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The Food Processing Industry in India: Challenges and Opportunities

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Abstract

India's agricultural base is quite strong but wastage is very high and processing of food products is very low. The country's processing sector is small and processing of food to consumable standards in India has reached only 10% recently. India's share in exports of processed food in World trade has remained at about 1.5 percent or \$3.2 billion. This paper examines trends and status of the food processing industry, identifies and discusses constraints/problems slowing down its growth. Though there are many promising dynamics which support the potential for growth of this industry, there are still some significant constraints which, if not addressed sooner, can impede the growth prospects of the Food Processing Industry in India.

Keywords: India, Food processing, Industry, Constraints, Commodities.

Introduction

India is the world's second largest producer of food next to China and has the potential of being the biggest in the World. Food and food products are the biggest consumption category in India, with spending on food accounting for nearly 21% of India's GDP and with a market size of \$181 billion. The Indian domestic food market is expected to grow by nearly 40% of the current market size to \$258 billion by 2015 and \$344 billion by 2025 (World of Food India, 2011; Merchant, 2008). India's agricultural base is quite strong but wastage is very high and processing of food products is very low. While processing of food to consumable standards are at levels of up to 80% in some developed countries, the overall processing level in India has recently reached 10%. Therefore, India's food processing sector comparatively is small and its share in exports of processed food in world trade has remained at about 1.5 percent or \$3.2 billion (Bhuyan, 2010).

Generally, in developing country markets, higher incomes result in diet upgrades, with increased demand for meats, dairy products, and other high value products. In India also sustained economic growth and increasing urbanization are fueling rapid growth in demand for high value food commodities like fruits, vegetables, milk, meat, eggs and fish (Rao et al 2004; Ali et al 2007). In the affluent and middle class (estimated to be around 350-375 million), the percentage share of food expenditure vis-à-vis other products has dropped, the total expenditure on foods has increased across all classes. There is an increasing trend of a shift from food security to nutritional security and convenience shopping. Increased mobility, exposure, increased aspiration and availability of a wide range and products have also contributed to shifts in spending (World of Food India, 2011).

The agro food processing industry is one of the largest in India, employs around 18% of the country's industrial work force and is ranked fifth in terms of production, consumption, export and expected growth (Merchant, 2008). India also produces a variety of temperate to tropical fruits, vegetables and other food products. Processing of food products plays an important role in the conservation and effective utilization of fruits and vegetables. India's strong agricultural base, variety of climatic zones and accelerating economic growth holds significant potential for food processing industry that provides a strong link between agriculture and consumers. The purpose of this paper is to examine trends and status of food processing industry in India. The paper also identifies the constraints/problems encountered and discusses challenges slowing down the growth of this sector. At the end, the paper examines opportunities and offers some feasible suggestions for continuous growth of the industry. Strength, Weakness, Opportunities and Threats analysis is used to highlight opportunities and threats facing the food processing industry and consider strategies to develop markets worldwide for processed food products.

Food Production and Processing – The Indian Scenario

In recent decades, there have been substantial changes in the patterns of production, consumption, and trade in Indian agriculture. One change is the shift in production and consumption from food grains to high value agricultural commodities such as fruits and vegetables, milk and milk products, meat, eggs, fish and processed food products. Trade in high value products is increasingly displacing exports of traditional commodities such as rice, sugar, tea, coffee, tobacco, etc.

Thus, during the 2000s, the growth rate in value of exports of rice, sugar, marine products, tea, etc. declined while high value exports(fruits and vegetables, floriculture, meat, processed fruit juices) grew by about 18 percent annually (Sharma and Jain, 2011; Ali, Singh and Muhammad, 2007). Given the declining share of traditional commodities in production, consumption and trade, horticulture and other nontraditional, high value, agricultural crops represent an important area of potential income growth in rural areas.

Trends in Area and Production of Major Crops /crops Groups:

During the last three decades net area sown under major crops declined from 142 million hectares during 1983-84 to 140.8 million hectares in 2008-09, whereas total cropped area increased from 176.4 million hectares to 194 million hectares during the same period. The area under food grains declined by about 6 million hectares between 1983-84 and 2008-09 and this decline reduced the share of food grains in total cropped area from about 73 percent in 1983-84 to about 63.8 percent in 2007-08 (Sharma and Jain, 2011). During the last two decades, food grain production increased from 177.4 million tons in 1993-94 to 227.8 million tons in 2009-10 by over 28 percent (Table 1). However, the highest increase was observed in case of cotton (>200% increase), followed by fruits and vegetables (97%), condiments and spices (66%) and wheat (39%). Pulses recorded the lowest increase in production, from 12.7, million tons in 1993-94 to 14.6 million tons in 2009-10.

