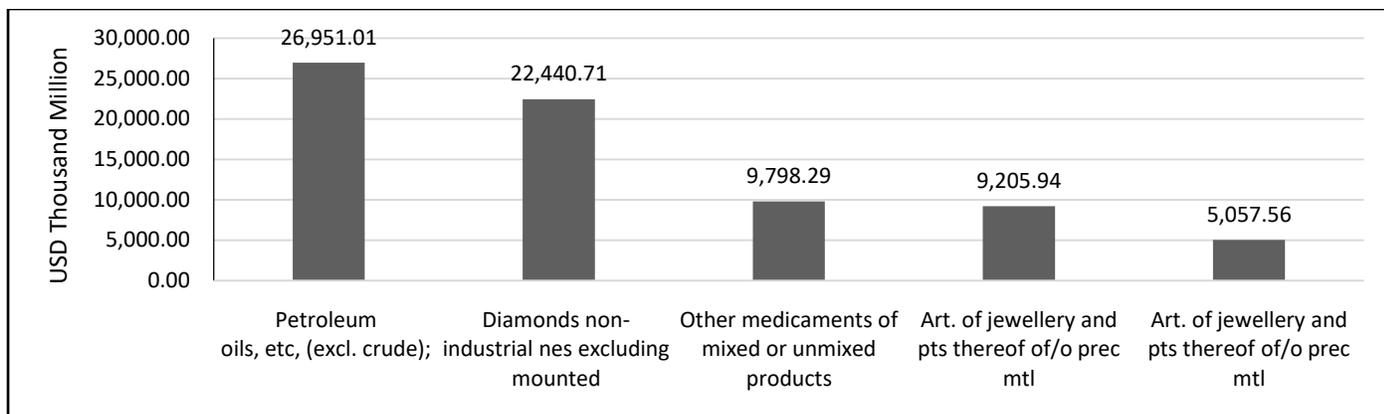
Overview of India's International Trade

In the backdrop of global slowdown and lower world demand (-4.4%), India showcased better compared to other developing world economies falling by -5.3%. The contraction was driven by slowing GDP and trade growth in developing economies such as China and Brazil and also in North America, which had the strongest import growth of any region in 2014-15 but has decelerated since then. In 2016 total Indian exports were USD 260,327 million and total imports were USD 365,705 million. India's total GDP figure is USD 2.2 trillion (2016) and trade as a percentage of GDP is 39.8%, trade deficit -1.46% of GDP. It can be seen in Chart-1 that India's top five export partners (2016) are United States of America (41%), United Arab Emirates (29%), Hong Kong (13%), China (9%) and United Kingdom (8%). India's export market penetration as compared to global trade is 0.06%. Top five countries from which India imports are China (45%), United States of America (15%), United Arab Emirates (15%), Saudi Arabia (14%), and Switzerland (11%).

**Chart-1
Top 5 Exported HS code 6 digit Products 2016 in US\$ Mil**

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Source: World Integrated Trade Solution

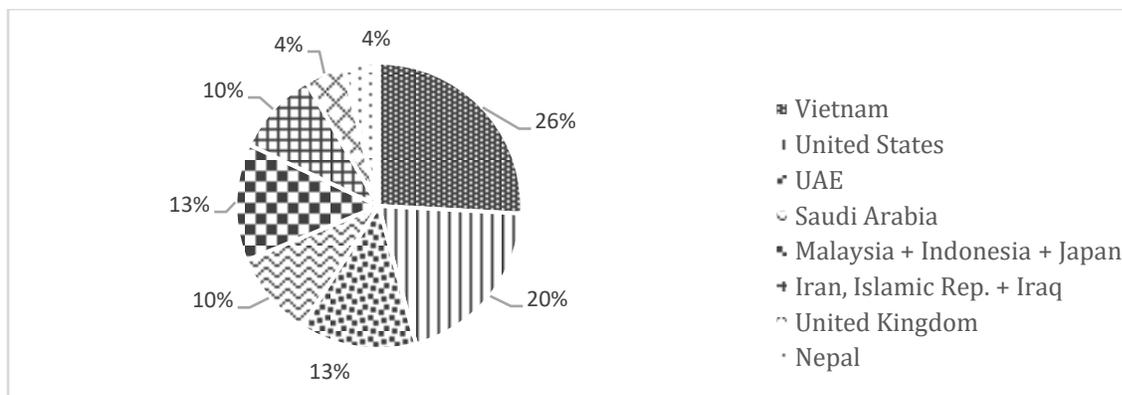
(WITS) <https://wits.worldbank.org/CountryProfile/en/Country/IND/Year/LTST/Summarytext> as accessed on 17th November 2017

With liberalization of India's economy in the 1990s, and India becoming a member of WTO in 1995 (inclusion of Agreement on Agriculture in WTO charter) have opened up several avenues for the export of processed food from India. In the last decade the domestic demand for processed food has increased many folds due to increase in disposable income, changing lifestyle changing role of women in society. Food processing industry also provide a vital economic link between industry and agriculture, over 58 per cent of the rural households depend on agriculture as their principal means of livelihood.

Indian food industry is still in its infancy and has taken much time to come up to the position and likely to take longer to reach a matured state. Although, India has advantage in terms of strong raw material base for food processing industry and is one of the largest producers of certain fruits, vegetables, pulses, cereals and dairy products, and its unique geographical position provides supply chain advantage and connectivity to Europe, South Asia and Middle East to but India has been unable to tap the potential for processing, storing, packaging and marketing internationally. As per latest statistics from the Export Promotion Body dealing in Agriculture in India, named APEDA, India is emerging as the export hub of instant coffee, it topped the list of shrimp exporters globally in 2016. The production of food grains in India reached a record during FY 2016-17.

