Food Processing Industry in India: Current Status and Future Prospects

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Food processing is one of the key sectors of the Indian economy. It has vital linkages with agriculture and industry. The huge scope for value addition makes this sector crucial in manufacturing. The reforms of 1990 have brought significant changes in the production, processing, marketing and consumption of food products. The main objective of this paper is to assess the status and performance of the food processing industry in India in the era of globalisation and liberalisation. The study is mainly based on secondary data collected from the Ministry of Food Processing Industries, ASI and CMIE. The study found that India possesses a comparative advantage in the food processing sector with its diverse and excellent raw material base for food production and subsequent processing, skilled human resources, cost competitiveness and use of modern technology. Nevertheless, despite having promising and favourable requisites, the food processing industry has not reached its potential. The development of the industry also depends on the degree to which existing challenges and constraints are removed. With the rapidly growing urban and young population, the demand for food processing is expected to increase.

Keywords Food processing, Value addition, Agriculture, Manufacturing, Globalisation

Food processing is the transformation of agricultural products into food or one form of food into other forms. It will enhance the shelf life, prevent contamination, help in storage and transportation, create attractive and marketable products and provide employment to a large population (Government of India, 2018). The Food Processing Industry (FPI) forms an important segment of the Indian economy through its contribution to Gross Domestic Product (GDP), employment and investment. FPI is well known for its high growth and profits in recent years. The scope for value additions gives enormous significance to this industry in the manufacturing sector. By reducing wastages, ensuring value addition, generating additional employment opportunities and export earnings, a developed food processing industry would thus lead to better socio-economic conditions for millions of farm families (GOI, 2011a).

The food processing industry provides a vital linkage between agriculture and industry. Food processing is crucial for the transformation of the agriculture sector. The diversification, commercialisation, and value addition of Indian agriculture can be strengthened by evolving the food processing in the country. The growth of FPI is significant in achieving the objectives of inclusive growth and food security (Bhandari & Vipin, 2016). With increasing food production and better processing, the industry can uplift the agriculture sector. FPI can thus be the growth engine for the rural economy. The food processing industry contributes 14.09 per cent of organised manufacturing output on the manufacturing front. FPI is the highest employment provider (11.36 per cent) among different industry groups. It also has the highest number of factories (15.95 per cent) in organised manufacturing (GOI, 2019). In 2018-19, FPI accounted for 11.11per cent of the Gross Value Added (GVA) in the agriculture sector and 8.98 per cent of GVA in the manufacturing sector. India as a food supplier, has massive production advantages. It has the potential to cultivate a wide variety of products and can become a food hub of the world. As a consumer with a growing population, rising incomes, and changing preferences, the country has an expanding market for food products.

With India's advantageous position on the demand and supply fronts, the country can become a favourable destination for growth in the food industry (GOI, 2014).

Food processing and Value Addition

Value is described as something the end-user of a product or service appreciates and values in its consumption. Peteraf and Barney (2003) defined *economic value* as the difference between cost (effort) and perceived benefits (status, satiety, excitement, health) from using the product. According to the United States Department of Commerce and Industry, "processed foods are value added products referring to the fact that a raw commodity or commodities are transformed into a processed product through the use of materials, labour, and technology. Any product that requires some degree of processing is referred to as a processed product, regardless of whether the amount of processing is minor, such as for canned fruit, or more complex as for snack foods." This is a simplistic and starting view of value-added, which indicates any processing of food as a value-added act in and of itself. A more complex view of value-added is the increased emphasis given the addition of culture as a value along with materials, labour and technology. DuGay and Friedman (2002) defined the addition of culture as a value that adds more meanings and associations to the product and aims to generate more desire amongst end-users done consciously. According to Mintel (2011), an astonishing 20,000 new value-added products per month are launched in the global food industry. The importance of value-added is highlighted in the following statements: According to Innova Market Insights (2011), the key trends impacting the food and beverage market in the present world relate to purity, authenticity and sustainability, as consumers seek products with added value. Consumers are willing to spend more on food that offers "something" despite the economic uncertainty and mounting scrutiny of product health claims. It shows added value matters (Euromonitor International, 2010).