Table 1: Trends in area production of major crops/crop groups: 1983-84 to 2008-09

| Crops | Area (Million ha) | | | Production (Million tons) | | |
|---------------------|-------------------|---------|---------|---------------------------|---------|---------|
| | 1983-84 | 1993-94 | 2008-09 | 1983-84 | 1993-94 | 2009-10 |
| Rice | 40.1 | 42.3 | 43.8 | 53.5 | 75.9 | 95.0 |
| Wheat | 23.5 | 24.3 | 28.1 | 41.9 | 57.6 | 80.0 |
| Coarse cereals | 41.5 | 33.6 | 27.9 | 30.9 | 31.1 | 38.2 |
| Pulses | 23.4 | 22.4 | 23.0 | 12.1 | 12.7 | 14.6 |
| Food grains | 128.5 | 122.6 | 122.8 | 138.4 | 177.4 | 227.8 |
| Oilseeds | 18.5 | 26.0 | 26.8 | 11.6 | 20.1 | 27.5 |
| Sugarcane | 3.2 | 3.6 | 4.6 | 183.3 | 237.2 | 303.7 |
| Fruits & vegetables | 5.1 | 8.3 | 13.6 | - | 95.6 | 188.7 |
| Condiments & spices | 2.2 | 2.3 | 2.6 | - | 2.5 | 4.15 |
| Cotton | 7.9 | 7.5 | 9.7 | 7.3 | 10.6 | 24.1 |
| Net area sown | 142.0 | 142.2 | 140.8 | - | - | - |
| Total cropped area | 176.4 | 184.8 | 194.0 | - | - | - |

Source: *Agricultural Statistics at a Glance 2010 and previous issues*, Directorate of Economics and Statistics, Ministry of Agriculture, Govt. of India, New Delhi.

The decline in area under food grains resulted in increase in area under other crops. The largest beneficiary of this decline were oil seeds during the decade of the 1980's, when area under oilseeds increased from 18.5 million hectares in 1983-84 to 26 million hectares in 1993-94 but area under oilseeds remained stable between 1993-94 and 2008-09. The share of oilseeds in total cropped area increased significantly from less than 10 % in early eighties to 14.8% in early nineties, which marginally declined to about 14.3% in 2007-08. The area under cotton, which declined by about half a million hectares between 1983-84 and 1993-94, increased by more than 2 million hectares between 1993-94 and 2008-09. Another beneficiary of decline in area under

food grains was high value crops mainly fruits and vegetables. The area under fruits and vegetables increased by about 8.5 million hectares between 1983-94 and 2007-08. This indicates that crop pattern in India shifted towards oilseeds, sugarcane, and fruits and vegetables during the 1980s, whereas in the 1900's and 2000s the shift was more towards fruits and vegetables and other nonfood crops (Sharma and Jain, 2011). India is a major producer of many fruits and vegetables with share in world production: 41% of mango; 23% of banana; 24% of cashew nut; 10% of onion; 30% of cauliflower; and 36% of green peas. The share of area under fruits and vegetables in total cropped area, which was less than 3 percent in 1983-84 increased to over 5% in 2007-08 (Sharma and Jain, 2011). The trends in production of fruits and vegetables are presented in Table 2. The production of fruits in India averaged about 55.05 million tons over a period of six years (2002-03 to 2007-08), a total increase of about 14 million tons.. There was also a slight increase in acreage under fruits. During the same period the production of vegetables increased by almost 33 percent and area also increased by almost 3 million ha.

TABLE 2: Production of Fruits and Vegetables in India

| Year | Fruits | | | Vegetables | | |
|---------|----------------------|------------------------------|-------------|----------------------|------------------------------|-------------|
| | Area (Million Ha) | Production (Million tons) | Growth rate | Area (Million Ha) | Production (Million tons) | Growth rate |
| 2002-03 | 4.8 | 49.2 | - | 5.9 | 84.8 | - |
| 2003-04 | 5.1 | 49.8 | 1.22 | 6.7 | 101.4 | 19.57 |
| 2004-05 | 5.3 | 52.8 | 6.02 | 7.1 | 108.2 | 6.71 |
| 2005-06 | 5.3 | 55.4 | 4.92 | 7.2 | 111.4 | 2.96 |
| 2006-07 | 5.6 | 59.6 | 7.58 | 7.5 | 115.0 | 3.23 |
| 2007-08 | 5.8 | 63.5 | 6.54 | 7.8 | 125.9 | 9.48 |

