CHAPTER VIII

SUMMARY, CONCLUSIONS & RECOMMENDATION

Economic development is a nation-wide phenomena. With faster economic development, people of the country can enjoy a higher standard of living and avail better social services. Economic development cannot be achieved without industrialization. India, being an agriculture dominant country, provides basic raw materials to many industries. One of such industries is the food processing industry. The food processing industry has got tremendous possibilities for growth, diversification, and exports. This is viewed as a thrust area for boosting the agricultural economy in particular and the overall economy in general.

Review of literature relating to the food processing industry in Punjab showed that many researchers have tried to study the food processing industry. However, most of the studies relate to various industries coming under the broad category of food processing industry. Not much work has been done to determine the growth and prospects of food processing industry in Punjab. Keeping this in mind, the present study was undertaken to study the growth and prospects of food processing industry in Punjab.

The Objectives of the Study were:

1. To study the government policies vis-a-vis food processing industry.
2. To study the growth of food processing industry in Punjab.
3. To construct the composite index of the level of development of food processing industry in Punjab vis-a-vis other states.

4. To study Profitability of food processing units in Punjab.

5. To recommend suitable policy guidelines for future growth.

For the present study, data has been collected from numerous sources. The basic source of data is Annual Survey of Industries. In order to study the various dimensions of food processing industry in Punjab, 14 industries listed in the industrial code number 20-21 and 22 at 3-digit level were selected. Data pertaining to number of factories, workers, employees, fixed capital, invested capital, wages, emoluments, net value added, net income and net profit was taken and changes in them were studied over the period of time. Structural and technical ratios, which were calculated, are as follows.

1. Fixed capital per factory
2. Workers per factory
3. Invested capital per factory
4. Employees per factory
5. Net Profit per factory
6. Net income per factory
7. Wages per factory
8. Emoluments per factory
9. Net income per employee
10. Net Profit per employee
11. Net value added per employee
12. Fixed capital per employee  
13. Output to invested capital  
14. Net value added to gross output  
15. Net Profit to gross output  
16. Fixed capital to net value added  
17. Emoluments to net value added.

To study the growth of each industry compound growth rate was also calculated. In order to see the productivity of various factors of production, production function was used.

To have a clear picture of the performance of food processing industry in Punjab, it was studied in comparison to other states of the country. For this purpose, ten states were selected and the data pertaining to three years was taken from Annual Survey of Industries.

For this comparison, only twelve industries were taken, as the remaining industries did not exist in many states. Twelve indicators were calculated and as these indicators individually do not give correct picture of the overall development of food processing industry, composite index was calculated by assigning weights derived from factor analysis. Weighted T-score for each indicator was calculated applying the following formula.

\[ T \text{-score} = 50 \pm 10 \left( \frac{X - \bar{X}}{\sigma} \right) \]

The weighted T-score so calculated for each of the indicator was summed up and then divided by the number of indicators to get the weighted
average T-score. Co-efficient of variation was calculated to determine the
degree of variations in the selected twelve indicators. The coefficient of
variations was worked out by the formula given below:

\[ \text{Coefficient of variation} = \frac{\sigma}{\bar{X}} \times 100 \]

On the basis of T-Scores 10 states were categorized as developed and
underdeveloped, and the technique of T-test and discriminant analysis was
applied, to analyze the differential level of development of food processing
industry.

To have a micro view of the food processing industry in Punjab, unit
wise analysis was carried out at factory level. For this purpose the Annual
Reports of the companies were the main source of information. Various
indicators used for this analysis were

1. Current ratio
2. Quick ratio
3. Fixed assets turnover
4. Total assets turnover
5. Working capital turnover
6. Long term debt to net worth
7. Long term debt to total capital
8. Long term debt to total assets
9. Net worth to net fixed assets
10. Net fixed assets to funded debt
11. Return on net worth

Techniques of correlation, regression, factor analysis, T-test and
discriminant analysis was applied to study the profitability of the units.
The study has been divided into 8 chapters. In the first chapter, the problem has been introduced and objectives have been specified. Second chapter relates to government policy and various rules relating to food processing industry. Third chapter reviews the available literature regarding the study. Fourth chapter describes the data base and the research methodology used in the study. Fifth chapter examines the growth achieved by various food processing industries in Punjab. In sixth chapter, the composite index relating to the level of development of food processing industry in Punjab vis-a-vis other states has been developed. In the seventh chapter profitability of food processing units in Punjab is studied. The last chapter summarizes the findings and brings out various recommendations.