Food processing in India includes manufacturing processes and value-added processes. Under manufacturing processes, a raw agricultural product is transformed into something that has commercial value. Value-added processes involve some value addition. i.e. increasing the shelf life of a product, canned and other ready to eat products. From a different perspective, processing can be viewed as primary, secondary, and tertiary. Primary processing is about converting raw agricultural produce into a commodity fit to eat. It includes cleaning, grading, and packing, as in the case of fruits and vegetables. In secondary processing, the primary product is altered to a different form, for example, transforming wheat flour into bread. Tertiary processing is manufacturing new or higher-value food products, examples being bakery products, health drinks and convenience foods. In India, the food processing industry mainly consists of fruit and vegetables, meat and poultry, dairy products, fisheries, grain and mill products, plantation, beverages, bakery products, starch products, other consumer products like confectionery, chocolate, and cocoa products, soft drinks and mineral water.

Despite having substantial production advantages, the level of food processing in India is deficient. At present, India processes less than 10 per cent of its agricultural produce (Singh et al.,2012). Moreover, the sector squanders 25-30 per cent of agriculture produce as harvest and post-harvest losses. This is alarmingly high. Besides, India's share in the international food trade is only around 1.5- 2 per cent (Bhuyan,2010). This reveals vast opportunities for growth and further scope to move higher up the value chain in processed food products. Market liberalisation has provided a new set of opportunities and challenges for the food processing sector. The reforms of 1990 have brought significant changes in the production, processing, marketing and consumption of food products (CII,2017). Firms increasingly resort to sophisticated technologies to meet emerging demands for food products and ease innovations. Technology imports, capital investments and Foreign Direct Investment (FDI) in food processing have increased substantially. Till 1998 India had reserved most of the food processing for the small sector. Deregulation, de-reservation, and liberalisation policy that

started in the 1990s led to the flooding of investment and deepening of capital in India's food processing. Growing markets, urbanisation, more women entering the workforce, a young population with growing incomes and increasing consumption rates will help accelerate the growth of this sector (Dev & Rao, 2005). The ever-evolving consumer preferences, use of modern technology, high-quality consciousness, nutritional value and awareness have reshaped the food processing sector. Compared to other sectors, FPI's share in manufacturing and GVA has declined, reflecting a slowdown in growth over the last few years. The significant challenges faced by the processing sector are gaps in supply chain infrastructure, lack of product development and innovation, unavailability of skilled workforce, absence of marketing intelligence and brand building, inadequate focus on quality and safety standards, inaccessibility of timely credit and constraints on raw material production (FICCI, 2010). It is crucial to address these challenges and project the future trajectory of the industry.

Food processing in India is still in a developing stage. Within FPI, certain segments gain increasing acceptability, thereby creating vast opportunities. It is essential to identify those segments and form policies to strengthen them. Other particular policies are required to accelerate the growth of sectors slowing down. The present study tries to bring out the development experience of India concerning the Food Processing Industries. The broader objective of this paper is to assess the present status and performance of the food processing industry in India. The paper also addresses the following: what are the government policies and initiatives to promote the food industry? Are they comprehensive in recent times? How promising is the food processing industry for the Indian economy? What are the new opportunities and trends seen in this sector since liberalisation? Is food processing in the country poised for further growth?

This study is analytical and based on secondary sources of information collected from various research papers, reports submitted by various agencies and government data sources. The secondary data is mainly collected from the Annual Survey of Industries (ASI), CMIE-Economic Outlook, EPWRF India Time Series (EPWRFITS) and Ministry of Food Processing Industries. The present study encounters four different National Industrial Classifications (NIC's)-NIC 1987, NIC 1998, NIC 2004 and NIC 2008. For comparison, the various sub-sectors were reclassified using the Central Statistics Office's (CSO) concordance table. Wholesale Price Index (WPI) data for price deflation was collected from the Office of the Economic Advisor, Department for Promotion of Industry and Internal Trade.

