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History of food processing industry and recent development in India

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Abstract
Over the last two-three decades, the Indian economy has experienced significant growth, with agriculture, industry, and the service sector all playing a larger role. Since 1991, when India's government implemented the New Economic Policy, the country's agriculture and manufacturing sectors have risen to prominence in global trade. India's international trade has risen as a result of the liberalisation, privatisation, and globalisation (LPG) programme, and it has become a major producer of various commodities throughout the world. The GDP and the contribution of different sectors to the GDP are indicators of an economy's strength. The real picture of industrial growth is that the share of the industrial sector is increasing day by day.

Keywords: Favourable climate, affordable prices, commodity processors

Introduction
The food processing business in India is a young industry that has risen to prominence in recent years and has a lot of room for growth. The availability of abundant raw materials, a relatively low-cost skilled workforce, a critical market, changing lifestyles, a variety of climatic conditions, and proper fiscal policies, among other factors, provide a favorable climate that has accelerated industrial growth. This industry serves as a link between agricultural and adjacent industries and industry. It is critical in reducing agricultural raw material waste, increasing the value addition of agricultural produce such as increasing shelf life and fortifying the nutritive capacity of food products, ensuring remunerative prices for farmers as well as affordable prices for consumers, and ensuring the availability of processed food even during the off-season. This industry may be useful in ensuring food security and lowering food inflation. Furthermore, this sector contributes to the creation of revenue and employment opportunities, resulting in an improved standard of living for individuals.

The food processing business is largely reliant on agriculture and related industries. Agriculture is the backbone of the Indian economy, with agriculture providing employment to 70% of the country's population. Between 1950-51 and 1970-71, the contribution of agriculture and related industries to GDP was between 52 percent and 42 percent, based on 2004-05 base prices. It fell to 28.54 percent in 1991-1992, 22.39 percent in 2001-02, 14.37 percent in 2011-12, and 13.94 percent in 2013-14 as a result of fast industrialization and economic expansion. Furthermore, this industry employs the majority of the country's working population. Agriculture employed over 70% of the country's main workers in 1951, but that percentage fell to 52 percent in 2001 and to 48.9% in 2011[1].Because of the critical linkages and synergies that it promotes between the two pillars of the economy, namely Industry and Agriculture, the Food Processing Industry is extremely important for India's development. India is the world's second-largest food producer, with the potential to overtake the United States in the near future if persistent efforts are made. The sector's growth potential is considerable, with food production predicted to treble in the next ten years and consumption of value-added food products expected to increase at a rapid rate.

A well-established food processing industry plays an important role in ensuring a variety of agricultural production and marketing, raising the price of agricultural production, creating

[1]http://statisticstimes.com/economy/sectorwise-gdp-contribution-of-india

employment opportunities, assisting farmers in increasing their income, promoting export-oriented produce, and ensuring the supply of goods even during off-season. Food processing increases the size of the market for goods. The following are the main segments of food processing [2]:

1. **Food grains:** From 2011 to 2012, India produced more than 250 million tonnes of various food grains. Rice, wheat, barley, jawar (millet), bajra (millet), makka (maize), and pulses are among the major food grains produced in the country. The country produces enough grain to feed itself and is the world's second-largest producer of rice and wheat (and in the country, Uttar Pradesh is the largest producer of total food grains and wheat and second largest producer of rice). The most important activity in food grain processing is primary milling of rice, wheat, and pulses.
2. **Fruits and vegetables:** India is the world's second-largest exporter of fruits and vegetables. It is the world's leading producer of bananas, mangoes, guavas, and papayas (& within the country, Uttar Pradesh holds first rank in the production of sugarcane and potato, second rank in the production of vegetables and third rank in the production of fruits in 2014-15). Only 2.2 percent of fruits and vegetables are processed in the country, but fruit and vegetable waste is quite significant (6.70 - 15.88 percent).
3. **Milk and milk products:** India produces the most milk in the world (and Uttar Pradesh is the largest milk producing state in the country). In the country, 35% of milk is processed, while just 0.92 percent of milk is wasted.
4. **Meat and poultry:** India has the world's largest livestock population. According to the 2012 livestock census, India has 512.06 million animals, including 190.90 million cats (2nd in the world), 108.70 million buffaloes (1st in the world), 135.17 million goats (2nd in the world), and 65.07 million sheep (3rd rank in the world). Furthermore, the country has 792.21 million chickens (5th in the globe) (& Uttar Pradesh is the leading state of India in terms of total livestock.). In the country, just 6% of chicken meat and 20% of buffalo meat are processed, while 6.74 percent of poultry meat and 2.71 percent of beef is wasted.
5. **Fishery products:** India is the world's third-largest fish producer and second-largest producer of inland fish. India's overall fish production in 2014-15 was 100.72 lakh tonnes, with marine fish accounting for 34.66 percent and inland fish accounting for 65.34 percent (& Uttar Pradesh holds the third rank with the production of 4.9 lakh tonnes inland fish in the country).
6. **Other agri-horticultural processed foods:** This category includes bakery items, ready-to-eat snacks, biscuits, chips, namkeens, confectionery products, cocoa, chocolate, macaroni, noodles, and other food flavours and colours that add value and extend shelf life.
7. **Products for beverages:** A variety of beverages are available, including alcoholic beverages, wines, malt, soft drinks, mineral water, and various bottled waters. Food processing units also include cold chains, transport vehicles, cold containers, fruit ripening rooms, packing of the processed product, cannery connected to food processing, preservatives, food flavours, and colour making facilities [3].

History and current scenario of food processing industry in India

Food processing dates back to prehistoric times, when a man's day was nearly entirely devoted to the protection and sustenance of himself and his family. He didn't have the same food preservation and storage capabilities as we do now; he was completely dependent on the whims of nature. Fermenting, sun drying, salt preservation, and other sorts of cooking were all part of the raw processing at the period (such as roasting, steaming and oven baking). Modern food processing technology arose in part to meet military requirements in the 19th and 20th centuries. Nicolas Appert (French) devised a hermetic bottling technique in 1809 to preserve food for the troops, followed by Peter Durand's canning in 1810. Louis Pasteur discovered pasteurization in 1864, which increased the quality of preserved goods and paved the way for the preservation of wine, beer, and milk. Spray drying, evaporation, juice concentrates, freeze drying, and the introduction of artificial sweeteners, colour ing agents, and preservatives like sodium benzoate8 all contributed to the growth of food processing in the twentieth century, as did World War II, the space race, and the rising consumer society in developed countries [4]. The Bengal Preserving Company, India's first cannery, was founded by A.B. Sircar at Muzarpur (Bengal) in 1901. Shree Kishan Dutt& Company Calcutta, founded in 1841, started their canary branch in 1910, and the company used to produce and export the famous mango brand canned items and sauces, among other things. In 1930, a few manufacturing operations for sweet squashes and sharbats were established in Panjab. The Bengal Canning and Condiment Works Limited and the Pioneer Condiment Company Limited, both founded in Calcutta during WWI, utilised advanced canning machinery before closing down [5].

Organized and unorganized food processing sector

There are two sorts of food processing units: registered or organised and unregistered or unstructured. Registered food processing facilities employ at least 10 people if they use electricity, and at least 20 people if they don't. Unorganized food processing units are the rest of the units. According to the NSSO, food processing units in rural areas are disorganised. This unorganised sector is divided into two categories: family-owned businesses that employ at least one hired worker on a regular basis, and establishments that employ at least one hired person on a regular basis. The unorganised sector dominates the Indian food processing industry [6].

The unorganised sector dominates the Indian food processing business, with organised and unorganised sectors accounting for roughly 30% and 70% of the industry respectively (MOFPI). Primary processing is dominated by the unorganised food sector. The organised units handle

[2] R.S. Adukia: Food Processing Industry in India,2012 (www.caaa.in/Image/food%20processing%20book.pdf)

[3] M.S. Radhawa: A History of Agriculture in India, New Delhi, Vol. IV, P.42

[4] Data source: Annual Surveys of Industries, India

[5] http://www.chauthiduniya.com/2010/05/sankat-me-aanvala-karobar

[6] Annual Reports, Ministry of Food Processing Industries, Government of India,2008-09 to 2014-15

secondary and tertiary food processing (NSSO, 2015- 16). In India, the unorganised food processing sector is the primary source of food goods. According to a World Bank report, the unorganised food sector accounts for roughly 42% of total output.