Findings

In order to study the level and growth of food processing industry in Punjab the 14 industries (falling in the broad Industrial classification code of 20-21 and 22) were selected and the primary data was taken from A.S.I reports for the years 1976-77 to 1992-93. Structural and technical ratios were also analyzed and to study the trends in the development, compound growth of each of the selected indicator was calculated. It was revealed from the analysis that Punjab’s performance was remarkable in case of some industries coming under the classification of food processing industry, while in case of some other industries the performance was not too good. In case of dairy products industry profits increased to a great extent. Lot of capital deepening took place in the industry as lot of modernization was done and to manage
high-tech machines skilled labour was employed which increased the emoluments. With lot of modernization, output increased but the increase in profit was less than the increase in output. In case of canning and preservation of fruits and vegetables industry, losses have arisen through out the study period. Huge investment in capital and labour could be the reason for such a situation. Punjab performed well over the time period of 16 years. Profits increased over the time period despite the fact that capital invested and emoluments have increased to a great extent. In case of bakery products industry and manufacture and refining of sugar industry, Punjab's position was very good regarding total output and net value added but the industry’s profits were not good. This might be due to large interest payments given on capital invested. Industries relating to edible oils also have very good prospects as high growth rate of total output and net value added exist in this industry. Similar kinds of trends appear in case of ice industry also.

Punjab’s performance was again remarkable in case of malt liquor and malt industry and soft drinks and carbonated water industry. In both these industries invested capital and emoluments increased tremendously. From the analysis it became clear that capital and labour appeared to be two main factors of production and it became essential to study the productivity’s of these two factors of production. From the study of capital productivity and labour productivity taking one at a time it appeared that in case of dairy products industry, canning & preservation of fruits and vegetables industry, hydrogenated oils, vanaspati, ghee etc. industry and soft drinks and
carbonated water industry, capital productivity was more as compared to labour productivity. In case of grain mill products industry, bakery products industry, manufacture and refining of sugar industry, hydrogenated oils, vanaspati, ghee etc. industry, animal feeds industry, food products not elsewhere classified and malt liquor and malt industry labour productivity was more. When capital productivity and labour productivity were studied together then in almost all the industries, except dairy and canning industry, labour productivity appeared to be significant. This shows that labour efficiency increases when the workers work on modernized and sophisticated plants. More over from the study of capital labour ratio over the time period it was seen that capital employed was more than the labour employed in the organization.