Food Processing Industry in India- Present Status

Food processing in India has evolved through different phases. From a food scarce to a food secure country, Indian food processing has undergone tremendous transformation. In the present era of liberalisation and globalisation, the focus is on sustained and higher growth. India has massive untapped prospects in this sector. The Indian food processing industry accounts for 32 per cent of the country's total food market and is ranked 5th in production, consumption, export and expected growth (CEPR,2017). This section analyses the present status and performance of FPI.

TABLE 1: Status of Food Processing Industry

Indicators	*1990-91*	*2000-01*	*2010-11*	*2017-18*
Share in Total Value Added	1.5	1.5	1.3	1.4
Share in Manufacturing Value Added	9.4	9.4	7.4	7.9
Share in Manufacturing Employment	13.2	15.4	12.1	11.4

Share in Total Manufacturing Exports	5.1	5.4	2.9	4.5
As Proportion to Agricultural Value Added	4.1	5.6	7.2	9.5

Source: Reserve Bank of India

The fall in the share of FPI in value added, employment and exports in the post liberalisation period is noteworthy (Table 1). This indicates a slowdown in growth of food processing sector.

TABLE 2: Performance of Food Processing Industry

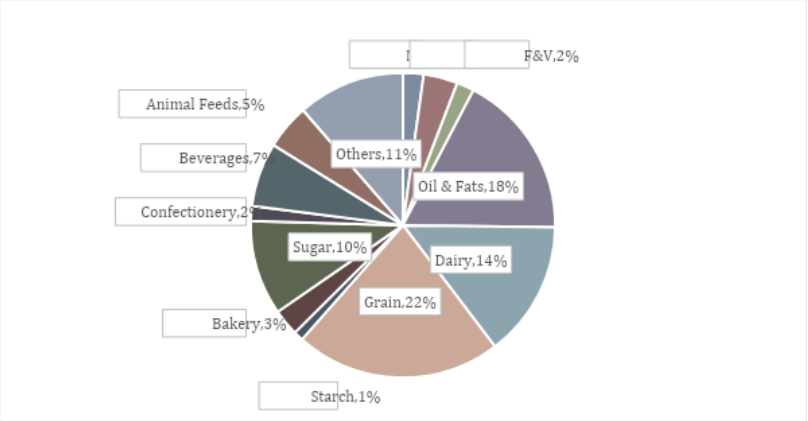
Indicators	*FPI*			*All Manufacturing Industries*		
No. of Factories	1991	2018	CAGR	1991	2018	CAGR
	19931	40161	2.53	110179	237684	2.78
Persons engaged	1150011	1933463	1.87	8278569	15614619	2.29
Total output	13820934	93128797	7.05	90133750	709329753	7.65
Persons engaged per plant	58	48	-0.64	75	65	-0.48
Output per plant	693	2318	4.41	818	2984	4.73
Output per person	12	48	5.08	10	45	5.23

Source: Computed from ASI data

The performance of FPI vis a vis. all Manufacturing Industries shows the growth of output in FPI and All Manufacturing Industries is impressive while the growth rate of persons engaged is disappointing. The number of workers per plant in FPI has declined from 58 persons per plant in 1991 to 48 persons per plant in 2018. Similarly, for All Industries, the same has declined from 75 persons per plant to 65 persons per plant (Table 2). This indicates that the growth of output is not matched by increased employment. The manufacturing industries are becoming more capital intensive. This does not augment well with the national objective of creating more employment opportunities in the organized manufacturing sector (Government of India,2016).

