

## **Development Potential of Food Processing Industry in Punjab**

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### **Abstract**

*The state is emerging as hub of food processing industry. Large multi-nationals including Nestle, Danone, Cargil, ITC and Walmart have already setup base in the state and are enjoying rich dividends. Food processing and value addition have great scope for reducing wastage, accelerating agricultural growth and improving economy of the state. This paper provides an insight into the food processing industry of Punjab, its growth prospects and employment opportunities. According to the latest Annual Survey of Industries (ASI) in 2014-15, the GDP of food processing industry as share of GDP in agriculture has gone up to 5.6 per cent in 2014-15 from 4.5 per cent in 2010-11. Out of total food processing industry, the highest share of 36.72 per cent of the registered food processing industry in Punjab is in the manufacture of grain mill products, followed by 35.08 per cent in manufacturing of beverages, 8.15 per cent in fruit & vegetables and 7.94 per cent in dairy products. Food processing industry provides plenty of direct and indirect employment opportunities because it acts as bridge between agriculture and manufacturing. The total number of persons engaged in food processing sector in Punjab is 18 per cent of manufacturing sector. The state needs to strengthen its efforts in S&T capability, infrastructure support and capacity building of youth in order to develop food processing industry. There is a need to provide adequate financial support i.e. subsidies to young entrepreneurs for establishing more food parks and agri-product export zones.*

**Key Words:** *Food processing, Manufacturing industry, Annual survey of industry*

**JEL Classification:** *L6, C8, D2*

### **Introduction**

Food processing industries play a key role in rural development providing food, shelter, clothing, generating employment and income and contributing to overall economic growth. Food processing industry can become an anchor activity for integrated rural development and can form the basis for environmentally sustainable rural development. Food processing not only stimulates value addition but also generates, direct and indirect employment, particularly in rural areas of the country to absorb the surplus workforce. Food processing is regarded as the sunrise sector of the Indian economy in view of its large potential for growth and likely socio-economic impact specifically on employment and income generation (Grover *et al.*, 1996). There are various multiplier

effects of agro-processing industry such as spread of industrialization in rural areas leading to more livelihood options to teeming millions, nutritional supplements, stable price of agricultural commodities and many other effects due to backward and forward linkages (Sharma *et al.*, 2010). In developing countries like India, the agro processing industry has a higher potential for employment generation through development of small scale industries (Singh and Bansal, 2013). Agro-processing industries especially food processing also bring harmonious and integrated socio-economic order in a country's economy, promote social cohesion and unity in the rural areas, and operate as catalytic agents for development of infrastructure. In addition to these, processing industry effectively utilize leisure of agricultural families, provide subsidiary income to our land less and marginal farmers, facilitate spatial distribution of industries. They also offer a

viable field for promoting occupational diversification in villages through supplementary occupation. But besides having large and diversified agricultural base, commercial processing in India is quite low (Sidhu, 2005), As such, agricultural development may not go very far unless there is development of food processing industries. Food processing industry does not only take up surplus labour force from agriculture but also provide solid technical base to modernize agriculture (Chengappa, 2004). Properly developed, agro-processing sector can make India a major player at the global level for marketing and supply of processed food, feed and a wide range of other plant and animal products.

Punjab, despite being the leading producer of food grains is way behind in value addition industry to agricultural output. The state government has taken many steps to diversify the Punjab agriculture toward the production of high value crops. But still the state needs to concentrate more on crop diversification pattern (away from wheat and paddy crops) and develop the agro-processing industry which can provide inherent benefits to the state (Johl 2011, 2012; Shergill 2001). As a agricultural dominant state, Punjab has bright scope for setting up food processing industry to uplift the agri-business system which will ultimately boost all other components of agri-business system to complete the process. Considering the importance of food processing industries in the development perspectives of overall rural development in general and realizing the expected role of expanding this sector for achieving increased employment opportunities and income level in particular the present study made an attempt to examine the emerging structure and development potential of food processing industry in Punjab.