Chart-2

Top Ten Destinations for Fresh and Processed Food Exports from India in 2016



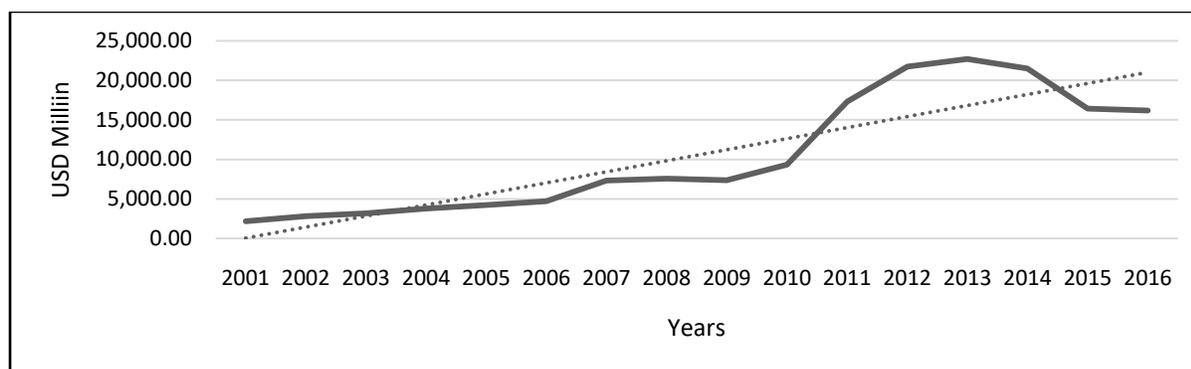
Source: APEDA (<http://agriexchange.apeda.gov.in/indexp/reportlist.aspx>)

Agricultural and Processed Food Products are classified under six broad categories: Floriculture and seeds, Fresh Fruits and Vegetables, Processed Foods and Vegetables, Animal Products, Cereals, and Organic Products. Chart -2 clearly establishes the important export markets for India which are Vietnam, Indonesia and Malaysia among the South East Asian countries, Saudi Arabia, United Arab Emirates and most of the other Middle Eastern countries, United States and United Kingdom.

Chart-3 clearly displays an upward trend in export of agricultural products and processed food from India from 2009 onwards. This is undoubtedly the result of renewed Foreign Trade Policy of 2009-14 which was introduced with an aim to double the exports of goods and services from India by 2014 and to arrest the decline in foreign trade. This was achieved through simplification of procedures, fiscal incentives, institutional changes, process rationalisation and diversification and greater access to markets. By triggering policies and strategies which will catalyze growth of exports. And tremendous growth momentum is visible from 2009 onwards.

Chart-3

Total Export Value of Agricultural Products and Processed Food from India



Data source: APEDA (<http://agriexchange.apeda.gov.in/indexp/reportlist.aspx>)

The renewed Foreign Trade Policy 2015-20 announced by the Government in April 2015 is designed to further increase export of goods and services as well as generation of employment and increasing value addition in the country.

From Table-1 it can be inferred that export of agricultural and processed food was on a growth trajectory from 2009 to 2013 and declined till 2015 while in 2016 stability was achieved. Further assessment indicates that the fall in processed food category exports is due to 30% fall in pulses exports in 2015, 10% fall in animal products in 2015 is due to fall in process meat 28%, Animal casings 21%, Poultry products 33%, and Milk 43%. 15% fall in Cocoa products, and 26% fall in Milled products. 20% fall in cereals and with 56% fall in export of wheat. On the other hand there has been a significant rise of 13% in Fresh Fruits and Vegetable category, with fresh mangoes and grapes both gaining 36% but walnuts losing 54%. Floriculture has grown by more than 5%.

Table-1

CAGR (%) in Agricultural and Processed Food exports from India 2014-2016

Product (Us\$ Thousand)	2014	2015	2016	CAGR
Floriculture	0.68%	0.92%	0.99%	5.31%
Fresh Fruits & Vegetables	5.69%	7.89%	9.54%	12.71%
Processed Fruits And Vegetables	5.08%	6.79%	6.57%	-0.95%
Animal Products	25.18%	28.39%	27.13%	-9.67%
Other Processed Foods	18.93%	17.79%	18.46%	-14.06%
Cereals	44.45%	38.23%	37.31%	-20.25%

Data source: APEDA (<http://agriexchange.apeda.gov.in/indexp/reportlist.aspx>)

While there is need and opportunity to grow the industry for exports it's imperative to be consistent and confirm to global standards of quality, traceability, safety, quality packaging, delivery and logistic.

LITERATURE REVIEW

India has large production capacity of vegetables, fruits, meat, poultry, cereals and dairy products and has presently improved its exports of fresh and processed food and vegetables, groundnuts, meat and fruits. India exports processed and fresh fruits and vegetable to many developed nations as United States (US), the European Union (EU), and to most of the South East Asian countries as Vietnam, Thailand, and Malaysia and to the Middle East which has major importers as Saudi Arabia and United Arab Emirates. India ranks 9th among exporters of Agricultural products. Some of the top exporters are the European Union, the United States, Brazil and China.

The Indian government is engaged in enhancing and promoting the food processing industry and its exports potential. It has come up with several financial, technological development, and market assistant schemes for the farmer, processors and traders. The Foreign Trade Policy 2015-20, the

government has focused on several such schemes under the 'Make in India' drive. 100% Foreign Direct Investment is allowed by the Ministry of Food Processing Industries in horticulture and food processing industry which helps bring in latest technology and much needed funds for the growth of the sector. To improve the conditions of farmers' government has removed the quantitative ceilings on export of organic products.

Although, the government is committed to promote exports of fresh and processed food products, a substantial number of tariff and non-tariff barriers are faced by agricultural products. General Agreement on Tariff and Trade (GATT) in agriculture was included under the Uruguay Round of the WTO negotiations in bilateral and regional trade agreements, which resulted in reduction of tariff rates for the member countries.

However, to protect indigenous industries from foreign competition, non-tariffs barriers in many cases has been used by nations. This continue to impede the growth of international trade in fresh and processed food and also acts as trade barrier. Sometimes countries implement sanitary and phyto-sanitary barriers as citizens demand high food safety and health standards (WTO, 2012). If one studies the list of non-tariff barriers as consolidated by the nodal Indian Authority, APEDA one could easily spot lack of harmonization in measures used by different countries and regions, different maximum residue limits (MRLs) for contaminants, pesticides, drugs, and different interpretations of standards are main issues in international trades. There are significant differences between the perceptions and institutional capacities of developing countries as compared with developed countries when implementing agreements on TBT and SPS under WTO.

Usually an Indian exporter face many SPS barriers especially in the European markets, and as this is one of the key export markets for India, many studies have been conducted to understand the nature of SPS barriers imposed by the EU and it was found numerous times that these barriers are not related to food and health safety instead are somewhat non-compliant and unreasonable (Chaturvedi and Nagpal, 2003; Mehta, 2005; Chaudhari *et al.*, 2012; Das, 2008). Indian exports of some specific products, in the past, as mangoes, table grapes, okra, peanuts, curry leaves, chillies, shrimps, prawns, and tamarind have faced rejections or bans due to issues related to health and food safety standards in markets such as the US, Vietnam, EU, Saudi Arabia, Japan and Bhutan. For instance, Indian chillies were rejected and even faced temporary bans in the US, Saudi Arabia and Bhutan, due to the presence of higher than approved levels of chemical residues.