The food processing industry contributes 13 per cent of total output in the registered manufacturing sector. The traditional sectors- Grain (21.91 per cent), Oil & fats (17.62), Dairy (14.48) and Sugar (10.09) constitute 64 per cent of the food industry's output. In the emerging sectors, the share of Beverages (6.81) was the highest. It is followed by Animal feeds (4.81), Fish (3.64), Bakery (2.82) and Meat (2.19) products**.**

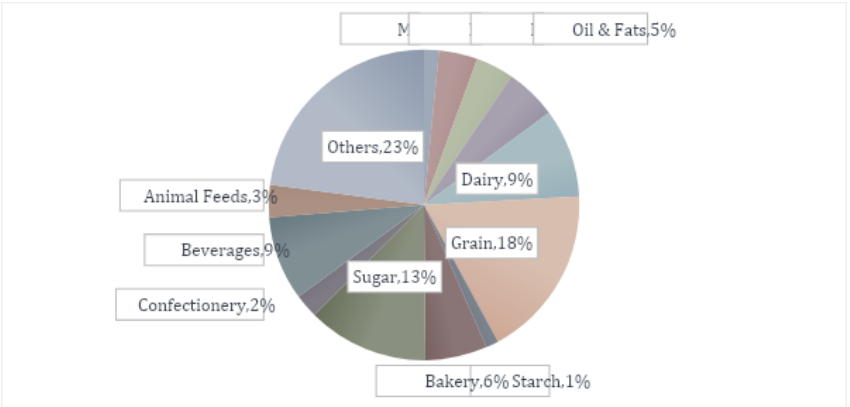
CHART 1: Share of sub-sectors in output, TE 2018



Source: Author's calculation based on ASI data

The food processing industry employs 19.3 lakh persons accounting for 12.3 per cent of total employment in the registered manufacturing sector (ASI,2018). The grain industry (17.96per cent) provides the highest employment among all sectors. It is followed by sugar (12.61 per cent), dairy (9.23per cent) and beverages (8.76 per cent). Traditional industries (grain, oil & fats, dairy and sugar) contribute almost 45 per cent of total employment generation in the food processing sector. This has great significance as traditional sectors are more labour intensive.

CHART 2: Share of sub sectors in employment, TE 2018



Source: Author's calculation based on ASI data

The growth rate of fixed capital has surpassed the growth rate of GVA and workers during the study period. The trend growth rate of fixed capital, GVA and workers in FPI for 1991-2018 were 10.39, 6.38 and 1.87 per cent, respectively (Table 3). The traditional sectors like grain, sugar, oil & fats and dairy are also becoming highly capital intensive. These sectors contribute to more than 40 per cent of the total employment in the food processing industry. The employment growth rate in Oil & fats, Sugar and Grain processing sectors is unimpressive. Among these, the oil & fats and Sugar industry recorded negative employment growth. Notably, investments in emerging sectors like fish, meat, fruits and vegetables, animal feeds, and bakery and confectionery segments generate higher output and employment growth.

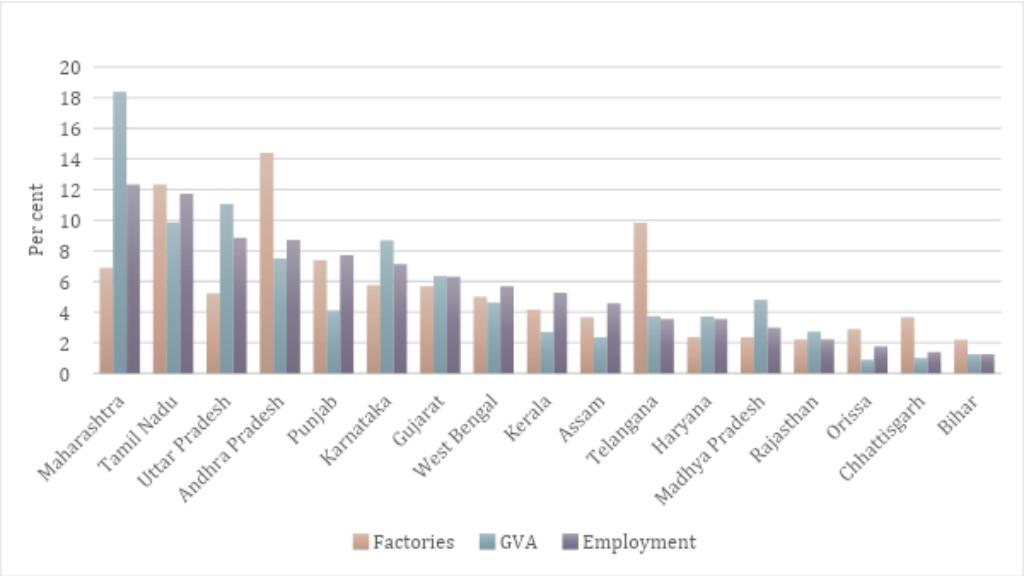
TABLE 3: Sub sector-wise growth rate of key indicators in FPI,1991-2018 (in per cent)

