

A Critical Examination of the Emergence and Expansion of India's Food Processing Sector

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Abstract

The food processing industry is slowly emerging as an important industry in the Indian economy. From 2005-06 to 2009-10, the industry's GDP growth rate was 8.40% on a compound annual growth rate basis. The total amount of the plan has been increasing year by year, from INR 650 crore in the 10th Plan to INR 15077 crore in the 12th Plan. Despite the growth of the industry, it is still unable to compete in the international market. The industry's share in the total export of the world is only 1.17%. The capacity to provide jobs reflects the industry's size and growth, as well as an understanding of the type of human resources used in the industry. Despite the industry having huge potential to provide jobs, it is not functioning to its maximum capacity. Most of the employees are lacking a skill set, and this makes them extremely unskilled. A number of policies and programs have been introduced by the government for the growth of the food processing industry. However, the results are not very promising. The present paper makes an attempt to understand the agro-processing sectors in India, the challenges, and growth opportunities. The paper makes an attempt to bring clarity to the concept of food processing. The paper highlights the areas of growth potential and the areas which needed re-thinking as far as the growth is concerned.

Key Words: Food processing, agro-processing, expanding, government, resources, analysis

1. Introduction

Because of its tremendous growth potential and socioeconomic significance, the food processing industry is considered a sunrise industry all over the world. Apart from contributing to revenue generation, it enhances manufacturing competitiveness and helps reduce waste, value addition, and forex earnings. Quality and food safety have become a competitive advantage for companies that deal in food products and service delivery.

India is ranked as the second highest food producer in the world, after China, and has the potential to become the highest food producer in the world. The food and food products sector is the largest sector in India in terms of consumption, and the expenditure on food constitutes nearly 21% of India's GDP. The food market in India is valued at \$181 billion and is expected to grow by nearly 40% to reach \$258 billion by 2015 and \$344 billion by 2025 (World of Food India, 2011; Merchant, 2008).

Although India is one of the highest food producers in the world, the country is facing serious challenges in food waste and food processing. It is estimated that some of the developed countries in the world process up to 80% of their food products to consumable standards, but in India, the food processing level has only recently touched 10%. The food processing sector in India is still in its nascent stages and is valued at only 1.5% of the total food processing exports of the world, valued at \$3.2 billion (Bhuyan, 2010)

In general, increases in income levels can be expected to improve diets and increase demand for meat, milk, and other high-value products in the emerging marketplaces of these countries. Demand for high-value food commodities such as fruits, vegetables, milk, meat, eggs, and fish is growing rapidly in India because of the growing economy and the rise of urbanization in the country (Rao et al 2004; Ali et al 2007). The proportionate share of food expenditure compared to other products is falling in the wealthy and middle-class groups, while the actual level of food expenditure is rising in all groups. Food security is gradually being replaced by convenience and nutritional security. These changes in expenditure are also being driven by growing mobility, exposure, aspiration, and access to a variety of products.

One of India's biggest industries, the agro food processing sector employs 18% of the total industrial workforce of the country, making it the fifth in terms of production, consumption, exports, and growth potential (Merchant, 2008). Various fruits, vegetables, and other food items of temperate and tropical varieties are also grown in India. Food product processing is essential for the preservation of fruits and vegetables. India has enormous growth potential for the food processing sector, which provides a strong link between consumers and producers due to its strong agricultural base, diverse climatic conditions, and high growth rates. The aim of this essay is to analyze the state and trends of the food processing sector in India. The essay also explores the challenges that are affecting the growth of this sector. Finally, the essay examines the limitation and challenges that have been faced by the food processing sector. The essay then explores the potential of the food processing sector in India and some workable suggestions for its further growth. Analysis of the Strength, Weakness, Opportunities, and threats of the food processing sector in order to identify the opportunities and threats faced by the food processing sector in the international market for food products.

2. Food Processing - the concept

The process of transforming raw components into food or food into other forms of food is known as food processing. Clean, harvested crops or butchered animal products are usually used in food processing to create appealing, marketable, and frequently long-lasting food items. The processed food industry is divided into the following broad segments:

2.1 Primary processed food

It comprises goods marketed in packed or unpacked forms, including fruits and vegetables, packed milk, unbranded edible oil, milled rice, flour, tea, coffee, lentils, spices, and salt.

2.2 Value-added processed food

It comprises goods like processed fruits and vegetables, juices, jams, pickles, squashes, processed dairy products (butter, cheese, paneer, and ghee), processed chicken, processed marine products, confections, chocolates, and alcoholic beverages.