### Data Sources and Methodology

The present study used secondary data on capital invested, gross fixed capital, total output, net value added, number of units, employment etc. for analysing growth, capital intensity, labour intensity and raw material intensity of registered food processing industries of the state. Time series data for eight year was collected from Annual Survey of Industries (ASI) published by the Central Statistical Organization, Ministry of Planning, Department of Statistics, Government of India for the period 2008-09 to 2014-15. The Annual Survey of Industries (ASI) is the principal source of industrial statistics in India. It provides statistical information to assess and evaluate, objectively and realistically, the changes in the growth,

**Table 1. The following food processing industries became the study sample**

NIC-Code	Description
101	Processing and preserving of meat
103	Processing and preserving of fruit and vegetables
104	Manufacture of vegetable and animal oils and fats
105	Manufacture of dairy products
106	Manufacture of grain mill products, starches and starch products
107	Manufacture of other food products
108	Manufacturing of prepared animal feeds
110	Manufacturing of beverage

composition and structure of registered food processing sector.

The data were analysed using tabular analysis and financial ratios as well. The profitability ratios of food processing industry was estimated using variables such as Fixed Capital, Net Value Added, Output and Profit. Further wages per worker, per person output, capital and raw material intensity of food processing is estimate at constant as well as current prices can be written as:

$$\begin{aligned} \text{Wages per worker} &= \frac{\text{Total wages (permanent employee)}}{\text{Total number of worker}} \\ \text{Per person output} &= \frac{\text{Total output}}{\text{Total number of worker}} \\ \text{Capital intensity} &= \frac{\text{Capital employed}}{\text{Labour used}} \\ \text{Raw material intensity} &= \frac{\text{Total raw material used}}{\text{Total input used}} \end{aligned}$$

### Results and Discussion

The pie diagram clearly depicts that Andhra Pradesh with 23 per cent share of food processing in the country stands first, Tamil Nadu (15%) ranks second whereas Punjab and Maharashtra with eight per cent share in food industry stands at the third position in the country.

The share of food processing industry is elucidated in Table 2. A cursory glance at table is enough to figure out that the scales of each parameters are titled heavily in favour of other manufacturing industries, which form a large percentage of the industries to the total industries. But the table also presents the enormous scope in the strengthening of the food processing industries as far as the values indicates are concerned. Out of the total registered manufacturing units of 12413 in 2014-15, only 23 per cent are the food based

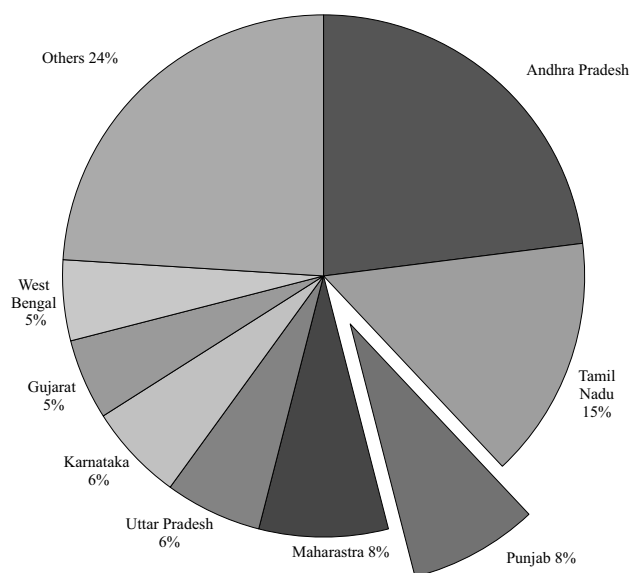
**Table 2. Share of food processing industries in all industrial sector in Punjab, 2014-15**

Indicator	(Rs. in billion)		
	Food processing industry	Other manufacturing industry	Total industry
Total no. of units	2840 (22.88)	9573 (77.12)	12413 (100)
Total invested capital	229.81 (27.53)	605.06 (72.47)	834.87 (100)
Total output	443.29 (23.34)	1455.95 (76.66)	1899.25 (100)
Gross value added	48.62 (19.07)	206.37 (80.93)	255.0 (100)
Net income	25.26 (17.87)	116.12 (82.13)	141.39 (100)
Employment (Number)	106618 (18.28)	476698 (81.72)	583316 (100)

Figure in parenthesis indicates percentages to total industry

industrial units. The data is generally skewed in favour of other registered manufacturing units which can be seen in the amount of total invested capital where only 27 per cent share goes to food processing industries. Even in the terms of GVA and net income, the share of food processing industry is around 19 per cent and 18 per cent respectively. The result revealed that the bulk of employment generation or participation is covered by the other manufacturing industry (around 82%), which necessitates the strengthening of food based industry to promote rural agricultural employment.