Even rejection of export consignments has taken place due to pest infestation for example import of mangoes from India was banned by EU due to the presence of fruit flies. Other Indian agricultural products such as eggplant exportability is affected due to similar issues, such bans are a cause for concern because they have both short and long term effects on export markets and farmers resulting in financial losses in the short run, due to the rejection of consignments, and loss of market share in the long run due competitors capturing the markets and are able to meet the food safety and health standards of importing countries.

There has been a transformation in the composition of agro-food exports from developing countries over the last three decades, due to rapid expansion in high value (HV) non-traditional

agro-food products (Jaffee and Sewadeh, 2005). This helps to explain the divergent food safety norms, animal and plant health requirements (SPS measures) and standards management capabilities and technological advancements that exist between countries can be important trade deterrents.

Since different countries adopt distinct standards and regulations for a particular product hence, SPS measures have the potential to act as important Non-Tariff Barriers (NTBs) and can be detrimental to exports from developing countries (Henson et al., 2000; World Bank, 2005) as the emerging or developing economies lack the necessary infrastructure at the administrative, financial, technical, scientific and human levels to match the standard practices of developed nations due to sheer lack of resources. For example, Mauritius had to develop other export avenues as fish and horticultural products as it is becoming difficult to map the stringent sugar protocol imposed by developed nations as EU.

Export market Mauritius is threatened by the introduction of the EU Food and Feed Controls Regulation 882/04 and the new Hygiene Directives due to the high compliance cost associated in establishing those standards while EU being the key export market for them. In order to maintain the export potential of the developing nation and to grow further it is imperative for them to respond to emerging challenges in target market by providing high quality and safe products (WTO, 2006).

SPS and Food safety measures is a cause of concern for export of fishery and horticultural products from developing to developed countries, due to the degree of manipulation of the produce throughout the entire supply chain, especially in the fresh produce trade (seafood, fresh fruit and vegetables) because of the (Zepp et al., 1998), the high perishability and susceptibility to damage and disease pre- and post-harvest and the stringency of standards and regulations in developed countries (Unnevehr, 2000). In developing countries the application of SPS norms is heterogeneous and hence variation in the degree of SPS infrastructure implementation and the degree of exposure to globalization.

A few studies highlights the role of SPS measures on the export of fishery and horticultural products from developing to developed countries, with focus on the EU. Strengthening of the EU regulation on aflatoxins levels in food on exports of cereals, dried fruits and nuts to Europe affected African countries which resulted in decreased exports by about 60%, representing US\$ 670 millions compared to internationally based regulations while reducing health risk by about 1.4 deaths per billion a year (Otsuki et al. 2001). It was also seen that tightening of pesticide regulations by 1% affected African countries and resulted in 1.63% decrease in banana imports (Wilson and Otsuki 2004).

Ban on fish exports in 1999 because of inability of Uganda's Competent Authority to guarantee fish safety due to inappropriate testing facilities by Uganda to EU impacted the economy at micro and macro levels, reducing returns of US\$ 36.9 million; 3 out of the 11 factories closed along with their ancilliary services. This also triggered the Ugandan authorities with Implementation of HACCP (Hazard Analysis Critical Control Point) and GMP (Good Manufacturing Practices) (US\$ 100 million

to comply with quality requirements); training, equipment procurement, certification, led to lifting of ban and increase in exports. Capacity of Competent Authority strengthened and inspection improved (Wilson and Abiola 2003 and Balagadde 2003).

Sanitary problems (shrimp peeling sheds); deficient official system of inspection in 1997 resulted in 9% decline in total exports by value Indian export to EU. Remedial measures taken by India, Other markets targeted; official control revisited; improvements made by plants to comply with the EU requirements costing some US\$ 174,000 and 220,000; training on HACCP. Seafood Exporters Association of India spent US\$25 million to upgrade facilities. Costs of compliance ranged from US\$ 51,400 to US\$ 514,300, representing 2.5–22.5% of turnover in a single year ie 1997–1998 (Mehta and George 2003 and Henson et al. 2005).

EU's ban on fishery products (1998) because of a Cholera outbreak in Mozambique resulted in Loss of about US \$60,000 a month in hard currency earnings as a remedial measure Authorities of Mozambique tried to resolve problems through consultations (bilateral level and ACP level) with the EU (Wilson and Abiola 2003).

In 1997, ban on fishery products due to serious deficiencies in infrastructure/hygiene in establishments and in government inspection system by Bangladesh to EU Cost to the Bangladesh shrimp-processing sector: US\$15 million in lost revenues. Remedial measures by 1997, the Bangladesh shrimp processing industry had invested \$17.6 million in plant upgrades, the government had invested \$382,000 in laboratory and personnel upgrades, and outside partners had invested \$72,000 in training programmes in Bangladesh. By 2002, out of 65 plants licensed for export by the government, 48 plants had EU approval. (Cato and Subasinghe 2003).

Literature study generally show that progressively stricter food safety requirements in the EU have had a negative impact on exporters of fishery and horticultural products in developing countries. Based on their intrinsic capabilities, Individual countries, have dealt with imports barriers differently; ranging from establishing food safety management systems, upgrading of packing houses to modifying their products. A number of developing countries have strengthened their Competent Authority and inspection system benefitting from technical assistance and (Wilson and Abiola, 2003; Balagadde, 2003; Cato and Subasinghe, 2003; Nanyaro, 2006). The results suggest that the compliance strategy used by the majority of exporters was mainly reactive.

Sanitary and Phyto-Sanitary Measures for Exports from India

Over the past few years, India's agricultural exports to the EU have faced several barriers related to plant and animal safety. Some of the notable instance include the presence of excessive aflatoxins in Basmati rice, the incidence of fruit flies in mangoes and presence of pesticides beyond the regulated level in grapes, among others, in recent cases in March 2017, Vietnam has decided to suspend the import of five agricultural products from India after finding live insects in several consignments of peanuts and tamarind, South Korea allowing mango exports from India after conducting the

stringent pest risk analysis (PRA). Australian authority revises protocol to allow Indian irradiated mango, Okays two treatment units.

Despite growing concern that certain foreign sanitary or phyto-sanitary measures may be inconsistent with World Trade Organization provisions and may unfairly impede the flow of agricultural trade, the Indian government is not well positioned to address this issue. Importing countries frequently require guarantees that exports are derived from areas that are free from certain pests or diseases, that minimum standards of hygiene have been applied in the manufacture, packaging and distribution of food products, or that products are free of excessive residues, for example of pesticides, veterinary medicine, environmental contaminants or naturally occurring contaminants. It is imperative for the exporting country to have the capacity to comply with these requirements and an authority to certify these compliances at international level. Instances of rejection in international market:

Major Issues of Sanitary and Phyto-Sanitary barriers in fresh or processed fruits and vegetables are:

Pesticide residues: The maximum residue levels (MRLs) of pesticides and other contaminants are largely based on technological development and not on actual risk assessment. The level of protection usually goes beyond the ALOP (Appropriate Level of Protection) specified by WTO and lack harmonization among custom unions.