3. Methodology

The present study is entirely based on secondary data. Macroeconomic factors are considered while analysing the trends in food processing sector in relation to its size and future growth prospectus. The secondary data are collected from scholarly articles, journals, Google scholar, newspaper and books. Some peer group discussion was also undertaken to get the clarity of the concepts and to understanding the relevant concepts of food processing sectors in India.

4. Objectives of the study

1. To understand the present status food processing industry in India
2. To sketch food processing sectors in India
3. To find the factors affecting food processing industry

5. The importance of Food-Processing

Farm produce can be transformed into consumer commodities through processing, which also increases shelf life, decreases waste, adds value, and transfers more revenue to farmers from various consumer classes because processed commodities have a larger market. The Indian government has also given agro-processing top importance, offering the required incentives to promote value addition and increase commerce. In this sense, the possibility of modernizing food processing and the food chain through integrated development activity, including retailing, is thoroughly covered in the CII-Mckinsey report (1997). According to this analysis, the entire food market is estimated to be worth Rs. 2,500,000 million, with value-added food items making up an astounding 32%. The economy is anticipated to be significantly impacted by this development in the food processing industry. Given the age cohort, an estimated 75 crores of young people will be added over the next 20 years, and their greater openness to experimentation and change will have a variety of consequences on India's food demand. This necessitates improving the capacity of food processing companies to meet the future needs.

Food processing is still in its infancy in India and has not yet gained the traction it has in Western nations. However, compared to urban areas, processed food's specialized market or markets are growing more slowly in rural India. As a result, the total value addition to food is only 7%, compared to 23% in China, 45% in the Philippines, and 88% in the United Kingdom. It should be noted that the potential for food value addition should not be averaged for both urban and rural locations, as this average obscures new and thriving niche markets for a

number of ethnic food products. Entrepreneurs are encouraged to invest in value-adding activities by these niche markets. It is anticipated that by 2005, there will be at least ten food enterprises in India with a remarkable turnover of Rs. 3,000 crores, creating 50 lakh jobs in food processing and allied industries including retail, distribution, and transportation.

6. Food Production and Processing – The Indian Scenario

The patterns of production, consumption, and trade in Indian agriculture have seen significant changes in the last few decades. The production and consumption of high-value agricultural commodities such as fruits and vegetables, milk and milk products, meat, eggs, fish, and processed foods has replaced food grains. Exports of conventional commodities like rice, sugar, tea, coffee, tobacco, etc. are increasingly being replaced by trade in high-value goods. As a result, during the 2000s, high-value exports (fruits and vegetables, floriculture, meat, processed fruit juices) increased by roughly 18% annually, while the growth rate of exports of rice, sugar, marine products, tea, etc. decreased (Sharma and Jain, 2011; Ali, Singh, and Muhammad, 2007). Horticulture and other atypical, high-value agricultural products constitute a significant area of potential revenue growth in rural areas, given the diminishing share of traditional commodities in production, consumption, and trade.

7. General Classification of food processing in India

Food grains/Pulses milling	Alcoholic beverages
Meat and meat products	Beverages
Fruits/vegetable processing	Breakfast cereals, biscuits, confectioneries, etc.
Aerated water/soft drinks	Fish, poultry products (eggs)
Milk and milk products	Edible oils/fats

7.1 Food grains/Pulses Milling

Primary milling of paddy, wheat, and pulses is the most common operation in the processing of food grains. Primary milling is carried out by 2,60,000 small flourmills and 91,000 rice hullers. There are 43,000 updated huller-cum-sellers and rice mills. In addition to turning paddy into rice, 3.4 million tonnes of oil were produced from rice bran between 1999 and 2000. Between 1991 and 2003, the number of contemporary rice mills rose from 25,000 to 40,667. Furthermore, 946 roller flour mills produce the high-quality flour needed for domestic use and the bakery sector. Approximately 10.5 million tons of wheat are converted into wheat products by the nation's 820 major flourmills. Additionally, there are 10,000 pulse mills that process roughly 75% of the 14 million tonnes of pulses produced.

In both domestic and international markets, branded rice is growing in popularity and drawing a sizable corporate presence. Foreign direct investment has been permitted in this industry in order to boost exports, and 94 export-oriented unit proposals totaling Rs. 949 crores have been authorized in the rice milling sector. Eight pulse milling facilities with a 100% export focus have also received approval.

