ECONOMICS OF FOOD PROCESSING INDUSTRIES IN KERALA WITH PARTICULAR REFERENCE TO FRUIT AND VEGETABLE PROCESSING INDUSTRY

THESIS SUBMITTED TO THE UNIVERSITY OF CALICUT
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CERTIFICATE

I certify that the work entitled "Economics of Food Processing Industries in Kerala - with particular reference to Fruit and Vegetable Processing Industry" is a bonafide piece of research work done by Sri. C.B. RAJEEV under my supervision. The thesis is worth submitting for the Degree of Doctor of Philosophy in Economics.

THRISSUR
DATE: 12/10/98

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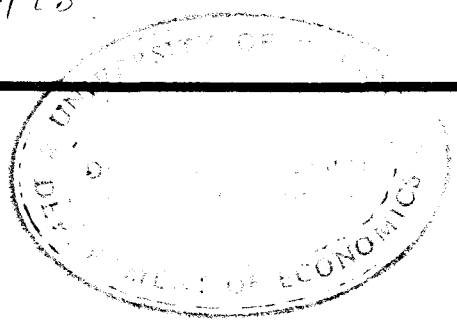

DECLARATION

I Declare that this thesis is the record of bonafide research work done by me under the supervision of Dr.A.C. KUTTYKRISHNAN, Professor of Economics, Dr. John Mathai Centre, University of Calicut, Thrissur. I further declare that this thesis or any part of it has not previously formed the basis for the award of any diploma, degree, associateship, fellowship or other title of recognition.

Thrissur,
Date: 12/10/98

C.B. RAJEEV

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INTRODUCTION

Rajeev C.B. “Economics of food processing industries in Kerala with particular reference to fruit and vegetable processing industry ” Thesis. Department of Economics , Dr. John Mathai Centre Thrissur, University of Calicut, 1998

CHAPTER - I

INTRODUCTION

The development process in third world countries has been observed to be correlated with the degree of industrialization. [Kuznets Simon, 1965] In such economies the case for rapid industrialization is all the more important considering the inability of agriculture sector to absorb the increasing number of unemployed. In this context, the Food Processing Industries [FPI's] play crucial role in the industrialization process of developing regions in the initial stages of economic development. These industries contribute more than ten percent of global industrial output and accounts for about seven percent of global trade. They absorb about twelve percent of industrial laborers globally. [Ruth Rama, 1992 : 3]

FPI's assume great significance for agrarian economies like India on several counts. The setting up of these industries is strategic in preventing loss of perishable agricultural produces. For instance India loses about thirty percent of food resources like cereals, fruits, vegetables, fish, milk etc. every year for want of proper storage and processing facilities. [Patnaik Gokul, 1995: 192]. Another advantage of FPI's is their ability to process surplus products which prevent glut in the harvesting seasons. This in turn provides remunerative prices for farmers. The increased facilities for food processing in the rural areas induce rural industrialization and consequent benefits of increased generation of employment and income. They also contribute substantially in earning foreign exchanges by way of exports. FPI's also help to provide relief to house wives from the drudgery of cooking food as conveniece food is made

available. Thus looked from several angles, development of FPI's assume much significance. No doubt, at present the sector has become attractive to even Transnational Corporations (TNC's) like Pepsi, Heinz, Saralee, and Co cocola. They have accelerated the rate of investment in this emerging sector in third world countries like India.

In this context, a study on the Economics of Food Processing Industries in Kerala with reference to fruit and vegetable processing assumes great significance. This introductory chapter briefly discusses the nature and classification of FPI's, its historical development, the current status of FPI's in India and Kerala. The role of Foreign Direct investments [FDI] in FPIs will also find a reflection in this chapter.

I : I Nature and Classification of FPI's.

FPI's are defined as those industries which transform food materials in to edible commodities by utilizing the different methods of processing like drying, freezing, pickling, canning, fermenting, and extruding. These industries process vegetables, fruits, cereals, pulses, milk, fish, and meat into convenient and edible forms for human consumption [Aboot J.C ; 1988 : 21].

As regards the classification of FPI's, there are different approaches. On the basis of the degree of processing, Peemans classified FPI's in to three broad categories such as primary, secondary, and tertiary processors [Peemans J . P, 1985]. Primary processors poduce simple homogeneous products like ghee, flour, oils, and fats and sugar by making use of elementary methods of processing. Secondary processors utilize sophisticated techniques and produce diversified products such as chocolates, jams, and soft drinks. Tertiary processors utilize costly mode of

processing to manufacture food like infant foods, break fast cereals, and noodles.