Equivalence standardization delays: Most developed countries take years to decide on equivalence and standardization with developing countries. For instance, USA took 3 years on organic standards, Japan took 20 years for market access on mangoes, EU has already taken more than 9 years to agree on equivalence in case of egg products etc.

Lack of harmonization with Codex: Although, the reference point for standards is Codex, most developed countries establish stricter standards as is allowed under the SPS Agreement. The true purpose of establishing Codex standards is not achieved by the developing countries.

Capacity building: The SPS Agreement provides for capacity building of developing countries through various programs but it is not followed in letter and spirit only little is done in this area in the form of seminars and conferences.

Impractical approaches to product testing: Aflatoxin cannot be more than certain value in in spices, processed food, groundnuts, cereals, etc., the sampling process is too complex and costly.

Unreasonable clearance procedure: Certain developed countries like the EU destroy processed food consignments at their ports if the risk to human health is high which is not reasonable. Exporter should be given an option of bringing back the goods to his own country where it may be acceptable. **Traceability:** Codex and its application is still not defined properly and left to interpretations by countries. Developed countries like the EU have started demanding traceability in all products right from the farm to the consumer which is not feasible in many developing countries.

Environment and Labour issues: The SPS Agreement, through the Codex, allows formulation of standards and practices for ensuring food safety and fair trade practices. In the name of fair trade,

most developed countries are expecting compliance with their environment and labour requirements.

Data and Methodology

Increasing globalization and liberalization of world economies has helped India to grow its merchandise trade although, in last few years there is a declining trend in some sectors. The aim of the Foreign Trade Policy 2015 – 2020 is to increase and facilitate trade. With ever changing trend in international market it is imperative for an entrepreneur to search for newer markets to offset business risks. Trade Agreement and partnerships with countries helps to expand the export potential as it makes the goods become more competitive due to lesser tariff and acceptability in the market.

HS Codification: The sector categorization begins with two digit HS code and standardized HS code accepted worldwide is 6 digit HS code. So identifying the correct HS code is important for an entrepreneur to begin with. For product suitability one can dig deep till 10 – 12 digit HS code which is known as National Tariff lines particular to that nation or market where the products are exported.

It is also important for the exporter to refer to India's Foreign Trade Policy to make sure that the chosen HS code / product chosen by him/her for export is freely exportable from the country and does not fall under restricted / canalized or prohibited category.

As per Directorate General of Foreign Trade, DGFT, products are classified under four categories:

- Open General License, OGL: Products under this category, defined by HS codes, are freely exportable and one should prefer to choose to avoid any export hassle.
- Restricted: These products are restricted in general and would need special license for exports.
- Canalised items: Only government permitted agencies as MMTC and STC are permitted to export. These products are specified in the negative lists.
- Prohibited Goods: These products are not permitted to export.

The Govt. Policy, is to allow the export of manufactured products quite freely but restrict export of goods of plant origin, animal origin and mineral origin. Policies are usually designed keeping the domestic demand in mind so as to help fulfill the countries requirement first and then exports. One should check the policy condition of HS code first before performing any further analysis. It is advisable to choose HS code in OGL category.

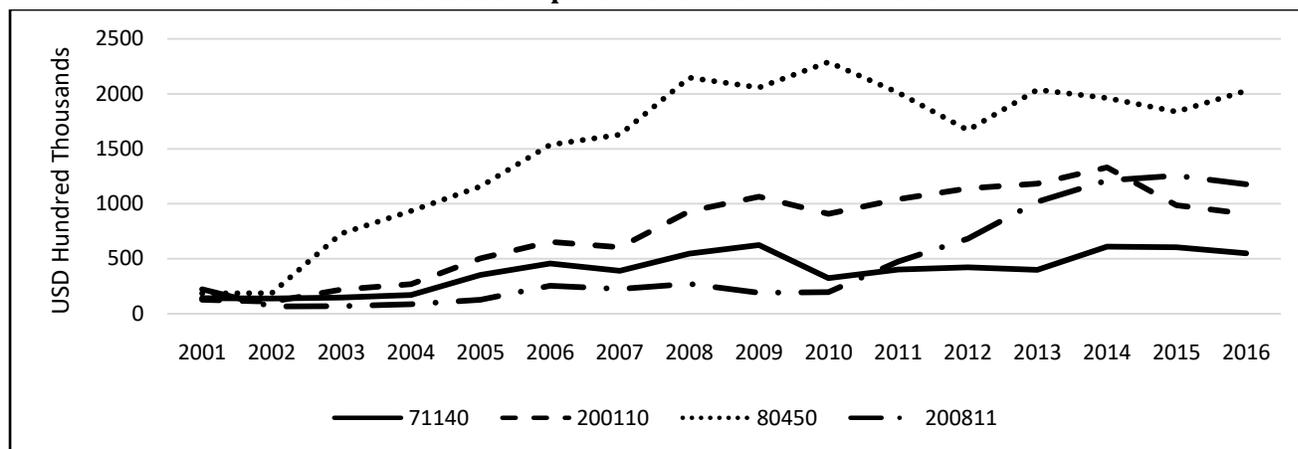
The paper focuses on certain product categories in 'processed foods and vegetables,' as classified by APEDA, India. The products and the HS codes chosen are:

- Cucumber and gherkins (prepd. & presvd)
 - Product: 071140 cucumbers and gherkins provisionally preserved, e.g. By sulphur dioxide gas, in brine, in sulphur water or in other preservative solutions
 - Product: 200110 cucumbers and gherkins, prepared or preserved by vinegar or acetic acid.

- Groundnuts (preserved)
 - Product: 200811 ground-nuts, prepared or preserved (excl. Preserved with sugar)
- Mango pulp
 - Product: 080450 fresh or dried guavas, mangoes and mangos teens: mango pulp

The paper focuses on the above stated five HS Codes and 6/8 digit classification depending upon the adequacy in description.