A further segregated analysis of different product groups of food processing industry is given in Table 3. A perusal of the table shows that even within the food processing industries the focus remains on manufacturing of grain mill products, starches and starch products, fruits and vegetables, dairy and beverage products. . The total number of units involved in such manufacturing constitute around 90 per cent of the total units. They account for around 80 per cent of the total invested capital and around 68 per cent of the total output produced. These manufacturing units also response for around 70 per cent of the total employment. Only the manufacturing of beverage was reporting a high net income share and net value added of 55 per cent and 37 per cent respectively. But as far as the other industry like meat preservation, fruit and vegetables preservation, dairy products and animal feed manufacturing were concerned, their share in different indicators was quite low. Thus, there existed an anomaly with in the ambit of food processing industry where one particular type of industry captured a larger share than others.

**Figure 1. State-wise share of food processing industries, 2014-15**

The data given in table 4 reflect the changes in the indicators over time, for food processing industry, other manufacturing industry and total industry. In absolute terms, it can be seen that over time from a period of 2008-09 to 2014-15 the number of food processing industrial units had increased from 2173 to 2840 (30 % increase). The capital during this period has risen from Rs. 113.68 billion to Rs. 229.81 billion (102 % increase) and the value of total output witnessed an increase of 79 per cent during the same period.

Though it can be argued that the share of food processing industry has more or less remained the same with respect to the indicators of total industry but there has been a slow and steady increase in almost all the indicators expect that in the case of gross value added where over the time period the value for food processing industry had decreased by around seven per cent. On holistic view, both food processing and other manufacturing industries needed a lot of strengthening and support to boost its prospects. Among the food processing industry, the highest share of agro-based product groups comprises of grain mill product, animal feed, fruit and vegetables, dairy products and beverages. The information given in table 5 shows the contribution of the grain mill product in the food processing product groups is the highest and has shown remarkable increase in capital invested, total output and net value added. The capital invested, total output and net value added increased from 46.9, 36.6 and 28.1 per cent to 61.5, 48.2 and 37 per cent respectively from

2009 to 2015 for the processing of grain mill products.

The share of food processing of dairy products, fruit and vegetables and meat product groups in total food processing industry has increased but at a slow pace. The Punjab state stands second in the production of milk and meat and thus has huge potential for increasing processing in dairy. Similarly, poultry, fishery and meat processing, if enhanced in the state can file ample opportunities for increasing employment in the state.

The profitability ratio of food processing industries in Punjab from 2008-09 to 2014-15 is shown in Table 6. The processing industry is responsive to the amount of capital invested, which can be gauged from the ratio of fixed capital to net value added of 1.10, 2.09, 1.86 and 1.69 in the year 2008, 2010, 2012 and 2014, respectively. The usefulness of processing can be ascertained from the output to input ratio, where an investment of a rupee gave an output of 1.24, 1.12, 1.03 and 1.12 times the rupee invested in the above-mentioned years, respectively.

**Table 3. Economic indicator of food processing industries in Punjab during 2014-15, Punjab**

		(Rs. in billion)					
NIC-2008	Industry	Total no. of units	Total invested capital	Total output	Net value added	Net income	Employment (No.)
101	Processing and Preserving of meat	7 (0.25)	2.81 (1.22)	17.27 (3.9)	0.99 (2.41)	0.95 (3.75)	970 (0.91)
103	Processing and Preserving of fruit and vegetables	158 (5.56)	12.06 (5.25)	13.16 (2.97)	3.21 (7.85)	2.27 (8.97)	8204 (7.69)
104	Manufacturing of vegetables and animal oils and fat	88 (3.1)	9.22 (4.01)	37.18 (8.39)	1.77 (4.32)	1.29 (5.09)	4243 (3.98)
105	Manufacturing of dairy products	55 (1.94)	14.51 (6.31)	59.14 (13.34)	2.86 (6.98)	2.44 (9.67)	8110 (7.61)
106	Manufacturing of grain mill products, starches and starch product	2297 (80.88)	141.25 (61.46)	213.52 (48.17)	15.16 (37.03)	5.05 (19.98)	59233 (55.56)
107	Manufacturing of other food products	81 (2.85)	25.04 (10.89)	30.51 (6.88)	0.82 (2.01)	-1.33 (-5.27)	13659 (12.81)
108	Manufacturing of prepared animal feeds	50 (1.76)	2.43 (1.06)	16.16 (3.64)	0.91 (2.21)	0.64 (2.52)	2240 (2.1)
110	Manufacturing of beverage	104 (3.66)	22.50 (9.79)	56.37 (12.72)	15.22 (37.19)	13.97 (55.29)	9959 (9.34)
Total food processing industry		2840	2840	229.81	443.30	40.93	25.27