7.1.1 Government Policy towards Food grains/Pulses Milling

As part of a liberalization program, the Rice Milling Industry (Regulation) Act 1958 and the Rice Milling Industry (Regulation and Licensing) Rules 1959 were repealed on May 28, 1997. Previously protected for the small-scale sector, rice and pulse milling are now de-reserved. Therefore, setting up a rice mill or pulse mill does not require a license or permit. Since liberalization, there is no need for a license to establish or increase the capacity of roller flourmills. Any source can supply wheat to the mills. Additionally, the production of wheat products is not subject to price or distribution restrictions or license requirements.

7.2 Fruits/Vegetable Processing

India produces 70 million tonnes of fruits and vegetables annually. Approximately 35 to 40 percent of the product is thought to be wasted during the picking, harvesting, packing, transportation, storage, marketing, and consuming processes. Just 0.9 million tonnes of fruits and vegetables are processed in India each year. Due to their greater output and superior value compared to cereals in the global market, fruits and vegetables can earn 20 to 30 times foreign exchange per unit. Fruit and vegetable production is progressively expanding from rural to urban areas and from traditional agricultural businesses to the corporate sector. Better technology, increased commercialization, and professionalism in production and marketing management are the results of this movement. Many export-focused entities are being formed as joint venture companies with international partners. Given that its proportion of the global market for processed foods and vegetables is less than 1%, India has enormous processing potential.

Tamil Nadu, Uttar Pradesh, and Maharashtra have a high concentration of processing facilities. Rather than the ready availability of raw materials, this is determined by market demand and the availability of favorable institutional support and infrastructure facilities. The processing units will inevitably appear closer to the raw material sources as the industry's structure changes and larger units join. Fruit pulps and juices, fruit-based ready-to-serve drinks, canned fruits and vegetables, jams, pickles, squash, chutneys, and dehydrated vegetables among the most common processed foods. The sector has recently started producing canned mushrooms and mushroom products, frozen pulps and vegetables, frozen dried fruits and vegetables, fruit juice concentrates, and vegetable curries in restorable pouches.

7.2.1 Government Policy towards Fruits/Vegetable Processing

Establishing a fruit and vegetable processing (FVP) industry does not require an industrial license, although government clearance is needed to develop 100% export-oriented operations. Under the Essential Commodities Act, this is governed by the Fruit Products Order of 1955 (FPO). This order, which establishes product specifications and quality control requirements on production-hygiene, re-labeling, and marketing, is administered by the Ministry of Food Processing Industry. Under this order, a license must be obtained by any processing unit. Additionally, units are inspected on a regular basis. Pre-shipment inspections are required for shipments of fruits and vegetables intended for export. Star Trading Houses and Recognized Export Houses are

not subject to this examination. Products including pickles, chutneys, tapioca sago, and tapioca flour are only made on a limited scale. Fruit exports, foreign technology agreement approval, and up to 51% foreign equity participation. Tomatoes, mushrooms, and other frozen vegetables, fruits, nuts, fruit peels, fruit jellies, marmalades, fruit juices, and vegetable juices are some examples of these.

7.3 Milk and Milk Products

Due to the execution of the Operation Flood program, milk production rose by 6.3% annually from 38 million tonnes in 1983 to 81 million tonnes in 2001 (Table 2). From 1.5 lakh tonnes in 1991 to 2.35 lakh tonnes in 2001, more milk powder, including infant formula, was produced. During the same time period, the amount of malted milk food produced rose from 0.41 lakh tonnes to 0.68 lakh tonnes. During this time, cheese output tripled, with the highest growth rate of 11.58% (Table 2). Every day, about 12% of milk is processed into value-added goods such casein, whey protein concentrates, and whey powder, the majority of which are exported. Value-adding accounts for about 35% of the 10 million tonnes of milk purchased in the organized sector. While the remainder is sold in different forms and exported to the Middle East, the United States, and other countries, a portion of the stock is preserved for lean periods. More than four million tonnes of milk are utilized to make both traditional and non-traditional goods in the unorganized sector.

Production of milk and milk products in India for the period 1991-2001 (Table 2), ('000 tonnes)

Year	Milk production (million tonnes)	Milk powder	Malted milk food	Condensed milk	Cheese	Total milk products
1991	55.7	150	41	8.1	2.5	201.6
1992	58.0	165	41	8.4	2.9	219.3
1993	60.6	185	32	7.8	3.1	227.9
1994	63.8	195	44	8.1	4.0	251.1
1995	66.2	200	48	9.2	4.0	261.2
1996	69.1	210	53	9.3	4.0	276.3
1997	71.9	215	55	7.8	7.0	284.8
1998	75.2	222	65	9.0	5.0	301.0
1999	78.1	225	66	11.0	5.0	307.0
2000	80.1	230	67	11.5	7.5	316.0
2001	84.9	235	68	12.0	8.0	323.0
CGR	4.24	4.17	7.14	3.99	11.58	4.80

Source: Government of India, 2002.