Chart-4
HS Code based Export Trend From 2001 - 2016



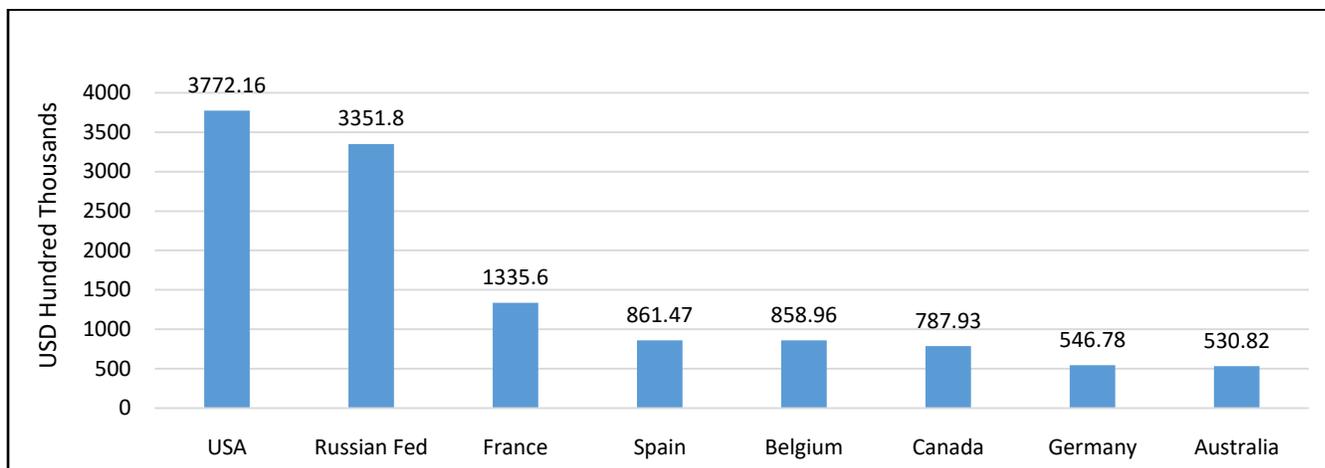
Data Source: ITC Trade Map

As can be assessed from Chart-4, the export trends of the chosen commodities indicate a rise over the 16 year time period. Maximum increase can be seen in the export of Mango pulp followed by cucumbers & gherkins and then preserved groundnuts.

TOP EXPORT DESTINATIONS

The major export destinations for Cucumbers and Gherkins during the time period 2001-16 have been USA, Russia, France, Spain, Belgium, Canada, Germany and Australia as depicted in Chart-5. In case of Preserved groundnuts it can be seen from Chart-6, the major destinations of export from India are Indonesia, Malaysia, UAE, USA and South Africa.

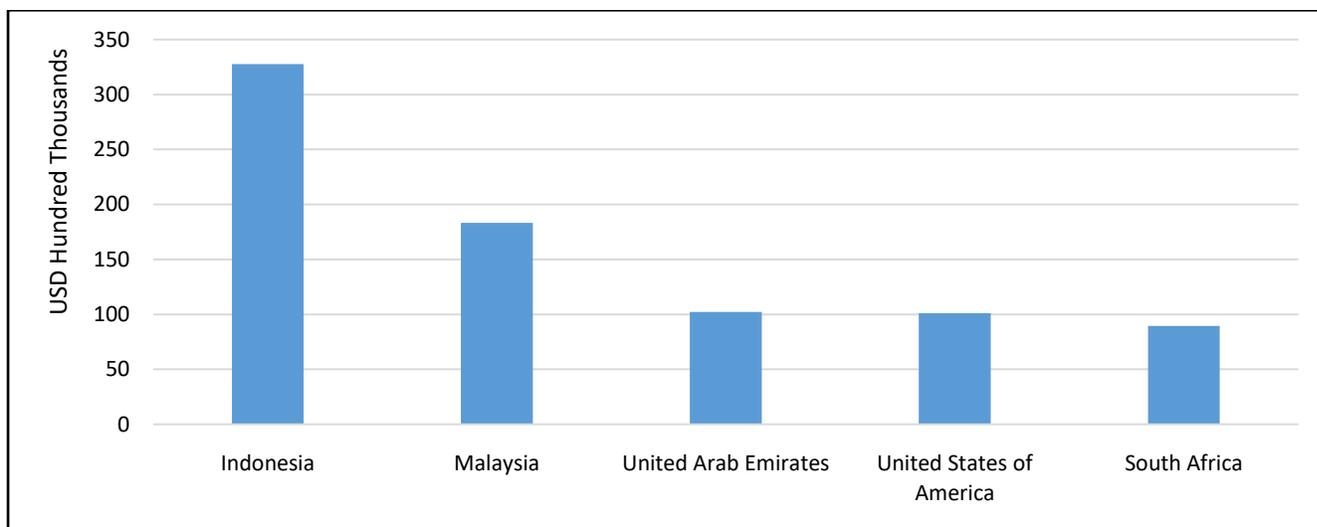
Chart-5
Cucumbers & Gherkins: Top Export Destination for 071140 & 200110 from 2001 -2016



Data source: ITC Trade Map

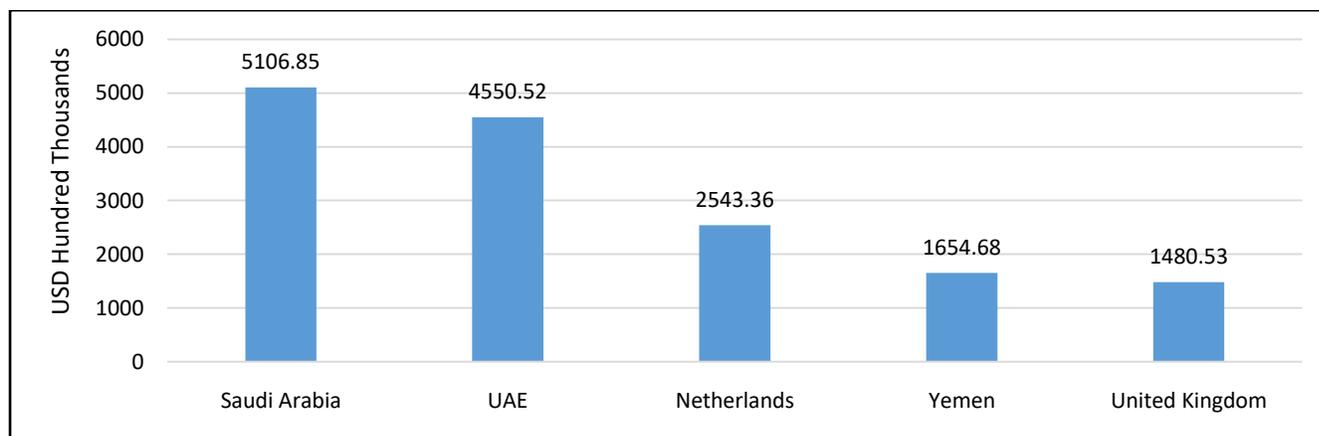
From Chart-7 it can be inferred that the major export destinations for Mango pulp are Saudi Arabia, Yemen, Netherlands, UK and UAE.