Figure in parenthesis indicates percentages to total food processing industry

**Table 4. Trend of food processing industry in total industrial sector during 2008-09 & 2014-15**

Indicator	Food processing industry		Other manufacturing industry		Total industry	
	2008-09	2014-15	2008-09	2014-15	2008-09	2014-15
No. of units	2173 (21.59)	2840 (22.88)	7892 (78.41)	9573 (77.12)	10065 (100)	12413 (100)
Invested capital	113.68 (24.65)	229.81 (27.53)	347.54 (75.35)	605.07 (72.47)	461.23 (100)	834.88 (100)
Total output	247.32 (23.44)	443.30 (23.34)	807.81 (76.56)	1455.95 (76.66)	1055.14 (100)	1899.25 (100)
Gross value added	43.84 (34.88)	40.93 (19.94)	81.84 (65.12)	164.31 (80.06)	125.68 (100)	205.24 (100)
Net value added	10.44 (19.17)	10.66 (18.28)	44.03 (80.83)	47.67 (81.72)	54.48 (100)	58.33 (100)
Employment (Number)	2173 (21.59)	2840 (22.88)	7892 (78.41)	9573 (77.12)	10065 (100)	12413 (100)

Figure in parenthesis indicates percentages to total industry

**Table 5. Product-wise changes in share of different economic indicator in food processing industries in Punjab, 2008-09 to 2014-15**

Industry	(Rs. in billion)									
	No. of units		Total invested capital		Total output		Net value added		Employment (Number)	
	2008-09	2014-15	2008-09	2014-15	2008-09	2014-15	2008-09	2014-15	2008-09	2014-15
Processing and Preserving of meat	9 (0.4)	7 (0.2)	3.45 (3)	2.81 (1.2)	10.41 (4.2)	17.27 (3.9)	1.18 (2.7)	0.99 (2.4)	2497 (2.4)	970 (0.9)
Processing and Preserving of fruit and vegetables	77 (3.5)	158 (5.6)	9.08 (8)	12.06 (5.2)	6.38 (2.6)	13.16 (3)	-4.05 (-9.2)	3.21 (7.8)	3971 (3.8)	8204 (7.7)
Manufacturing of vegetables and animal oils and fat	75 (3.5)	88 (3.1)	8.76 (7.7)	9.22 (4)	36.34 (14.7)	37.18 (8.4)	0.18 (0.4)	1.77 (4.3)	5498 (5.3)	4243 (4)
Manufacturing of dairy products	49 (2.3)	55 (1.9)	6.88 (6.1)	14.51 (6.3)	29.30 (11.8)	59.14 (13.3)	1.93 (4.4)	2.86 (7)	6832 (6.5)	8110 (7.6)
Manufacturing of grain mill products	1779 (81.9)	2297 (80.9)	53.36 (46.9)	141.25 (61.5)	90.45 (36.6)	213.52 (48.2)	12.30 (28.1)	15.16 (37)	59501 (57)	59233 (55.6)
Manufacturing of others products	66 (3)	81 (2.9)	14.67 (12.9)	25.04 (10.9)	15.74 (6.4)	30.51 (6.9)	1.57 (3.6)	0.82 (2)	12748 (12.2)	13659 (12.8)
Manufacturing of prepared animal feeds	38 (1.7)	50 (1.8)	2.07 (1.8)	2.43 (1.1)	7.42 (3)	16.16 (3.6)	0.74 (1.7)	0.91 (2.2)	2546 (2.4)	2240 (2.1)
Manufacturing of beverage	80 (3.7)	104 (3.7)	15.40 (13.6)	22.50 (9.8)	51.27 (20.7)	56.37 (12.7)	29.98 (68.4)	15.22 (37.2)	10846 (10.4)	9959 (9.3)
Total food Processing Industry	2173 (100)	2840 (100)	113.68 (100)	229.81 (100)	247.32 (100)	443.30 (100)	43.84 (100)	40.93 (100)	104439 (100)	106618 (100)
Total Industry	10065	12413	4612258	8348779	10551352	18992516	1256840	2052371	544776	583316