Central Statistical Organization's, (CSO) new industrial classification 1987, (NIC) categories FPI's in India in to twenty groups on the basis of the raw materials utilized for processing. These are grouped under NIC codes 200 - 219 [see the Annexure 1 for these group of industries]. These three digit level codes are further subdivided in to four digit level codes [Govt. Of India, Central Statistical organization, 1988-89, Appendix]

1 : 2 Historical development of FPI's

Historical evidence suggest that several factors contributed to the development of the FPI's at the global level.[Baron C.G; 1980:16-17]. Originally primitive man may have quite accidentally noted that cooked food was tastier than uncooked food. This led him to experiment with smoking meat / fish for storing it for long time. In order to cook food, he searched for a container which made him to manufacture earthen pots. Natural processes like freezing of fruits / fish / meat in cold regions and drying of fruits / nuts / grains motivated him to adopt these methods for preserving food. As time passed, man through trial and error method mastered other preserving techniques like salting, fermenting and adding spices to change the flavor and taste of food. Reliable sources point out the fact that hand pounding of cereals and pressing of oil seeds to produce edible oils also started very early. In ancient Rome, processing of food was done commercially to cater to the needs of travellers and merchants. [Mortimer Wheeler, 1954] The spirit of adventure and explorations witnessed in Europe with the development of shipping transport in European countries like Spain, Portugal, France, Britain and Netherlands during the "long

sixteenth century " have further accelerated the demand for processed foods as ships bound for Asia, Australia, and America have to store processed food for months for the journey. It is to be mentioned that food processing activities during this era was carried out not only in households but also in village level units and by small scale plants in the towns.

With the onset of industrial revolution in Continental Europe, there was an accelerated development of FPI's. The emergence of large scale factories and urban centers naturally increased the number of people living away from rural areas. Improved transport facilities like roads and railways helped the setting up of large scale food processing factories in cities and towns. This was in order to ensure that the urban population received the food they required in all the seasons.

With the passage of time, technology of food processing also underwent revolutionary changes. The food technologists introduced innovations in processing and packing to preserve foods hygienically and in good quality.

The entry of TNC's in the late nineteenth century in U S A and western Europe also accelerated the expansion of food processing activity around the globe. [Horst Thomas : 1974]. As the TNC's have world wide net work for distribution and established brand loyalties by constant advertisement, they began to exert considerable influence in developing food processing industries in developed and developing countries. [Marton Katherine, 1986 ; Rama Ruth, 1992]

Another factor that fuelled the increase in demand for processed food came from the increased female participation in economic activities. House wives began to take up jobs outside home, in offices, schools, colleges and factories to support the households. As this imposed

time constraint for home cooking, they increasingly relied on the processed food items to supplement the home cooked meals.

Research studies have also revealed that as economic development proceeds, average income of people increased which also encouraged them to consume more processed food. This naturally resulted in a cumulative rise in the share of processed foods in the total food consumption. [Baron C. G. 1980 : 357].

In recent times, technological advances like membrane technology and biotechnology have profoundly aided the development of FPI's globally. [Rama Ruth 1992] These technologies permit the breakdown of food into components that can be further processed into different food items. They also enable many food processors to rely on cheap substitutes for various raw materials imported. It is claimed by food scientists that by 2000 A D, substitutes for hot beverages like coffee, tea, and cocoa may be commercially produced. [Bull .A. etal, 1982]

It is therefore clear that the development of FPI's have been significantly promoted by a host of factors like industrialization, urbanization, increased participation of female workers in economic activity and innovations in technology of processing food. It is also true that changes in tastes and preferences of consumers over time also influenced the nature of food processed by the processing industries around the world. In the years to come , the FPI's are poised to assume new dimensions in respect of structure and growth.

1 : 3 Status of FPIs.

The global production of processed foods in 1992 was valued at about one thousand five hundred billion dollars which accounted for more than ten percent of global industrial output [The

Economist, 1993] Table 1:1 presents the shares of selected countries. From the table it can be observed that developed countries account for more than seventy percent of the total global output of processed food. In sharp contrast to this, the highly populous economies like China and India have lower shares in the manufacture of processed food products. It is thus obvious that developed economies dominate in the production of processed food.