Production of milk and milk products is governed by the Milk and Milk Products Order (MMPO). Units that handle less than 10,000 liters of milk per day or up to 500 tons of milk solids annually are exempt from the order. Except for malted foods, all milk products fall under industries where up to 51% foreign equity participation is permitted. Previously set aside for small-scale manufacturing, ice cream is now no longer reserved. Establishing large-scale production facilities for the production of ice cream does not require a license. Following decentralization, certain milk-based goods may be exported as long as the units meet the mandatory inspection standards set forth by the Export Inspection Council, National Dairy Development Board,

etc. The industry must abide by the requirements set forth by the Bureau of Indian Standards for all milk-based products.

7.4 Fish and Poultry Products

With an 8,000-kilometer coastline, 3 million hectares of reservoirs, and 1.4 million hectares of brackish water, India offers enormous potential for both inland and marine fishing. Between 2000 and 2001, fish production was roughly 56.56 lakh tonnes, split equally between inland and sea fisheries. But over the past ten years, the corporate sector has been more involved in the processing, exporting, and preservation of marine fish. India leads the world in total agricultural exports and exported marine items valued at Rs. 4,368 crores in 1998–99. Marine food is mainly processed for the export market in canned and frozen versions. There are 476 cold storage units, 13 canning units, 160 ice making units, 12 fishmeal units, and 393 freezing units. India must take advantage of the potential processing market based on a range of inland fisheries in order to create jobs, while the over-harvesting of coastal fisheries is causing an ecological imbalance.

7.5 Meat and Meat Products

The amount of meat and poultry produced in India has significantly increased. Value-added products including sausage, ham, luncheon meat, kabab, and meatballs were made from just 1% of the 4.2 million tonnes of meat produced in 1998, which included cattle, buffalo, sheep, goats, hogs, and fowl. Buffalo and mutton accounted for Rs. 845 crores in meat exports between 1999 and 2000. There are seven cutting-edge integrated facilities for processing chicken. Many small poultry processing facilities are involved in the production of poultry meat products. Egg products are exported by a few egg processing facilities.

7.6 Breakfast Cereals, biscuits, candies, etc.

In the home market, this food category is gradually but surely gaining traction. The demand for packaged and processed meals has increased due to rapid urbanization and shifting eating habits. Bread, biscuits, and other baked goods, confections, chocolates, and cocoa products, products made from soybeans, ready-to-eat pasta items like noodles and cereal flakes, high-protein foods, and other processed foods and snack foods are all included in this category. This also comprises the starch, glucose, and other ingredients needed to make food.

Soy milk, nuggets, flour, and texturized soy meals and snacks are all part of the soy products business, which is valued at about Rs. 80 crores (US \$22.2 million) and has been expanding at a rate of about 10% annually. The potential for export has led to the emergence of numerous major units. Due to growing health concern, soy food is also becoming more popular. With 60,000 bakeries, 20,000 traditional food and pasta food units, the semi-processed ready-to-eat food market is worth about Rs. 4,000 crores (US \$1.1 billion). For both local and foreign markets, sizable biscuit and confectionery facilities, soy processing facilities, and starch, glucose, and sorbitol production facilities have also been developed. Numerous multinational corporations have established production facilities for confectionary and cocoa-based goods. About 16,500 tons of macaroni noodles, 1,240 tons of pearl

barley, and 600 tons of cornflakes are produced. About 30 million tonnes of bread, biscuits, and other bakery goods are produced each year.

7.7 Cotton Textile Products

With value addition of at least 100% in subsequent processing steps, cotton is the first-largest agro-based industrial sector. After being spun into yarn, cotton is woven into fabrics, treated, and turned into ready-made clothing or makeup. Exports of different cotton goods generated from one lakh bales of cotton demonstrate the excellent value-addition achieved by turning cotton into ready-made clothing.