Chart-6
Groundnuts (preserved): Top Export Destination for 200811 from 2001 - 2016



Data source: ITC Trade Map

Chart-7
Mango Pulp: Top Export Destination of 080450 from 2001 - 2016



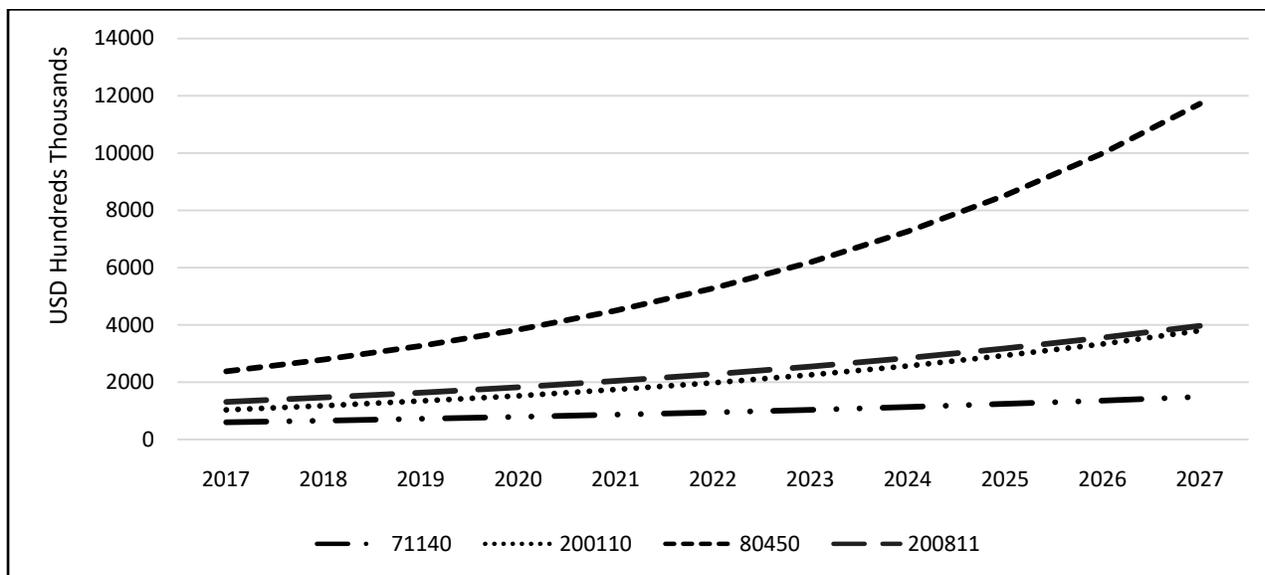
Data source: ITC Trade Map

In order to enhance exports of the chosen commodities it is imperative to assess the existing competition in the top export destinations of these products for India. It can be seen in Table-2 that the major competitors for India are USA, China, Germany and Netherlands primarily.

Table-2
Competing Countries for India's Export Market

HS Code	Competitors to India	USD TH. 2001 - 2016
Groundnuts (preserved) 200811	China	7350671
	Argentina	4390288
	Netherlands	2350072
	USA	2218639
	Germany	1119360
Cucumbers & Gherkins (provisionally prsvd.)200110	Germany	1351765
	Turkey	1027403
	USA	469002
	Netherlands	448745
Mango Pulp 080450	Mexico	2919829
	Netherlands	2081467
	Peru	1415135
	Brazil	1790404
Cucumbers & Gherkins (peprd. and presvd.)071140	China	230657
	Belgium	155486
	Netherlands	119449
	Viet Nam	43171
	Spain	31669

Source: ITC Trade Map

Chart-8**Future Potential from 2017 till 2027 based on CAGR from 2001 to 2016**

Source: Author based on calculations

The estimated export trend in HS code 07, 20 and 08 from 2017 to 2027 is calculated based on the Compounded Annual Growth Rate (CAGR) from 2001 to 2016 as given in Table-3. Chart-8 shows significant rise in value of exports by 2027 in agricultural and processed food. These will be achieved by friendly FTP & numerous Trade Agreements with the right soul and purpose to win in the international market. There would be diversification in terms of new markets and growth by product differentiation and customization being more closure to National Tariff line of importing countries.

Table-3
CAGR of chosen products

HS Code	CAGR (2001-16)
071140	0.095
200110	0.139
080450	0.173
200811	0.117

Source: ITC Trade Map

The trade analytics methods should help to identify suitable market and right products for exports. Existing markets and products can be divided into four categories

- New product old destination (NPOD)

- New product new destination (NPND)
- Old product old destination (OPOD)
- Old product new destination (OPND)

For our reference we divide the players in the market into L1, L2, L3 where

- L1 players – Exporter of the same Commodity from India
- L2 players – Exporters of the same commodity in Competitive countries
- L3 players – Manufacturers of the same commodity in importing country

It is imperative to find the concentration of market and product to shift from old product old destinations to any of the other three markets. Sectoral Hirschman Index, SHI > 0.5 would mean shifting to new sectors or products. In case of Regional Hirschman Index, RHI > 0.5 indicates need for shifting to newer markets as business is concentrated in a region. For example, China is a country whose export markets and product are too concentrated and it needs to diversity both in terms of market and products to offset the risk of dependency on one or two major markets and products. The Export Propensity Index for Sector Selection is calculated by using the following formula

$$\text{Export Propensity} = (\text{Export}/\text{GDP}) * 100$$

Export propensity index measure the export potential of local producers. High EPI value means whatever is produced locally is all exported and not much competition in the domestic market. This shows that the product is acceptable in the export market and exporters are making good revenue by selling in the international market and startups can initiate their operations in local market to begin with till they gain competence to operate in international ones.

The next step was to assess the Revealed comparative advantage (RCA). RCA is calculated as

$$\text{RCA} = \frac{(\text{Export of I from India to the world} / \text{Export of J from India to the world})}{(\text{World export of I} / \text{World export of J})}$$

Value of RCA more than 1 indicates India's presence is better in international market than the other suppliers of the same commodity in the world. Hence RCA should be greater than 1 and trend at least over a five year period should be considered. If RCA is very high and trend is rising it means there are lots of L1 (in-country) players. Startups should venture into exports if RCA value lies between 2-15. Start-up can venture into exporting products where RCA > 15, if PHI is low. Players Hirschman Index (PHI) < 0.5, means too many local player in the export market which is indicative of low entry barriers to the market, easier for a start-up to venture. Established firms can operate with RCA < 58.6. Beyond 58.6 firms should consider customizing its product as per national tariff lines of the importing country.

Zero RCA value indicate that there are no in-country players in the export market and probably the products falls under prohibited category as per DGFT notification. It might also mean the product is a newly invented and RCA value will rise slowly and it can be a patented product and cannot be

exported for initial years. If there is a sudden rise in the RCA value from ZERO that means the product was in prohibited category and now is classified under OGL.