Table I : 1

Global output of processed food, 1992

	Region / Country	Value of out put (in billion)US dollars	Percent
I	Developed Countries		
	(a) USA	104	6.9
	(b) Japan	75	5
	(c) Germany	34	2.3
	(d) France	26	1.7
	(e) Others	820	54.7
	Sub Total	1059	70.6
II	Developing Countries		
	(a) China	17	1.1
	(b) Brazil	14	0.9
	(c) Mexico	11	0.7
	(d) India	4	0.3
	(e) Others	395	26.4
	Sub Total	441	29.4
	Grand Total	1500	100

Source : The Economist, World in Figures 1993 as reproduced in U. N. E. P industry and Environment, January - March 1995, p - 4.

It has been estimated that the share of processed foods in total world trade is about seven percent in 1992 [U.N.E.P ;1995 : 4].Table 1 : 2 shows the shares of selected countries in the global trade of

processed foods. As can be observed fron the table, there was the dominance of developed countries in the global trade in processed food as seventy two percent of such trade was accounted by developed economies. Though eighty percent of world population resides in developing countries, they accounted for only twenty eight percent of global trade in processed food.

Table 1 :2

World Trade in Processed Food 1992.

Value in US billion dollars.

	Regions	Exports	Imports	Total	Percentage Share
	1	2	3	4	5
I	Developed economies				
	(a) North America	41	23	64	13.6
	(b) West Europe	126	135	261	55.5
	(c) Australia & New Zealand	11	2	13	2.8
	Sub Total	178	160	338	71.9
II	Developing economies				
	(a) Asia	30	51	81	17.2
	(b) Africa	5	10	15	3.2
	(c) Latin America	22	14	36	7.7
	Sub Total	57	75	132	28.1
	Total	235	235	470	100

Column (5) shows the percent share of country region in the total trade [Exports + Imports]

Source : Ibid, p - 5

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Table I : 3

A Profile of Transnationals in FPI, 1992

Sl. No.	Name of the Corporation	Sales in Billion US Dollars	Major area of operation	Share in world production
1	Nestle	37.6	Milk food	2.6
2	Unilever	22.5	Oils, fats,beverages	1.6
3	Pepsico	13.7	Soft drinks	0.97
4	Coco cola	13.1	Soft drinks	0.92
5	B. S. N.	12.4	Breakfast cereals	0.87
6	Grand Metropolitan	9.7	Noodles, Corn flakes	0.68
7	RJR Nabisco	6.7	Bakery products	0.47
8	Sara lee	6.6	Convenience foods	0.46
9	CPC International	6.58	Marine foods	0.46
10	Heinz	6.56	Tomato paste and spices	0.46
	Total	135.44		9.0

Source Ibid, Page 5.

Table 1 : 4

Output of Processed Food, Product wise in 1990.

[Value in Rs. millions.]

Name of the Products	Value of Output	Percent share in processed food output	Percent share in total industrial output
Dairy products	26,380	14.7	1.4
Processed fruits and Vegetables	3,860	2.15	0.2
Gramill products	5,570	3.10	0.3
Bakery products	6,100	3.40	0.3
Refined sugar	55,000	30.65	3.0
Vanaspati	22,230	12.39	1.2
Tea	20,340	11.33	1.1
Other food products	11,920	6.64	0.7
Total output of processed food	179,460	100	9.7
Grand total for all	1,843,490		

Source : Center for Monitoring Indian Economy (CMIE) 1995.
India's Industrial Sector p : 156.

Another note worthy fact that emerges from the table is that countries from North America, Latin America, and Oceania were the net exporters of processed food where as countries from Europe, Asia, and Africa were the net importers of processed food.

A profile of T N C's in F P I's is shown in Table 1 : 3. The combained sales of ten largest TNC's in FPIs come to over 135 billion dollars which accounted for nine percent of global productions of processed foods in 1992. The largest TNC, Nestle has foreign affiliates in over thirty countries of Asia, Africa, and Latin America. All the other food

transnationals are having conspicuous presence in the developing countries of the world. [Marton Katherin : 1986 ; 103 - 109]

Having seen the general trends in the production of processed food globally, we may turn our attention to the FPI's in India.Table 1 : 4, shows the value of processed food products in India. As can be seen from the table, the output in the year 1989-'90 was estimated to be Rs. one hundred and eighty billion which came to about ten percent of aggregate industrial output in India. Coming to the output composition, it can be observed that sugar, edible oils, dairy products, vanaspathi, and tea constituted more than eighty four percent of total foods manufactured in the country.