Table 1: Level of Processing in Food Processing Sector

Items	Organized Sector	Unorganized Sector	Total Processing
Fruit& Vegetables	1.2%	0.5%	1.8%
Dairy Products	15%	22%	37%
Meat	21%	-	21%
Poultry	6%	-	6%
Marine Fisheries	1.7%	9%	10.7%

According to a research published by the India Brand Equity Foundation in 2006, the dairy section of the Indian food processing industry processes 37 percent of the total production, with 22 percent of the unorganised sector accounting for 22 percent. With only 1.8 percent, the fruits and vegetable segment processes the least. The statistics revealed that raw fruits and vegetables are consumed. Meat processing is done in a regulated environment. Because most government measures are aimed at the organised food processing sector, the growth rate of the unorganised food processing sector is slow. According to the NSSO, the unorganised food processing sector employed 5.1 million individuals in 2015-16, with 24.7 percent of them being women. According to a World Bank research, around 69 percent of unregistered food processing units are located in rural areas. In this approach, the unorganised sector contributes to the reduction of regional inequities and waste, the expansion of employment opportunities, and the mobilisation of local resources [7].

Classification of food processing industry

The Food and Agriculture Organization (FAO) divides the food processing business into three categories based on the level of processing.

Primary food processing

Raw foods are processed in primary industries (e.g. Wheat into flour). Sorting, grading, and packaging of vegetables and fruits, rice and milk, as well as spices, are all part of this process.

Food processing in secondary industries

Secondary industries employ basic products to make other foods (e.g. Flour into bread). It entails reshaping food, such as flour, oil cakes, beverage powder, and tea leaf, for convenience of eating.

Tertiary food processing

Processed fruits, vegetables, jam, and juices are included in the tertiary food processing/Value Added food category. These businesses make ready-to-eat convenience foods including frozen dinners and canned soup [8].

Institutions working for food processing sector in India

Prior to India's reform phase, the food processing industry was governed by the ministry of agriculture and industry. The Indian government did not take many steps for the development of this sector at the time. However, the Ministry of Food Processing Industry was established in 1988. Since that time, the government has begun to focus on the growth of the food processing industry.

Ministry of food processing industry (MOFPI)

The Ministry of Food Processing Industry (MOFPI) was established in 1988. The ministry's main goals are to boost farmers' incomes by adding value to their products and reducing waste, introducing modern technology, improving supply chain management, encouraging research and development in the sector, and providing policy support for better infrastructure and export of processed food products. NIFTEM and IIFPT are two institutes that function under the government.

National institute of food technology, entrepreneurship, and management (NIFTEM)

NIFTEM is a deemed university under the Ministry of Food Processing Industries of the Government of India. This university has been recognised as a global leader in the fields of food science and technology [9].

Indian institute of food processing technology (IIFPT)

IIFPT is a government of India-funded academic and research institute. IIFPT has a NABL-accredited laboratory to test the food quality that has been notified by India's Food Safety and Standards Authority (FSSAI). Marine Products Export Development Authority (MPEDA): The Marine Products Export Development Authority Act of 1972 founded MPEDA in 1972. MPEDA is a department of the Government of India (GOI) that is involved in the production of fisheries and related activities.

National Horticulture Board (NHB): In 1984, the Indian government founded the National Horticulture Board to promote horticulture in the country. Because horticulture products are perishable by nature, the board's major goal is to eliminate agricultural waste. The board assists growers in the production of processed horticulture produce for both domestic and international markets. Department of animal husbandry, dairying, and fisheries (DADF): The Department of Animal Husbandry and Dairying (AH&D) was renamed the Department of Animal Husbandry, Dairying, and

[7] Agricultural Statistics at a Glance 2015, Department of Agriculture, Cooperation & Farmers Welfare Directorate of Economics and Statistics, Ministry of Agriculture & Farmers Welfare, Government of India

[8] Collins, Norman R. and Preston, Lee E. (1961), 'The Structure of Food- Processing Industries 1935-55', Wiley: The Journal of Industrial Economics, Vol. 9. No. 3, pp. 265-279

[9] Corporate Catalyst India (2012), 'A Brief Report on Food Processing Sector in India, New Delhi.