Indicators Sectors	*Fixed capital*	*GVA*	*Workers*
Meat	14.41	11.51	7.28
Fish	14.45	11.56	7.33
F &V	15.21	12.15	11.45
oil & fats	8.12	3.99	-0.03
Dairy	11.78	7.91	4.07
Grain	10.36	7.05	1.59
Starch	13.54	8.93	3.09
Animal feeds	15.14	11.89	7.27
Bakery	11.66	9.22	7.66
Sugar	9.05	3.4	-1.3
Confectionery	15.85	10.12	6.54
Beverages	11.68	7.13	3.58
FPI	10.39	6.38	1.87

Source: Computed from ASI data

In terms of the number of factories, three southern states - Andhra Pradesh, Tamil Nadu and Telangana- constitute 37 per cent of the total number of factories. In terms of GVA in the food industry, Maharashtra tops the list with 18.37 per cent, followed by Uttar Pradesh, Tamil Nadu, Karnataka, Andhra Pradesh and Gujarat. Together, these six states contribute over 61 per cent of total GVA in the food processing sector. The states which create the most employment opportunities in registered food processing are Maharashtra (12.33 per cent), Tamil Nadu (11.12 per cent), Uttar Pradesh (8.85 per cent) and Andhra Pradesh (8.71 per cent). They together generate nearly half of the employment in food processing (Chart 3).

CHART 3: State-wise share in FPI, TE 2018



Source: Author's calculation based on ASI data

Food Processing Industries were able to attract more foreign investments over the last decade. The FDI regulations have now been eased that 100 per cent FDI is allowed in the food processing industries. Although FDI inflow is rising, FPI's share in total FDI is meagre, hovering around 2 per cent (Table 4).

TABLE 4: FDI inflows in Indian Food Processing Industries (in Rs Million)

Year	*FDI to India*	*FDI to Food Processing*	*Share of FPI in total FDI (per cent)*
2008-09	1229196	4553	0.37
2009-10	1234832	13162.8	1.07
2010-11	647524.4	8609.9	1.33
2011-12	1937505	8590.2	0.44
2012-13	1219067	21936.5	1.8
2013-14	1475178	251067.7	17.02
2014-15	1891071	31647.2	1.67
2015-16	2623216	33120	1.26
2016-17	2916963	48658.5	1.67
2017-18	2888885	58356.2	2.02
2018-19	3024417	44304.4	1.46
2019-20	3535584	64146.7	1.81

Source: Annual report, MoFPI & Database on the Indian Economy

The export of food products as a percentage of total exports has declined from 15.2 per cent in 1991 to 11.7 per cent in 2018. On the other hand, India's import of food products has increased from 3.5 per cent to 4.9 per cent during the same period (Chart 4). At present, India accounts for only a 2.6 per cent share of global exports. India has the potential to improve its share in the international food trade. The fall in the share of exports of food products shows that food processing is largely domestic oriented. The top export destinations for India in the early 1990s were Russia, the Netherlands, Germany, the UK, Saudi Arabia and the US. At present, the country's top export destinations are the US, China, Iran, Vietnam, Saudi Arabia and UAE. This shows there has been a change in the direction of the food trade (GOI,2019).