If the RCA values are declining which means either the world demand overall is decreasing or competitor is eating up the market share. Companies can shift their focus to National Tariff Lines instead of operating in 4 to 6 digit HS code. Sudden decline in RCA value indicates the possibility of SPS/TBT barrier in one of the major markets of Old Product in Old Destination. In such cases start-ups should wait for the situation to come under control or search for new markets.

RCA of the GI product is usually good. RCA will also rise when government announces some special product or market focused schemes. RCA can show a fluctuating trend if the product is canalised.

Understanding the structure, size and trends in International markets, SPS/TBT barriers is essential for any firm. Countries with negative balance of trade are good for exports as they do not re-export after value add. Whether the country is importing for domestic consumption can be determined by Import Penetration Index (IPI).

$$IPI = \left(\frac{\text{Import}}{\text{GDP} - \text{total exports} + \text{total imports}} \right) * 100$$

$$\text{Domestic demand} = (\text{GDP} + \text{Imports}) - \text{exports}$$

It is sector specific i.e. GDP contribution of that sector to country's total GDP.

To find out the suitability of Indian exporters over competitors in a particular import market we calculate an index termed as Trade Intensity Index. High value of TII means better trade between the countries.

$$TII = \frac{\text{Exports from country I to country J} / \text{Total Exports from Country I}}{(\text{Total Imports from country J} / \text{World Trade volume})}$$

Markets where India's TII is more than 1 and rising, $TII > 1$ and rising indicates good value of TII which comes from high numerator value which is indicative of increasing India's exports to that market when Indian products are acceptable and also Indian L1 players are finding it lucrative to export to that market. TII will also increase when government provides assistance under various schemes. It is advisable to enter market where competitors TII is lower than the country aiming to expand markets.

Since the higher value of TII with any market is directly proportional to the amount of trade happening between two countries in that HS code, hence TII value will be higher where products are accepted in that market.

Analysis and Interpretation

In order to assess the export performance of the chosen product categories, Export Propensity Index is calculated.

Table- 4
Summary of Export Propensity Index (EPI) for all products

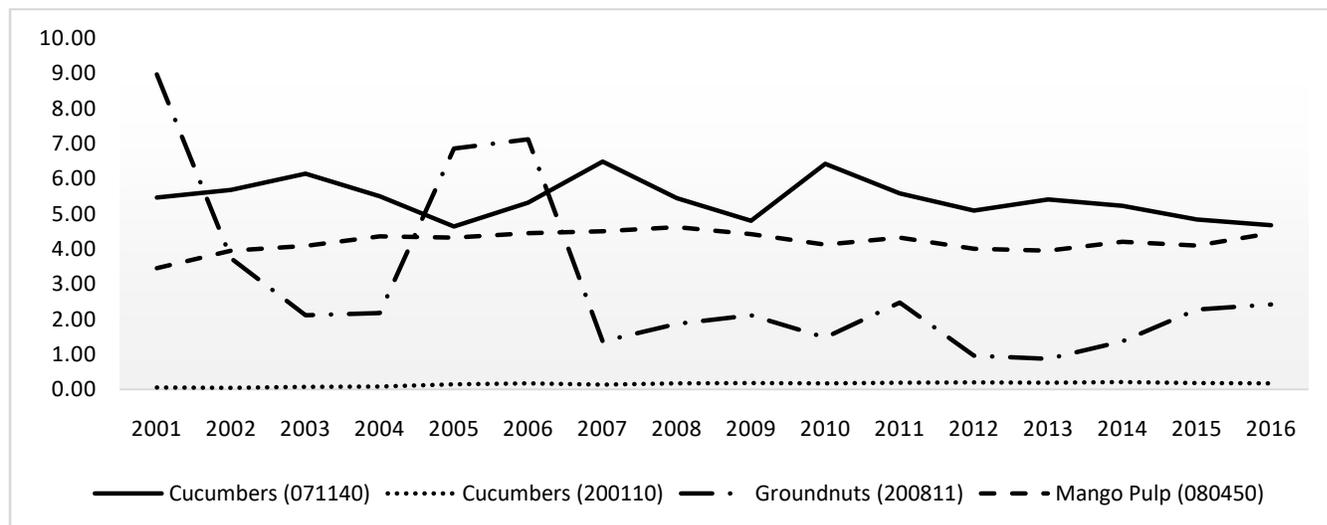
Export Propensity Index (EPI)	
Mango Pulp	0.32
Cucumbers & Gherkins (provisionally preserved)	0.23
Cucumbers & Gherkins (prepared and preserved)	0.10
Groundnuts (preserved)	0.33

Source: Author's Calculations based on ITC Trademap

High EPI for a sector means that sector has high exports and most of the local manufacturers are exporting the product rather than supplying to the local markets hence, incountry competition will be less and one can begin the business with domestic operations. It can be seen that major exports are of Mango Pulp and preserved Groundnuts.

The next step was to assess the Revealed comparative advantage (RCA). As it can be inferred from Chart-9, the RCA for Cucumber and gherkins preserved has been stagnant over the 16 year period. This constant RCA indicates that in the export markets, the demand is not too high and the competitor nation has a higher share. It also points towards the fact that there exist high standards in the importing countries for this product. Similar has been the case with Mango pulp despite the fact that it has a constantly high RCA. It indicates India's presence is better in international market than the other suppliers for Mango pulp in the world.

Chart- 9
Summary of commodity specific Revealed Comparative Advantage (RCA)



Source: Author's Calculations based on ITC Trademap

In case of Cucumbers and gherkins provisionally preserved, it can be seen that the RCA is fluctuating between 5-6. The sudden decline in the selected years can be attributed to the fact that the competition in the international market is rising. It also pints towards the applications of

various SPS measures in the export destination. The high value of RCA also attributes to the fact that there are a number of exporters for the product from India.

The trend in RCA for groundnuts is highly fluctuating with a comparatively low RCA from 2007 to 2016. This fall in the advantage can be attributed to the rise of new competing countries in export of groundnuts to the destinations of India's export.

High IPI ≥ 0.5 indicates high import dependency of the importing country and absence of established local players in this category but competitors from other countries in the international market still exists. Importing countries with high IPI and negative balance of trade are good export market as they import for domestic consumption and not for exports.