Table 1 : 5

Share of Registered and Unregistered Sector in Food Processing Industries in India. 1980 - to '90 - '91.

Years	Registered	Unregistered	Total
1980 - '81	61.8	31.2	100
1982 - '83	74.1	25.9	100
1984 - '85	73.9	26.1	100
1985 - '86	73.4	26.6	100
1986 - '87	74.2	25.8	100
1987 - '88	75.2	24.8	100
1989 - '90	75.2	24.8	100
1990 - '91	78.8	21.2	100

Note : The shares are estimated on the basis of value added by each sector at constant prices.

Sources : Govt. Of India, National Accounts Statistics, 1993.

The FPI's in India, can be broadly classified in to organized and unorganized sectors. The relative importance of these two sectors can be observed from Table 1: 5. The share of the registered sector was on the rise over the period of study from about sixty two percent in 1980-81, to about seventy nine in 90-91. Thus the organized sector has come to dominate in the food processing sector in India.

Table 1 : 6
Growth of FPI 's in India

Parameters	1973 - '74		1989 - '90		Growth rate	
	F P Is	All Industries	F P Is	All Industries	F P Is	All Industries
1	2	3	4	5	6	7
No. of factories	13,509 [21.1]	84,133	19,342 [17.9]	1,07,992	43.2	28.3
Productive Capital (Rs. Crores)	851 [5.5]	15,375	7,611 [5.3]	1,40,991	794.3	817
No. of Employees	6,95,360 [11.9]	58,20,109	10,84,102 [13.3]	81,42,550	55.9	39.9
Net value added (Rs. crores)	320 [6.9]	4,633	3,975 [9.2]	43,373	1142.2	836.2

(Figures in brackets present respective shares)

Source : Govt. of India, C. S. O. Annual survey of Industries Summary results for Factory Sector 1973 - '74 and 1989 - '90.

Notes : Col. [2] and [4] gives selected features of FPIs in India for the year 1973 - '74 and 1989 - '90.
Col. [3] and [5] presents selected features of all Industries in India for the year 1973 - '74 and 1989 - '90.
Col. [6] and [7] presents the annual growth rate of FPIs and All industries during the reference period

Table 1 : 6 presents the growth of factory sector of FPI's in India from 1973 -'74 to 1989 -'90 in terms of number of

factories,number of employees, productive capital and net value added. From columns 6 and 7, it can be seen that the growth of FPI's in terms of all parameters except the productive capital has been much higher than the aggregate industrial sector. Only in respect of the productive capital, the FPI's showed a marginally lower rate of growth than the total industrial sector. Thus the growth performance of FPI's has been remarkable over the period 1973 -'74 to 89 -'90. Thus the FPI's has emerged as one of the significant sector in the industrial profile of India during the reference period.

Table 1 : 7

Exports of selected processed foods from India,

Commodity wise, 1980 - '91.

(Value of exports in Rs. Crores)

Commodity	1980	1991	Growth rate
1	2	3	4
Meat preparations	67	94	40.3
Fish preparations	242	579	139.3
Cereal preparations	201	391	94.5
Processed vegetables and fruits	259	370	42.8
Coffee and its substitutes	271	135	-50.2
Spices	156	121	-22.4
Total	1648	2176	32

Source : U.N. International Trade statistics Year Book, 1991 as collected from Economic Survey 1993 -'94. Ministry of Finance, Govt. of India.

Note : Col. 1 gives the product categories.

FPIs also contribute substantially to the foreign exchange resources of the country. The product wise exports are depicted in Table 1 : 7. The value of exports have recorded thirty two percent growth over the period under study. Coming to product wise growth rates, it can be observed that fish preparations recorded the highest growth followed by cereal preparations, processed fruits / vegetables, meat products and tea. Only in the cases of coffee and spices there was decline in the export value over the reference period. However it is to be mentioned that though there was an absolute increase in the exports of processed foods from India, their share in global trade has declined during the 1980's [Govt. Of India, Planning Commission. 1992 vol. II. Chap - VI].