Performance of Punjab can be best judged correctly only if it is studied in comparison to other states of the country. For this purpose 10 states were selected and the data was collected from various issues for Annual Survey of Industries for the years 1976-77, 1984-85 and 1992-93. In order to have an over all picture of the level of development eleven variables were selected and various structural and technical ratios were calculated. As the twelve ratios individually do not give the true picture of the over all development, weighted composite index was constructed. For this the weights were calculated by factor analysis technique. It was found that in 1976-77, Punjab got top rank in composite index for dairy products industry. It got second rank in case of canning and preservation of fruits and vegetables industry. It got second rank in case of canning and preservation of fruits and vegetables industry, grain mill products
industry, manufacture & refining of sugar industry and manufacture of other edible oils and fats industry and manufacture of food products not else where classified. Maharashtra was on top rank in case of manufacture and refining of sugar industry, manufacture of hydrogenated oils, vanaspati, ghee etc. industry, manufacture of other edible oils and fats industry and manufacture of soft drinks and carbonated water industry. It was second in case of canning, preservation and processing of fish industry, malt liquor and malt industry and third in case of grain mill products industry and manufacture of food products not else where classified. In the year 1984-85, Punjab's position improved and it appeared on top rank in case of dairy products industry, manufacture of hydrogenated oils, vanaspati, ghee etc. industry, manufacture of food products not else where classified and manufacture of soft drinks and carbonated water industry. Punjab emerged on second rank in case of malt liquor and malt industry and third in case of manufacture and refining of sugar industry. In 1992-93 Punjab emerged on top rank in case of dairy products industry, malt liquor and malt industry and manufacture of food products not elsewhere classified. Punjab got second rank in case of grain mill products industry and manufacture of soft drinks and carbonated water industry. The technique of factor analysis was used to derive the weights of the selected indicators. From the results it was seen that net value added per employee \( (x_5) \) appeared to be very important except in grain mill products industry. Other indicators which appeared as important in descending order were net value added per factory \( (x_3) \), net value added to gross output \( (x_8) \), emoluments per employee \( (x_4) \), net
income to invested capital ($x_{12}$). The variables which didn't turnout to be important were invested capital per factory ($x_1$), invested capital per employee ($x_6$), output to invested capital ($x_7$) and emoluments to net value added ($x_{10}$). It can be inferred that labour productivity plays an important role in the growth of food processing industry in India.

On the basis of T-score states were categorized as developed and under developed, and the technique of T-test and discriminant analysis was applied. T-test is applied in order to determine whether the mean value of two groups of states significantly differ from each other. The findings of T-test showed that net value added per employee ($x_5$) figured out as significant variable in explaining the difference in the level of development of food processing industry in different states. From the discriminant analysis it was seen that labour productivity and capital productivity had emerged as significant indicators in discriminating the two groups of states. It became clear that labour productivity played a significant role in the growth of the food processing industry where as labour productivity and capital productivity both were important in discriminating between the two groups of states.

After having the macro view of the food processing industry, it was important to have the micro view of food processing industry in Punjab. For this purpose, unit wise analysis was carried out at factory level. In Punjab, majority of food processing units are in co-operative sector so it was thought essential to have a comparative study of performance of private and co-operative sector. For this the Annual Reports of the companies were the main
source of information. 32 companies were selected and eleven ratios were applied on the data of these companies. In order to study the profitability, of the firms, three techniques namely correlation, regression and factor analysis were used. Technique of T-test was used to know whether significant difference exists between the mean values of two groups of firms. The technique of discriminant analysis was used to isolate various factors in discriminating between the high profitability firms and low profitability firms. From the analysis it was seen that in the year 1988-89, for private sector units, long term debt to total assets ($x_6$), long term debt to net worth ($x_7$) and long term debt to total capital ($x_8$) emerged as significant factors. All these are debt related indicators, and hence debt played a very important role in affecting the profitability of the food processing units in Punjab during 1988-89. In the year 1991-92, debt related indicator i.e.; long term debt to net worth ($x_7$) emerged as an important indicator. This depicts that over the period of time the significance of other debt related indicators declined where as in 1994-95, debt related indicators not only became insignificant but their relationship with profitability also became positive. This clearly shows that in 1988-89, the profits declined with more and more use of debt and over the time period the units started monitoring their funds properly and with the result of this the utilization of debt showed a positive response. On the other hand current ratio became significant in 1994-95 which shows that proper management of working capital increase the profits to a great extent. Similarly, according to univariate analysis also, debt related indicators
appeared to be significant in 1988-89 and 1991-92 whereas in 1994-95, current ratio appeared to be significant.

In case of co-operative sector units, it was seen that in the year 1988-89 and 1991-92 debt related indicators appeared to be significant but there were some other indicators, which appeared to be more significant. These were fixed assets turnover ($x_3$), total assets turnover ($x_4$), current ratio ($x_1$) and working capital turnover ($x_5$). So the efficiency of the assets play a major role in the working of the organization. In other words, we can say that in case of co-operative sector units, the efficiency related indicators had got significant correlation with profitability of the units. The results of univariate regression analysis were in conformity with the results of correlation analysis.