Fisheries (DADF) in 1991. It is one of the Ministry of Agriculture's Departments. This department was formed by combining two departments of the Department of Agriculture and Cooperation, namely Animal Husbandry and Dairy Development, into one. Later, the Department of Agriculture and Cooperation's Fisheries Division and a portion of the Ministry of Food Processing Industries were transferred to this Department. The DADF is responsible for the production, preservation, and protection of livestock and inland and marine fisheries, as well as the National Dairy Development Board [10].

Recent initiative by the government of India for the development of food processing sector-poky

With the agreement of the Indian government, the Ministry of Food Processing Industry has developed a centrally supported scheme for the development of agro processing clusters and agro marine processing in India. This project, which has a budget of 6000 crores for the years 2016-2020, was developed as a comprehensive package to provide modern infrastructure and efficient supply chain management. With the expansion of the food processing business, the system's major goal is to deliver higher returns to farmers and to provide more job possibilities. This plan will also aid in reducing food waste, raising processing levels, and expanding processed food exports in India. During the 2019-20 fiscal year, this policy will assist around twenty lakh farmers and offer approximately five lakh job opportunities in India (MOFPI). For the growth of the food processing sector, the Ministry of Food Processing Industry (GOI) has implemented a number of measures under the Pradhan Mantri Kisan Samadi Yojna (PMKSY) umbrella plan [11].

History and current scenario of food processing industry in Uttar pradesh

The number of food processing units in Uttar Pradesh was 2040 in 1998-99, accounting for 8.55 percent of the total number of food processing units (23845) in India, and the state's GSDP of the food processing industry was 2564.91 crore, accounting for 13.42 percent of the country's GDP of the food processing industry (19119.24 crore). In 2014-15, the number of food processing units in the state was 2054 (marginally increased), accounting for 5.32 percent of India's total food processing units (38607); however, in 1998-99, it was 8.55 percent of the country's total food processing units, and in 2014-15, it was 5.32 percent. The GSDP of the state's food processing industry was 7957.45 in 2014-15, up 210 percent from the GSDP of the state's food processing industry in 1998-99; nevertheless, it fell from 13.42 percent of the country's food processing sector's GDP in 1998-99 to 8.68 percent in 2014-15 [12].The absence of industrial infrastructure in Uttar Pradesh, as well as government negligence, are the primary causes of the state's food processing industry's backwardness. This is demonstrated by the fact that, despite Uttar Pradesh's key role in the country (80 MPs and 403 MLAs), this sector is backward and neglected. This can be approximated based on the fact that in March 2015, the country has 32 mega food parks, 9 of which were operating and the remaining 23 under construction. In addition, on January 3, 2017, eight more mega food parks were approved. Unfortunately, Uttar Pradesh does not have even one single giant food park. However, Uttar Pradesh has enormous potential for the expansion of the food processing industry [13].

Level of processing of food in India

India's agricultural production foundation is quite robust, and it has regularly produced more. India is first in the world for milk, ghee, ginger, banana, guava, papaya, and mango output, and second for rice, wheat, and a variety of other vegetables and fruits. At the same time, food processing in the country is extremely low, and agricultural produce waste is extremely high. More information on the country -by-level processing and segmentation -based on the country's processing level [14]

Table 2: Country-wise level of processing

Country	Level of Processing (%)
USA	80.0
France	70.0
Thailand	30.0
Malaysia	80.0
Australia	25.0
Netherland	12.0
India	1.3

Wastage of major produces in India

Despite India's large-scale food production, food inflation, food security, and farmers not receiving remunerative rates for their output, among other challenges, are the country's significant concerns. These concerns worry policymakers in the country because they impact residents' basic necessities (such as - adequate, healthy and affordable food supply). The value of wastage of raw food materials in the country, on the other hand, is extremely significant.