Table 1 : 8

State wise F D I approvals in Food Processing Sector

Name of the state	Rs. in million	Percent
1. Maharashtra	24350	38.8
2. Punjab	4910	7.8
3. Tamil Nadu	4790	7.6
4. Uttarpredesh	4040	6.4
5. Andhra Pradesh	2070	3.3
6. Hariyana	1360	2.2
7. Gujarat	1130	1.8
8. Himachal Pradesh	920	1.5
9. Madhya Predesh	890	1.4
10. Karnataka	740	1.2
11. Kerala	320	0.5
12.Other States	17240	27.5
Grand Total	62760	100

Source : Assocham Parliam entary Digest,. Feb. 1-7-,97, P : 69

In this context, it is relevant to examine the role of foreign direct investments in FPIs in India. It is estimated that during the post liberalization phase 1991 -'96, the Govt. of India approved Rs. Seven hundred and eighty two billions as total FDI [Ganesh S 1997 : 1266].Out of this, FPIs account for Rs sixty three billions.(eight percent of total FDI approvals). The state wise distribution of the flow of FDI in FPI's is depicted in Table 1 : 8. It is clear from the table, that four states [Maharashtra, Punjab, Tamilnadu, and U P] alone attracted more than sixty percent of FDI in Food processing sector. Kerala state's share was less than one percent of the proposed FDI in FPIs.

Table I : 9

Product wise details of F D I approvals in Food Processing

	Sector	Investment in millions of Rupees	Percent
1	Fruit / Vegetable processing	7610	12.1
2	Grain milling	7080	11.3
3	Meat processing	6960	11.1
4	Alcohol	6370	10.1
5	Milk products	5970	9.5
6	Fish processing	5490	8.7
7	Other food products	23280	37.1
	Total	62760	100

Source : Assocham parliamentary digest, Feb. 1997, p: 68 - 70.

The break up of FDI in FPIs by product wise is presented in Table 1 : 9. The highest share was in fruit and vegetable processing followed by grain mill processing, meat processing, alcoholic beverages, milk products and fish processing.

In this respect, it is pertinent to observe that there is wide spread apprehension that the entry of transnational corporations like Unilever, Nestle, Coca-Cola, PepsiCo, Cadbury, Heinz and Nabisco in FPIs may lead to the demise of indigenous firms in certain product lines. A series of mergers and takeovers have taken place in the Indian FPIs rendering support to such an apprehension. To note, several national brands have been taken over by TNCs. Thus in the ice cream industry, domestic firms like Kwality and Milk food have been under the control of a Unilever group company, Brooke Bond Lipton India Limited (BBLIL) so that the WALLS brand ice-cream gets marketing support. BBLIL established a frozen dessert factory in Nassik and also acquired Dollops from Cadburys. With these acquisitions, Hindustan Lever has gained a dominant market share in ice-cream business. As a direct consequence of this dominance, the growth and even the survival of small scale / cottage scale units manufacturing ice-creams for local markets will be adversely affected. Soft drinks industry is now under the complete domination of two TNC's, Coco-cola and PepsiCo Inc. after the liberalization of FDI policy. As regards the proceeded fruit / vegetable market, Unilever, Nestle and Pepsi have considerable shares which in the long run affect the development of small size firms at the local and regional levels.[CMIE : India's Industrial sector January 1996 ; Chaudhuri Sudip, 1996.].

The increased flow of FDI also aided the transnationals like Nestle, Glaxo, Smith Kline Beechan, Cadbury to increase

their market shares in milk products and confectioneries. Their strategy was to strike strategic alliances with domestic forms or to acquire marketing and production facilities of indigenous firms. [Rajeev C .B. 1997 : 5]

Table I : 10

F P Is in Kerala 1989 -'90

Shares are in percentage terms.