(Source: National Horticultural Board, data base 2007-08)

Structure and Composition of Indian Food Processing Industry

The food processing or food manufacturing industry includes companies that transform livestock and agricultural products into products used for intermediate or final consumption. Processed foods are products in which a raw commodity is transformed into a processed product regardless of whether the amount of processing is minor, such as canned fruit, or more complex, such as snack foods (U.S. Census Bureau 2004, Industry Outlook for Processed Foods). Through food processing value is added to the agricultural or horticultural produce by using various techniques including grading, sorting, packaging etc., which enhance the shelf life of food products. A strong and dynamic food processing sector plays significant role in the overall economic setup of a country. The sector provides vital linkages and synergies between industry and agriculture and has been identified as a sector having immediate potential for growth of the economy. Processing also helps in generating rural employment, additionally processed fruits and vegetables are a source of earning foreign exchange (Murthy and Dasaraju, 2011).

The extent of processing in India can be categorized as follows:

- Primary Processing: cleaning, grading, powdering and refining of agricultural produce, e.g., grinding wheat into flour.
- Secondary Processing: basic value addition, e.g., tomato-puree, ground coffee, processing of meat products.
- Tertiary Processing: high value addition products like jams, sauces, biscuits and other bakery products ready for consumption.

Food processing is a large sector in India that covers activities such as agriculture, horticulture, plantation, animal husbandry and fisheries. It also includes other industries that use agricultural inputs for manufacturing of edible products. The Ministry of Food Processing, Government of India divides the industry into six segments: Dairy, fruits & vegetable processing; Grain processing; Meat & poultry processing; Fisheries; and Consumer foods including packaged foods, beverages and packaged drinking water. In Table 3 various segments of India's food processing industry and examples of products produced in these sectors are presented.

Table 3: Segments of Food Processing Industry and Products Produced in India.

| Sectors | Products |
|---------------------|--|
| Dairy | Whole milk powder, skimmed milk powder, condensed milk, ice cream, butter and ghee, cheese |
| Fruits & Vegetables | Beverages, juices, concentrates, pulps, slices, frozen & dehydrated products, potato wafers/chips, etc |
| Grains & Cereals | Flour, bakeries, starch glucose, cornflakes, malted foods, vermicelli, beer and malt extracts, grain based alcohol |
| Fisheries | Frozen canned products mainly in fresh form |
| Meat & Poultry | Frozen and packed –mainly in fresh from egg powder |
| Consumer Foods | Snack food, namkeens, biscuits, ready to eat food, alcoholic and non alcoholic beverages |

Source: Ministry of food processing India, Annual report, 2004

Though the Indian food processing industry is large in size, it is still at a nascent stage in terms of development. Of the country's total agriculture and food produce, only 2 percent is processed. The industry size has been estimated at US\$ 70 billion by the Ministry of Food Processing, Government of India. The food processing industry contributed 9 percent to India's GDP and had share of 6 percent in the total industrial production. The industry employs 1.6 million workers directly (Merchant, 2008). The industry grew at an estimated rate of 9.12 percent during the period 2002 to 2007. Value addition of food products is expected to increase from the current 8 percent to 35 percent by the end of 2025. Fruit & vegetable processing, which is currently around 2 percent of total production is expected to increase to 25 percent by 2025 (Food Processing, 2006).

India's processing industry is highly fragmented and is dominated by the unorganized sector. A number of players in this industry are small. About 42% of the output comes from the unorganized sector, 25% from the organized sector and the rest from small scale players. Though the unorganized segment varies across categories but approximately 75 percent of the market is still in this segment. The organized sector is relatively bigger in the secondary processing segment than the primary processing segment. The primary processing segment is also highly fragmented. Primary food processing is a major industry with a highly fragmented structure that in-

cludes hundreds of thousands of rice mills and hullers, flour mills and oil seeds mills, several thousands of traditional bakeries; food units and fruits, vegetable and spice processing units in the unorganized sector (Food Processing, 2006). The most common type of food processing units that form the organized sector are flour mills, fish processing units, fruits and vegetables processing units, meat processing units, non-alcoholic and aerated drinks units, sugar units (mills) and modernized rice mills. While India's agricultural production base is quite strong, the food processing industry is still under developed. The highest share of the processed food is in the dairy sector, where 37 percent of total produce is processed, of which only 15% is processed by the organized sector. The processing level is around 2.2 percent in fruits and vegetables, 21% in meat and 6% in poultry products. Of the 2.2% processing in fruits and vegetables only 48% is in organized sector remaining in unorganized sector (Merchant, 2008).

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.