When the correlation analysis and univariate regression analysis techniques were applied on all the units taken together, it was seen from the correlation analysis for the year 1988-89, debt related indicators appeared to be significant. In 1991-92, along with debt related indicators, liquid ratio also emerged as an important indicator. In the year 1994-95, all the three debt related indicators i.e., $x_6$, $x_7$, $x_8$ were significantly correlated amongst themselves and they were not significantly related with return on net worth. In case of univariate analysis debt related indicators and turnover related indicators appeared to be important.

From the step wise multiple regression analysis, it became clear that in case of private sector units, in the year 1988-89, long term debt to total assets ($x_6$), long term debt to total capital ($x_8$), liquid ratio ($x_2$) and net worth to net
fixed assets \( x_9 \) appeared as significant indicators. In 1991-92, significant indicators were long term debt to net worth \( x_7 \), long term debt to total capital \( x_8 \), working capital turnover \( x_5 \) and long term debt to total assets \( x_6 \). In the year 1994-95, the situation changed and the significant indicators were current ratio \( x_1 \), liquid ratio \( x_2 \), long term debt to total capital \( x_8 \) and fixed assets turnover \( x_3 \) so it can be said that on a whole, debt and liquidity related indicators appeared to be more significant.

In case of co-operative sector units, debt and turnover related indicators appeared to be significant in all the three years. When the analysis was done on all the units taken together, it appeared that in the year 1988-89 and 1991-92 debt and turn over related indicators emerged to be important, where as in the year 1994-95 debt and liquidity related indicators were significant.

On the basis of factor analysis it was seen that in the year 1988-89, \( x_7 \), \( x_6 \) and \( x_8 \) appeared to be significant indicators in case of private sector units. For co-operative sector, debt and liquidity related indicators appeared to be most important. In the year 1991-92, for private sector units \( x_6 \), \( x_3 \) and \( x_7 \) are the indicators which appeared to be significant, whereas turnover related indicators appeared to be significant in co-operative sector units and in 1994-95, liquidity and turnover related indicators emerged as significant indicators.

Method of financing the assets emerged as a important factor in distinguishing between the private and co-operative units. Units with better liquidity position were having higher profitability and the units with poor
liquidity position earned relatively less profits. From the discriminant analysis also similar kind of results emerged. Liquidity of the units and financing of fixed assets by using long term debt emerged as significant factors in discriminating between the two groups on the basis of ownership and debt related variables were significant in discriminating between the two groups of units on the basis of profitability. More over liquidity of the units and their ability to convert the assets into sales were also significant in discriminating the two groups on the basis of profitability.

**Recommendations**

It is seen from the analysis of Punjab economy that the state has achieved quite a high level of economic development, in the sense that it is one of the affluent states of India. In terms of capital income, its position is highest and the position of Punjab as compared with other states is also very good, but still it is considered that the state is industrially backward. This becomes clear if we compare the level of industrial development with other sectors of the economy. The performance of industrial sector is not commensurate with the agricultural or tertiary sector. It is seen that not much large-scale industries exist in the state and not much employment has been absorbed in the industrial sector. Punjab is showing signs of relatively developed service sector. This is mainly because the surpluses generated by agricultural development have gone to the service sector. This has also led to the widespread growth of educational system in Punjab, which has led to an
increase in educated class, but the economy is not so developed to absorb the growing educated force. Educational institutions in Punjab are among the best educational institutions in the country and they produce best engineers and MBA's of the country. Due to non-existence of the industries in the state these graduates migrate to other states where more industries are existing. When the industrial sector develops, more and more skilled labour will be available from within the state. More over the outlay in the various five-year plans for the industrial sector was very less, as the state efforts was more concerned on the development of agricultural sector. This way the state emerged as a high-income society with highly developed service sector. Hence the society which did not follow the normal process of development and reached at a high level of development is bound to create various serious problems. Therefore it is very essential that as development proceeds, with the support of agricultural sector, it must be followed by industrialization programs, which should also sustain and support agricultural development. On the other hand it should lead to development of service sector. The main focus should be Agricultural led - Human Resource based integrative industrialization. This policy will accelerate the process of integration of Punjab's industry with two major sectors of Punjab's economy - agriculture and service sector. Now the questions arises that what kind of industries should be promoted so that the agriculture and industrial sector, both develops simultaneously.