7.8 Sugar Industry

With 5 lakh workers and 450 lakh farmers, sugar is the second-largest industry. There are 493 factories in the sugar business; 273 are in the cooperative sector, 153 are in the private sector, and the remaining plants are in the public sector. The sugar industry's shortcomings include dispersed capacities, outdated machinery, subpar recoveries, and insufficient use of byproducts. To increase the industry's viability, it is imperative to use the byproducts for higher value addition. About 80% of the cost of raw materials used in the production of sugar comes from sugarcane. As a result, the sugar industry's byproducts are more profitable than sugar production. It is essential to construct capacity for cogeneration of power using bagasse and to increase the ethanol extraction capacity from the molasses in accordance with Brazilian experience, in addition to increasing sugarcane production and sugar recovery.

8. Factors Affecting Food Processing Industry in India

The vision -2015 prepared by the Ministry of Food Processing Industries, Government of India, envisages to increase processing level of perishables from 6 to 20 percent, increase value addition from 20 to 34 percent and increase share in global trade from 1.6 percent to 3 percent, thus tripling the size of processing food industry by 2015. (Report of the Task Force, 2008). However, before this can be achieved a number of constraints must be removed. In Table 4, major factors affecting beginning from production to distribution in the value chain are presented. These factors directly/ indirectly affect the Indian processing industry. Following is the table listing the affecting factors of Food Processing Industry in India

Factors Affecting Food Processing Industry in India (Table 3)

	Production	Output Trading	Processing	Distribution/Retailing
Skill	Conventional agricultural practice	Trading by adthiyas with conventional skill sets.	Exposure to small-scale operations. Purchase expertise and large-scale operations management are limitations in retail management.	The skills needed for contemporary retail formats are not well known.
Technology	Low or nonexistent use of technology minimal degree of automation. Biotechnology and hybrids are rarely used.	Very little money spent on handling and storage equipment A few impending adjustments to commodities	Outdated technology as a result of small-scale operations Units with little capacity	There is little usage of bar coding, supply chain connections, or IT.

Regulations	Corporates are prohibited from engaging in non-plantation farming. Contract farming is not enforceable.	Government agency procurement involvement MSP policy Movement and storage restrictions	Beneficial to small-scale investments Limited scope for massive CPUs	Due to delay on land development, foreign direct investment is prohibited and land costs are high.
Capital	Farmers have limited access to funds. 80% borrow at extremely high rates from adhiyas.	Controlled by small trader financiers	High cost finance	Flow of capital is restricted due to ban on FDI
Structure	Subscale farm sizes Farmer indebtedness 70 % rainfall dependent	Large number of small trader financiers Upcoming exchanges High wastage and transaction costs	Predominant small scale sector Low efficiency	Dominance of informal sector Small traditional family owned stores are the norms No/limited backwards linkages Large MNCs have good distribution channels

Source: Adopted from Surendra P. Singha, Fisseha Tegegheb and Enefiok Ekenem (2012)

9. Opportunities of food processing industries in India

In the Indian food processing sector it is anticipated that trends such as shifting demographics, population growth, and fast urbanization will persist in the future, influencing the demand for value-added goods and, consequently, the Indian food processing sector. The industry has a great chance to advance R&D and S&T capabilities. The unskilled labor force needs to be trained, and different human resource profiles need to be developed. Only with an educated and trained labor force will India be able to take advantage of all the prospects in the food processing industry. In order to meet the needs of the market, the government should expand its skill development program and build additional training facilities.

The food processing business will be strengthened by the construction of infrastructure facilities like power, roads, and cold chains. The perishable food goods market, which includes the meat and poultry, dairy, and fruit and vegetable sectors, will see a very encouraging sign. The food processing sector is poised to propel India's economy to greater heights; the only things left to do are focus on the field's technological advancement and the production of competent labor. Due to agro-ecological diversity, the nation's large agricultural and material base offers enormous potential for agro-processing operations. There is a great deal of room for quick advancement and development when modern technologies like electronics, computer science, biotechnology, and material science are integrated. The opening of international markets could result in the export of our advanced technologies and enable the creation of new revenue streams and job possibilities.

10. Conclusion

Even though there are many encouraging factors that contribute to the industry's strong growth, there are still a number of important obstacles that could hinder the Indian food processing industry's future prospects if they are not resolved quickly. The fact that this industry requires a lot of capital is one of the main obstacles. It makes it difficult for new players to enter the market and establishes a high barrier to entry. Players imply competition,

which diminishes efforts to raise standards of excellence. Educating consumers that processed foods can be more nutritious, addressing low price elasticity for processed food products, developing marketing channels, streamlining food laws, improving food quality standards and bolstering the food testing network, and strengthening the institutional framework to develop manpower for improving R&D capabilities to address global challenges are some of the major challenges facing the Indian food processing industry. For the Indian food processing industry to reach its full potential, these issues must be resolved.

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