Table 4: Factors Affecting Production, Processing, and Distribution in India

| | Production | Output Trading | Processing | Distribution/Retailing |
|--------------------|--|--|--|---|
| Skill | Traditional methods of farming | Trading by adthiyas whose skills sets are traditional. | Exposure to low scale operations. Limitations in Retail Management purchase skill and management of large operations. | Skills required for modern retail formats relatively unknown. |
| Technology | No/low use of technology Low levels of mechanization. Low use of hybrids, biotechnology. | Very low investment in storage & handling technology Few upcoming commodity exchanges | Outdated technology due to small scale operations Low capacity units | Use of technology is low Bar coding, supply chain linkages and use of IT is low |
| Regulations | Corporates not allowed in non-plantation farming No enforceability in | Procurement intervention by Govt. agencies MSP policy | Favorable to small scale investments Scope for large | Foreign Direct Investment not allowed Land cost high due to inaction on land development |

| | | | | |
|------------------|--|---|--|--|
| | contract farming | Restriction on storage and movement | processors limited | |
| Capital | Funds availability to farmers is poor 80% borrow from adthiyas at very high rates | Controlled by small trader financiers | High cost finance | Flow of capital is restricted due to ban on FDI |
| Structure | Subscale farm sizes Farmer indebtness 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 |

Constraints in Indian Food Processing Activities

Major constraints for the growth of the Indian food processing industry include the absence of adequate infrastructure, particularly rural road connectivity, inadequacy of information and marketing linkages, lack of electricity supply, and the absence of cold chain systems. The cold chain capacity caters to less than 10 percent of the produce and within that facilities are so rudimentary that over 80 percent are only capable of handling potatoes. Maintaining the standards of quality is another major constraint and there are two aspects to it. First, there is poor infrastructure for storing raw food materials. The two main types of storages – the warehouses and the cold storages, lag in storage standards. The pests infest the grains sometimes due to lack of monitoring, proper use of pesticides and proper ventilation. Similarly, the power outages result in sub-optimal function of the cold-storages and the quality of food material in the cold storages becomes questionable. The second important aspect is having poor quality standards and control methods for implementing the quality standards for processing and packaging the processed foods. For example, vegetables may not be washed properly and processed into either ‘ready to eat food’ or packaged as ‘cut and ready to cook’ vegetables. High costs and low availability of credit remain a problem because even within the priority sector, lending by banks for agriculture, food processing receives only 4.5 per cent of the ear marked credit. The regulatory framework preventing farmers from directly marketing their produce, except through designated agricultural markets adds to cost and impairs flexibility. Packaging is usually poor but its cost is high and become unbearable for small producers. Another important constraint is the legal framework-currently; food laws span nine ministries, comprising 13 central orders alone. In addition, states have their own control orders. In Table 5, SWOT analysis of Indian food processing industry is presented.

Table 5: SWOT Analysis of Agro-Processing Industry Infrastructure in India

Conclusions

| Strengths | Weaknesses | Opportunities | Threats |
|--|--|--|---|
| Round the year availability of raw materials. Social acceptability of agro-processing as important area and support from the central government. Vast network of manufacturing facilities all over the country. Vast domestic market. | High requirement of working capital Low availability of new reliable and better accuracy instruments and equipments Inadequate automation w.r.t. information management. Remuneration less attractive for talent in comparison to contemporary disciplines. Inadequately developed linkages between R&D labs and industry. | Large crop and material base in the country due to agro-ecological variability offers vast potential for agro processing activities. Integration of developments in contemporary technologies such as electronics, material science, computer, biotechnology etc. offer vast scope for rapid improvement and progress. Opening of global markets may lead to export of our developed technologies and facilitate generation of additional income and employment opportunities. | Competition from global players Loss of trained manpower to other industries and other professions due to better working conditions prevailing there may lead to further shortage of manpower. Rapid developments in contemporary and requirements of the industry may lead to fast obsolescence. |

Though there are many promising dynamics which support good growth of this industry, there are still some significant constraints which, if not addressed sooner, can impede the growth prospects of the Food Processing Industry in India. One of the biggest constraints is that this industry is capital intensive. It creates a strong entry barrier and allows limited number of players to enter the market. Players mean competition which reduces efforts to improve quality standards. Major challenges faced by the Indian food processing industry include: educating consumers that processed foods can be more nutritious; dealing with low price elasticity for processed food products; need for distribution network; development of marketing channels; streamlining of food laws; improving food quality standards and strengthening food testing network; strengthening institutional framework to develop manpower for improving R&D capabilities to address global challenges. These challenges must be addressed to achieve full potential of the Indian food processing industry.

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