Food processing industry is one such industry, which acts as a link between agricultural and industrial sector. This industry along with boosting
the agricultural sector develops the industrial sector of the state and creates employment. Efforts must be made to develop such industries so the following recommendations are given to promote the food processing industry in Punjab.

1. For variety improvement in agricultural and horticultural produce, there is need to have tie-ups with agriculturally developed countries and liberal import of seeds should be allowed. This will enhance the production of good quality products, which will make them suitable for processing industry. This will result in good quality processed foods which are competitive in export markets. Investment in new and developed technology is the need of the hour. This will not only increase the yield of existing crops but will also diversify the crops toward horticulture produce. Efforts must be made to strengthen the research system at national level through various technical and educational institutions. This will benefit the small and marginal farmers who can not afford the huge research expenditure.

2. Various infrastructural facilities like fertilizers, electricity, water, seeds etc are given at subsidized rates to the farmers in Punjab. Over the time period the subsidies granted on various fronts have increased. Debate is going on whether the subsidies should be abolished completely or they should exist. It is proposed that the subsidies granted to the farmers should continue in future also as the subsidies remained negative over
3. Cropping pattern of the state must be shifted from wheat to fruits and vegetables. At present very negligible area is allocated to fruits and vegetables. The change in cropping pattern will have dual benefit. First of all it will assure ready supply of the raw material to the food processing industry and secondly it will generate employment in the agricultural sector also as the fruits and vegetables have shorter cropping period as compared to wheat. So there will be more rotations of crop and more men will be needed for different jobs.

4. Agro industrial development of the state should form the basis of food processing industries. For this the word 'agriculture' would have to be taken to mean not only crops but also the allied fields of horticulture, animal husbandry, poultry development and fisheries etc. For the purpose of development of these allied activities, these must be regarded at par with the agricultural sector regarding various incentives and facilities available to agriculture sector.

5. The government in the past has granted various exemptions on excise and sales tax but still these duties are very high. On an average 10 per cent of excise duty and 8 per cent of sales tax is levied on the food processing products which is quite a high rate. Government should either reduce the taxes to the minimum or should abolish all the taxes on food processing industry. In order to have ready market for...
processed foods, food-processing industry should be brought at par with agricultural produce. This is essential because a rational consumer wants the product of good quality at cheaper price. Reduction in duties will also avoid unnecessary transportation of fruits and vegetables. This way saving on account of fuel, pollution, deterioration of quality etc are generated. Moreover the duties imposed on the machinery used in food processing industry must also be reduced as the burden of taxes and duties are passed on to the consumers which makes the products expensive.

6. Packaging cost accounts for major chunk of the total cost of processed foods. High rates of duties are levied on packaging material which makes the processed foods expensive, so the government must at least reduce the duties on packaging material used in the food processing industry. Moreover efforts must be made to import the machinery for manufacturing packaging material at the lowest cost. Further various incentives must be given to manufacture machinery for packaging material.

7. Food processing industry enjoys competitive advantage over other industries. In many other developed industries in Punjab the raw material does not generate from within the state. A typical example of this is cycle industry. Raw material for food processing industry is available in the state itself, as Punjab is agricultural dominant state so this will result in backward linkage. Moreover due to non-
transportation of agricultural produce to other states, transportation cost will be minimum and there will not be spoilage of goods and deterioration of quality. Further due to developed service sector and being economically developed state there is no problem of the finished goods to be sold. Moreover the processed food can be exported to other states as well as other countries. This is because the transportation of raw material to other states is very expensive as compared to the transportation of finished products.