CHART 4: Import and Export of Food products

Source: DGCI&S, Kolkata

Government Initiatives

The Government of India is promoting food processing with various policies and incentives. The Food Processing Industry is recognized as a high priority sector and further identified as a key thrust area under the Make in India programme. Several initiatives have been undertaken with the objective of promoting investments, innovation and bringing best practices.

Infrastructure support To address infrastructural bottlenecks and smoothen the supply chain, the government has established Mega Food Parks (MFP). The scheme is based on the cluster approach and aims to create better infrastructure with a well-established supply chain to reduce wastage, enhance farm income and create employment opportunities. Following this, 42 mega food parks and 236 integrated cold chains establishments have so far been approved to create modern infrastructure.

Attracting Investments 100 per cent FDI is allowed in food processing through the automatic route. 100 per cent FDI is permitted for manufacturing and trading (including through e-commerce) for food products manufactured and/or processed in India. The whole idea is to increase FDI in the food industry which in turn will offer huge opportunities for the growth of the sector.

Credit and financing Loans to food processing units are now considered under priority sector lending. NABARD is entrusted with the task of boosting credit disbursement to food processing sectors at affordable rates.

Skill development In order to develop the skills of workers, the government is tying up with institutions like National Institute of Food Technology, Entrepreneurship and Management (NIFTEM) and the Indian Institute of Food Processing Technology (IIFPT). Schemes like Pradhan Mantri Kisan Sampada Yojana (PMKSY) have been implemented to enhance human resource and skill development.

Boosting Exports Agriculture export policy 2018 aims to diversify India's export basket and export destinations. Under this policy exports of high value added products are promoted. Export duty, quota restrictions and export bans on processed food items are done away with and a cluster-based approach is adopted for promoting invention in food processing.

Food Processing as a Promising Sector

India has an advantageous position in food processing on multiple fronts. Globalisation, urbanisation and changing dynamics of social codes have created new opportunities for FPI. By having close association with agriculture and industry, food processing has a crucial role in the economy. Agriculture remains the primary source of livelihood for the majority of the population. However, people engaged in agriculture remain poor because of low returns from farm activities. This has resulted in people shunning away from agriculture. There is a diminishing appeal for agriculture as an occupation at the present times, especially among the youth. In such a situation, food processing has a vital role to play owing to its backward and forward linkage effects. It can improve the productivity of agriculture, making it more lucrative and attractive. The growth of the food processing industry is also expected to create more employment opportunities in agriculture and industry. The food processing sector in India is fast evolving. The following are recognised as the key drivers of the growth of the food processing sector in India: (1) Strong and robust domestic demand: With changing lifestyles, growing disposable income, urbanisation and changing demographics, the demand for processed food is expected to rise stronger. The increasing number of nuclear families and more women entering the workforce has increased the demand for processed and

convenient food products. (2) Supply-side advantages: As a food producer, India has a huge agriculture sector, a growing livestock population and cost competitiveness. The wide range of topography, soil quality and climatic conditions also favour growing various food products. Thus, having been blessed with favourable agro-climatic conditions, food production is expected to increase. This provides an opportunity for the country to become the food processing hub of the world. (3) Increasing investment: The rise in investments coming into the food processing sector from private and public players is transforming the country's food processing and allied activities. The increasing FDI inflows and domestic investment can modernise the food processing sector's infrastructure and retail. Improved technology, product standardisation, better packaging, strong distribution network and branding are expected to strengthen the demand and supply of processed food products. (4) Proactive government policy and support: The government must set up a level playing field for all participants. Various incentives and concessions have been provided from time to time to make food processing attractive. Providing sops to private players, rationalising tariffs and duties of products relating to food processing, and creating favourable regulatory frameworks have been done by the government to increase the pace of growth of the food processing industry. (5) Greater integration with the world economy: With the opening up of global markets and growth of organised retail, the Indian food products and food market have become more attractive for global players. There is a rising demand for Indian products in the international markets. India can take advantage of this by increasing quality and safety standards. This is also an opportunity to improve the export potential and generate more earnings.