Table-5
Summary of Trade Intensity Index

HS code	Top Five Importing Countries	Import Propensity Index (IPI)
2008	United Arab Emirates	1.96%
2008	United States of America	1.69%
2008	Malaysia	0.14%
2008	South Africa	0.19%
2008	Indonesia	0.01%
0804	United Arab Emirates	5.47%
0804	Saudi Arabia	0.20%
0804	United Kingdom	3.64%
0804	Netherlands	6.83%
0804	Yemen	0.17%
0711	United States of America	0.01%
0711	Belgium	0.62%
0711	France	0.09%
0711	Spain	0.07%
0711	Russian Federation	0.01%
2001	United States of America	0.24%
2001	Germany	0.80%
2001	Canada	0.49%
2001	Russian Federation	0.04%
2001	Australia	0.07%

Source: Author's Calculations based on CIA Fact book and ITC Trade Map

For HS code category 2008, Groundnuts (preserved), U.A.E is the major export market for India with IPI of 1.96% and U.S.A is the second largest market with IPI of 1.69%. It can be concluded that among the top markets for Mango Pulp (080450) exports, United Arab Emirates is the most preferred market with highest import propensity index of 5.47%, India is number one exporter to U.A.E. Netherlands is the second largest export market for Indian mango pulp with IPI of 6.83HS

Code 0711, Cucumber and Gherkins preserved & 2001 Cucumber and Gherkins (prepared and preserved), USA is the number one export market with IPI of 0.17% and 2.4% respectively, European Union is also a major importer of Cucumber and Gherkins.

It is important to compare own country's TII with competing countries TII to know whether we as country are at an advantage or at disadvantage in the international market for a particular product compared to its competitors in the same market. Better TII indicates better business conditions with the country, in other words it implies favorable trade agreements between the two countries i.e., low or zero tariff duty and feasible logistic facility and ease of doing business plus the product is acceptable in the local market of the importing country.

Table-6
Trade Intensity Index (TII) - India's and its Competitors in the International markets

HS code	Top Five Importing Countries	India's TII	Top Competitors	Competitors TII
2008	United Arab Emirates	2.4	Argentina	19.5
2008	United States of America	2.0	Canada	2.6
2008	Malaysia	6.6	China	2.4
2008	South Africa	18.3	Argentina	2.5
2008	Indonesia	8.9	China	2.5
0804	United Arab Emirates	2.2	Pakistan	10.7
0804	Saudi Arabia	5.8	Egypt	3.1
0804	United Kingdom	9.3	Brazil	7.0
0804	Netherlands	2.5	Brazil	6.5
0804	Yemen	2.9	Oman	0.8
0711	United States of America	22.3	Canada	5.8
0711	Belgium	75.1	Netherlands	0.1
0711	France	87.2	United Kingdom	54.0
0711	Spain	109.3	Germany	0.3
0711	Russian Federation	44.2	Belarus	0.4
2001	United States of America	33.0	Canada	0.5
2001	Germany	60.7	Netherlands	1.7
2001	Canada	19.2	USA	1.3
2001	Russian Federation	24.4	Germany	12.0
2001	Australia	38.7	Poland	15.1

Source: Author's Calculations based on ITC Trademap

In HS Code 2008, India is relatively better placed in markets of Malaysia, Indonesia and South Africa because of favourable trade agreement and feasibility of logistics due to lesser distance where as in markets of UAE and USA competitors are better placed to perform business deals.

In markets of UAE and Netherlands Competitors are better place in terms of doing business although these are top Indian export destinations for mango pulp. The entire Middle East is a good market for India especially for mango pulp and fresh mangoes but off late there has been some sanitary issues concerning fruit flies etc. due to which Pakistan has emerged as a major competitor in these markets. Similarly Europe especially United Kingdom has been a strong export market for India but due to some sanitary and phyto-sanitary barriers we are losing the U.K market to South American countries as Brazil, Peru etc. For HS code 0711 and 2001, Cucumbers and Gherkins, United States of America and the entire Europe had been very good markets till now with high TII which has been more than competitors TII. The EPI, IPI, and RCA & TII successfully explains the market trend.

CONCLUSION

India with its varied agro-climatic conditions and large production base has become a leading exporter of fresh and processed food products. The Indian government is keen to promote exports of fresh and processed food products and, in recent years, the government has come up with several reforms and schemes as FDI, Financial assistance, Market assistance, and Product knowledge share to support exports. The Indian government is also undertaking policies and schemes for supporting sustainable agriculture practices and is encouraging organic farming.

Despite these efforts, Indian exporters of agricultural products continue to face rejections and bans in key markets and most of these are related to non-compliance with food safety and health standards. Such non-compliance is because of several reasons including pest infestations, presence of chemical residues that are banned by the importing country's national food law, higher than maximum approved levels of chemical residue and food contamination due to germination of bacteria.

With reduction in tariff barriers most countries want to protect their farmers from imports using SPS measures often serve as non-tariff barriers. Moreover, conforming to SPS standards — mandatory vapour heat treatment or irradiation of fruits, engaging pre-clearance quarantine inspectors from importing countries, using new-generation proprietary pesticides leaving lower traces of residues, etc — imposes additional costs on exporters. European countries, in particular, are known for setting stringent phyto-sanitary certification requirements that render exports of most farm produce uncompetitive. SPS measures pose methods partly regulated under the SPS Agreement of the World Trade Organization (WTO), but their design and use are less restricted and rather flexible. In principle, SPS measures are meant to provide countries with a possibility to protect the health of animals, humans and plants, but major concerns are regularly expressed that SPS regulations are used as protectionist devices.

In key markets such as Saudi Arabia, US, Japan, Vietnam, EU etc., Indian agricultural products and marine products as chillies, table grapes, okra, mangoes, peanuts have faced rejections due to bacterial infestation or higher levels of chemical residues. Such rejections not only bring temporary financial distress but may also result in permanent loss of market to competitors.

These SPS measures affect trade and are based on the principle that countries have a right to adopt and apply standards as long as these do not restrict international trade. However, there are significant differences between the perceptions and institutional capacities of developing countries

as compared with developed countries when implementing agreements on TBT and SPS under WTO.

Some of the safeguard measures against SPS could be member states have to harmonize their national food safety standards with WHO-FAO's codex standards, choose higher quality standards than CODEX, only on scientific grounds, aggrieved countries can also approach WTO's dispute settlement mechanism.

Developing countries can request SPS Committee to grant additional time for compliance. The acceptance or rejection of any export consignment would primarily depend on the domestic inspection and certification procedure adopted for the agriculture and food products export from India, on the other hand, the important procedures in the destination market will be crucial in as much as the SPS measures are concerned.

It is imperative that India should take the lead in making quality products available to the world at affordable prices. Any national strategy for standards should be able to factor in technology to disseminate any change in import requirements in foreign countries so that our exporters are well prepared to overcome those barriers. Especially the issues confronting the agriculture sector, where the nature of standards set in international bodies often militates against the Indian varieties.

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