8. Processed foods have a tremendous scope in the coming years in India and abroad. The target group of the processed foods industry is the families having working couples and all those families which require convenience food at one or the other point of time. With this target group we can say that the foreign countries posses huge market for the processed foods and India is at an advantage as India is an agricultural dominant society. Punjab Agro Export Corporation and PSIEC must be made the nodal agencies so that various export units export their produce through them. This way these units are saved of various problems hindering the exports. For further boosting exports of processed food products, there is need to have international airports at Chandigarh and Amritsar, cargo facilities at Kandla port, freight subsidy for exports etc.

9. From the analysis it became clear that when labour and capital productivity’s were studied keeping one factor of production as
constant it was found that in few industries capital productivity is more as compared to capital productivity. When both the factors of production were studied taken together labour productivity becomes more significant. This depicts that labour productivity increases when the labour works on modernized plants. Further it was seen that capital employed in the business was more as compared to the labour throughout the study period and in many industries labour productivity was more. This again supports the view that labour productivity increases when the labour works on modernized and sophisticated machines. The efforts must be made to increase the labour productivity in isolation also because the labour efficiency is not increasing in itself, it is only increasing while working on hi-tech plant. This shows that it is capital productivity and not labour productivity which is increasing. Labour productivity can be increased only by having proper monitoring of results and follow up action.

10. In any industry those units progress which have a good management network and quick decision making policies. In case of food processing industry in the state of Punjab, many units are in co-operative sector. In case of co-operatives the top level management is influenced by political environment. This delays the decision-making process and more over there is inefficient follow up action. This significantly affects the profitability of the units. The location of the units is also influenced by political decisions. This way the plant and
the raw material are located at different places so the transportation cost, wastage of raw material increases. Appointment of top level management is also affected by political environment. Efforts must be made to have the top-level management from within the organization or those persons who have knowledge about the units and the production process both.

11. To create generic demand in case of processed food items, education of the people is very essential. Education must be given by the central government regarding the use of various processed food items hygienically prepared and packed. Unless such kind of education is there, people will not be willing to look at the processed food at par with self-cooked foods. Another way to create demand is to conduct research on the behavioral tastes. This will help to develop the products best suited to the people’s taste and preferences.

12. Long term debt plays a significant role in the working of the private sector units. From the analysis it is clear that on a whole the debt is significantly correlated with profitability. For two time periods the inverse relationship exists between debt and profitability. This shows that as the company’s increase the proportion of debt profits reduce and vice-versa. In other words majority of the companies employ the debt at higher rate of interest as compared to the earning rate of interest of the company. This shows that the company’s financial position is not very sound and not enough cushion is available for the equity
shareholders. These companies must be highlighted and disbursement of funds must be done after proper evaluation of the earning capacity of the units. In the last year of the study period, debt related indicators became positively correlated with profitability. It depicts that financial institutions are taking some steps to recover their money from the defaulting units. This is the reason why companies have started employing debt only after viewing their earning capacity.

13. In Punjab some industries are performing very well. These are dairy products industry, malt liquor and malt industry, manufacture of soft drinks and carbonated water industry, ice industry etc. Efforts must be made to strengthen these industries as these will make the Punjab's industrial sector strong where as in case of some industries like canning and preservation of fruits and vegetables industry, manufacture and refining of sugar industry, tea industry, animal feeds industry, starch industry etc. Punjab's position is not satisfactory. Efforts must be made to monitor the results of these industries in order to take steps to improve the performance of these industries.

14. In order to boost the food processing industry, efforts must be made to encourage contract farming. Clear cut example of contract farming is a joint venture of Pepsi Company in Punjab cultivating tomatoes. In this method there are no middlemen and there is direct relationship between producer and processor. By contracting, the buyer avoids the risk of availability of raw material and the farmer reduces the risk of
market demand and prices of his produce. These types of contracts are best suited for food processing industries, as the raw material needed in this industry is highly perishable and seasonal in nature.

15. Development of infrastructure is core to the development of any industrialization program. For that, better roads be encouraged or at least the existing network of roads must be strengthened. There is a urgent and unavoidable need to have refrigerated trucks etc. without which the food processing industry cannot exist.