Is the Food Processing Industry poised for further Growth?

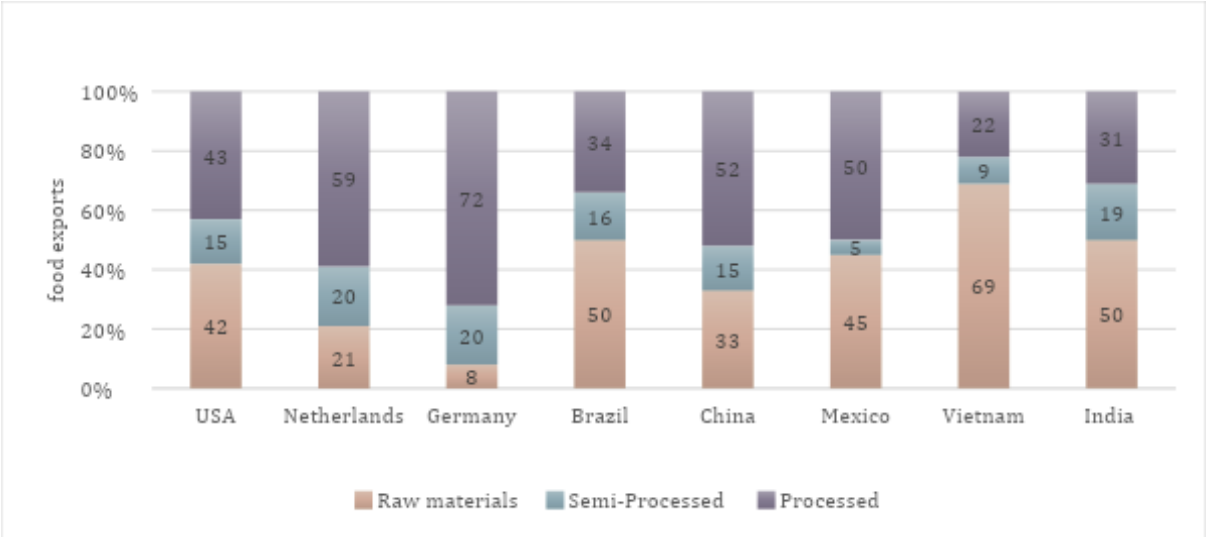
The Food Processing Industry possesses innumerable growth opportunities. Changing consumer expectations and dynamic growth in the food processing sector have catapulted it to a more significant and accelerated growth track. The country is blessed with an abundant supply of raw materials, good agro-climatic conditions, and increased demand for food products. India ranks first in the world in the production of milk, ghee, pulses, ginger, banana, guava, papaya and mango and second in the production of rice, wheat and many other fruits and vegetables (Government of India, 2019). Food processing is expected to boom in India with the rising demand for processed food products. The covid-19 pandemic has further transformed the food processing sector in India. New opportunities and challenges need to be identified and appropriately addressed. There will be a rise in the demand for packaged food, snacks, dairy and ready to eat products. Along with this, allied industries like food processing equipment and logistics are also anticipating growth. Therefore, with the right policy interventions, India can become a global leader in the food processing industry in the post-pandemic world.

However, the estimates of food processing at the international level show that food processing in India is dismally low. Despite the considerable level of agricultural production, India is not able to successfully process its agricultural produce. The level of food processing in developed countries is 60-80 per cent, China processes 40 per cent, and Brazil has a whopping 70 per cent. In order to become a leader in food processing, India has to improve the level of food processing. Moreover, a large part of the agricultural produce in India is wasted. The harvest and post-harvest losses are about 25-30 per cent of the total agricultural produce (CIPHET, 2016). Despite the large production of agricultural commodities, the country is not able to take advantage because of this high level of wastage. Farmers are at the receiving end of this, and they remain poor. In India, only 7 per cent of perishable commodities are processed. With the development of the food processing sector, wastage can be reduced, and returns from agriculture can be improved.