**Table 6. Profitability ratios of food processing industries in Punjab, 2008-09 to 2014-15**

Ratio	2008	2010	2012	2014
Fixed capital to net value added	1.10	2.09	1.86	1.69
Fixed capital to output	0.20	0.19	0.18	0.16
Output to input	1.24	1.12	1.03	1.12
Profit to output	0.10	0.04	0.03	0.02

**Table 7. Financial ratios of food processing industries in Punjab, 2008-09 to 2014-15**

Particular	2008	2010	2012	2014	
Wages per worker (Annual)	Current price	55600	56799	86659	103810
	Constant price	55600*	52477*	70812*	80000*
Per person output	Current price	35.19	31.52	41.69	54.08
	Constant price	35.19*	29.13*	34.07*	41.91*
Capital intensity	Current price	4.63	4.57	5.73	6.50
	Constant price	4.63*	4.23*	4.68*	5.03*
Raw material intensity		0.79	0.74	0.73	0.68

\*At Constant Price 2008-09=100

The processing industries were also beneficial for the employed workforce where the wages per worker rose from Rs.55600 in 2008 to Rs. 80000 in 2014 (Table 7). The capital intensity of the industries was slightly more (5.03) in 2014 as compared to the year 2008 (4.63), 2010 (4.23) and 2012 (4.68). Capital intensity being more implied the firm/industry was using more capital than before to produce one unit value of output. This can be due to change in technology i.e. investment on new machines in processing sector.

### Conclusion and Policy Implications

There is a lot of scope for strengthening the food processing industry not only in the state but also in the country. A country where agriculture form the main stay of the workforce dependence cannot afford to ignore the contribution of such industries. Further, in states like Punjab which are agrarian economies in nature, these industries should have its presence in each village of Punjab by forward and backward linkages. Agrarian state should have capitalized on the availabilities and expertise of their farming population to develop such food processing industry, which can go long way in addressing the twin problem of

unemployment and absorbing huge production of high value crops so that prices may not fall below certain level. The policies should not only promote the setting up of such industries but also facilitates the smooth running of such enterprises for the benefits of overall economy and its stake holders.

### References

- Anonymous 2008 to 2014. Annual Survey of Industries, *Central Statistical Organization*, Ministry of Planning, Department of Statistics, Government of India
- Johl S S 2011. Sustainable inclusive growth: Need to focus on rural economy, *The Tribune*, January 30.
- Johl S S 2012. Agricultural diversification in Punjab: It is policy paralysis in a soft state, *The Tribune*, June 28.
- Shergil H S and Singh Gurmail 2001. Scope of agro-processing industries in Punjab, *Institute for Development and Communication*, Chandigarh.
- Grover R K, Suhag K S and Aneja D R 1996. Retrospect's and prospects of agro-processing industries in Haryana. *Indian Journal of Agricultural Marketing*, **10**: 10-17
- Chengappa P G 2004. Emerging trends in agro processing in India. *Indian Journal of Agricultural Economics*, **59**: 55-74
- Sidhu M S 2005. Fruit and vegetables processing industry in India-An appraisal of the post reform period. *Economic and Political Weekly*, July 9: 3056-61
- Tripathi K K 2006. Processed food industry in India-Potential and constraints, *Kurukshetra*, **54** : 12-16
- Singh H and Bansal M 2013. Major problems and prospects of food processing industry in Punjab. *International Journal of Management Excellence*, **1** : 7-12
- Sharma K D, Pathania M S and Harbans Lal 2010. Value chain analysis and financial viability of agro processing industries in Himachal Pradesh, *Agricultural Economics Research Review*, **23**: 515-22

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