[10]Cox, Clifton and Foster Robert (1985), 'What's Ahead for the U.S. Food Processing Industry? Discussion', Agricultural & Applied Economics Association, Oxford University Press, Vol. 67, No. 5, pp.1155-1157.

[11] FICCI (2010), 'Bottlenecks in Indian Food Processing Industry: survey on challenges in food processing sector

[12]Goswami, Rahul (2010), 'The Food Industry in India and its Logic', Economic and Political Weekly, Vol. 45, No.41, pp. 15-18

[13]Kachru, R.P. (2010), 'Agro-Processing Industries in India-Growth, Status and Prospects', Indian Council of Agricultural Research, New Delhi.

[14] Litchfield, J.H. (1978), 'Meat, Fish and Poultry Processing Wastes', Water Environment Federation, Vol. 50, No. 6, pp. 1200-1208

Table 3: Estimated monetary value of losses for the major produces in India

S.No.	Particulars	Cumulative wastage (%)	Monetary value of the losses (₹crore)
1	Cereals	4.65-5.99	20698
2	Pulses	6.36-8.41	3877
3	Oil Seeds	3.08-9.96	8278
4	Fruits	6.70-15.88	16644
5	Vegetables	7.32-12.44	14842
6	Plantation Crops and Spices	1.18-7.89	9325
7	Livestock Produce	0.92-10.52	18987
	Milk	0.92	4409
	Fisheries(Inland)	5.23	3766
	Fisheries(Marine)	10.52	4315
	Meat	2.71	1235
	Poultry meat	6.74	3942

According to a study conducted by the Central Institute of Post-Harvest Engineering & Technology (CIPHET), the annual value of harvest and post-harvest losses of major agricultural produce at the national level was estimated to be 92,651 crore, based on production data for the year 2012-13 at wholesale prices in 2014. In 2012-13, the country's total wastages of major agricultural products were 4.65–5.99 percent in cereals, 6.36–8.41 percent in pulses, 3.08–9.96 percent in oilseeds, 6.70-15.88 percent in fruits, 7.32-12.44 percent in vegetables, 1.18–7.89 percent in plantation crop & spices, and 0.92-10.52 percent in livestock produce. Furthermore, livestock produce wastage ranged from 0.92 percent to 10.52 percent, including 0.92 percent in milk, 5.23 percent in inland fisheries, 10.52 percent in marine fisheries, 2.71 percent in meat, and 6.74 percent in poultry meat.

Conclusion

The Food Processing Industry has been highlighted as a development priority. This industry is part of the priority lending business. With the exception of beer and alcoholic beverages, and commodities reserved for the Small Scale Sector, such as vinegar, bread, and bakery, most food processing industries have been exempted from the terms of the Industries (Development and Regulation) Act, 1951. For the majority of processed food items, automatic permission for even 100% equity is available when it comes to foreign investment. The actual development of the food processing sector in India begins once the country achieves food grain self-sufficiency as a result of the Green Revolution. The Ministry of Food Processing Industries was established in July 1988 to help the country's food processing sector grow. Within the overarching national aims and objectives, the ministry develops and implements policies and programmes for the food processing industry. It serves as a catalyst for attracting further investment into the sector, as well as directing and assisting the industry and fostering a healthy growth environment for the food processing industry.

The Indian economy is heavily reliant on agriculture, and this trend is likely to continue in the future. It is an appealing investment destination for global businesses because to its strong agricultural basis, abundant livestock, cost competitiveness, deregulation, and the rise of the organised retail market, and it has tremendous potential for the food processing industry. India is renowned as the world's food basket. In India, there are twenty different types of agroclimatic areas for growing a variety of crops for processing. Several types of herbs used in medicine can only be found in India. Despite having a low degree of processing (10%) compared to the United States (65%), China (23%), Thailand (30%), the Philippines (78%), and Brazil (70%), India is the world's greatest producer of various commodities. In terms of milk production, India ranked #1 in the world in 2015-16, generating 155.5 MT. India's dairy industry is booming, with a CAGR of 13-15 percent predicted in the following years. India is the world's second-largest producer of fruits and vegetables, producing 254 metric tonnes with only 2% processing. India is second in the world in the production of rice, wheat, and cereals. It is the world's largest exporter of cereals.

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