Further, developed countries like the US, Germany, Netherlands, China and Japan export more value-added food products. A significant share of Indian food exports is low margin raw materials. India needs to export more value-added processed food products rather than

low margin raw materials (Chart 5). Much of this is attributed to the country's heavy dependence on agriculture. This scenario needs to be changed, and it is expected that FPI can transform the agriculture sector. Improvements in food processing can help the country change its composition of food exports.

CHART 5: Composition of Food Product Exports



Source: Trade Map Database

The million-dollar question is whether the food processing sector is poised for further growth? Despite the challenges mentioned above, the processing industry is expected to hold enormous growth potential because of the vital linkages and synergies it has with agriculture and industry. The food processing industry's ability to optimise local resources and thereby boost the rural economy contributes to the country's growth. Processed food items will have increased demand in the post-pandemic world. It will further boost investments, exports and employment. Thus, to keep in consonance with the evolving food landscape, the food processing units will have to strengthen their industrial norms and practices. Policy formulation and intervention require an alternative knowledge-policy paradigm with solid interdisciplinary research on agrarian and industrial realities.

Shaping the Future of the Industry

Food processing in the country is evolving rapidly. With the emergence of new products and new segments, there is ample scope for growth in this sector. The emerging trends need to be acknowledged, and the industry should adapt to them. A proper action plan for the future should be adopted, taking in the views and needs of all stakeholders. For this central government, various state governments, cooperatives, and quasi-public and private players will have to join hands.

What lies ahead?

The food trade has a huge impact on the health of the people and the economy of the nation. Consumers in the modern age are thoughtful and informed. They place a high emphasis on convenience and nutrition. Thus, it is crucial to combine taste and nutrition. There is a need to shift focus from usefulness in processing to usefulness to the consumer. Consumer convenience and quality should be at the heart of modern-day food processing. Packaging and branding are the key elements in attracting prospective consumers. The packaging is emerging as a purchase influencer and communicator. Honest and reliable packing with food

tracing will improve the brand value and trust of consumers. Technology and automation are necessary for the flourishing growth of the food processing sector. Product innovation is the key to expansion in the modern era. Technology applications will help reduce wastage and enhance the quality of food products. Also, the food industry is committed to reducing its carbon and water footprints. Sustainable and climate-smart technology is required in the present times to reduce environmental impacts. The Indian food regulatory ecosystem needs to be strengthened. Formulating new standards and harmonising and adopting International best practices and capacity building initiatives are required to transform the food processing landscape. With the coming of e-commerce, the traditionally driven supply chain has given way to the digitally-driven supply chain. Technology-enabled innovations are now the need of the hour for further growth of the sector. Technological innovations like smart supply chain, logistics and warehousing, digital payments, digital advertisement, hyper-local logistics, online grocery etc., are critical for creating a thriving ecosystem for the growth of food processing in India.

Conclusion

Food processing is one of the critical sectors of the Indian economy. Its vast potential to create employment in the agricultural sector, industry, and rural and urban areas is noteworthy. India possesses a comparative advantage in the food processing sector with its diverse and excellent raw material base for food production and subsequent processing, skilled manpower, cost competitiveness and the use of modern technology. But despite having promising and favourable requisites, the food processing industry has not reached its potential. It is still considered in a nascent stage. Regulation resisted transformation in the food industry. With the opening up of the economy in the 1990s, it is expected that the food industry can take advantage of overall liberalisation and attract new investments, processes and technology. Market liberalisation has presented new opportunities in this sector. The development of the industry also depends on the degree to which existing challenges and constraints are removed. With the rapidly growing urban and young population, demand for processed food items is set to increase in the coming years. The food processing industry in India needs to gear up to meet the demand.

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