NIC		Category of FPIs	No. of factories	Productive capital	No. of employees	Value of output	Net value added
1	201	Dairy products	3.5	5.3	1.40	7.2	4.40
2	202	Processed fruits and vegetables	1.9	0.9	0.50	0.3	0.30
3	204	Fish products	16.6	11.9	3.20	15.1	8.00
4	205	Grain milling	16	6.3	9.50	5.2	1.20
5	207	Bakery products	2.6	3.5	0.20	1.4	1.60
6	209	Khandsari, gur etc.	0.5	0.4	0.25	0.2	0.20
7	211	Cocoa products	0.5	0.7	0.05	0.3	0.30
8	213	Oils & fats	5.6	15	1.70	14.7	15.40
9	214	Tea processing	11.4	31.2	6.30	15.9	32.06
10	215	Coffee processing	0.7	0.7	0.60	0.1	0.50
11	216	Edible nuts	46.8	22.8	69.60	32.2	31.70
12	218	Ice manufacture	0.5	0.3	0.40	0.2	0.14
13	219	Starch	0.9	3.4	4.70	1.7	Neg
14		Miscellaneous [200, 206, 210, 212 & 217]	3.7	2.6	1.60	5.5	4.2
			100	100	100	100	100

Source : Govt. of India, C. S. O. Annual Survey of Industries 1989 - '90

State X Industry. Shares are computed therefrom.

Thus the increased FDI flows to FPIs, pose grave threats to the survival and continued existence of several Indian firms. Further, as the TNC's have huge resources at their command, wide marketing channels and better sales promotion strategies, they can easily influence the people. No doubt, consumerism is on the rise.

It has been pointed out that Govt. of India is indifferent to the cause of domestic firms. Though East Asian countries liberalized their foreign investment policies, they never allowed unrestricted entry to TNC's as is being done by India. [Chaudhari Sudip 1995 : 999-1001]

Coming to our study area, Kerala is in general industrially backward. [Subramanian K. K, 1994] In the industrial structure of the state, FPI's play a significant role. It has been observed that the FPI's constituted about sixteen percent of total factories, provided employment about thirty percent of total workers, invested around six percent of fixed capital and contributed eleven percent of the net value added. It has also been noted that FPI's in Kerala account for less than three percent of total factories in India, employed less than two percent of total workers, employed less than two percent of productive capital and created about four percent of net value added [Joseph K.V 1996 ; 5]

A profile of FPIs in Kerala is depicted in Table 1:10. Tea processing employed largest productive capital followed by edible oils, fish products and grain milling. In respect of employment creation, processing of edible nuts (mainly cashew nut) has the highest share at 69.6 percent followed by grain milling, tea processing, starch production and fish processing. Edible nut processing accounted for the largest share in value of out put followed by tea processing, oils, fish products and oil processing.

The highest share of value added was in tea processing followed by edible nuts, oils and fats and fish processing.

From the above table, it was obvious that from the perspective of value addition process, tea processing, cashew nut processing and manufacture of oils and fats were the principal food processing industries contributing to about eighty percent of net value added by the FPIs. These three account for sixty nine percent of productive capital employed in FPIs. Cashew nut processing factories alone provide employment to about seventy percent of employees in FPIs.

The fruit and vegetable processing industry in the FPI's in Kerala accounted for about two percent of the number of factories, less than one percent of productive capital, 0.5 percent of the number of the employees, 0.3 percent of value of out put and net value added. Thus, the share of factory sector of fruit and vegetable processing industry in Kerala was indeed very small.

It is clear that FPIs in India has a significant role to play in the economic utilization of food resources, in the generation of more employment and creation of more value.

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OBJECTIVES, METHODOLOGY AND REVIEW OF LITERATURE

Rajeev C.B. “Economics of food processing industries in Kerala with particular reference to fruit and vegetable processing industry ” Thesis. Department of Economics , Dr. John Mathai Centre Thrissur, University of Calicut, 1998

CHAPTER - II

OBJECTIVES, METHODOLOGY AND REVIEW OF LITERATURE

In this chapter, an outline of the research problem, objective, methodology and a critical review of some significant research studies on FPIs is attempted.

II : 1 The Research Problem.

According to estimates, Kerala state produces about two million tonnes of fruits and three million tonnes of vegetables. (CMIE. India's Agricultural Sector, September 1995 : 63) As to the requirements, the I.C.M.R has worked out a daily percapita consumption requirement of fruits and vegetables for a balanced diet as 90gms of fruits and 150gms of vegetables respectively. When related to the population, it can be seen that Kerala requires 16 lakh tonnes of vegetables and 10 lakh tonnes of fruits annually. It is a common observation that the state is acutely deficient as far as the local availability of vegetables is concerned. As against this, in the case of fruits, the state has not only a variety of exotic fruits like jack fruits, pappaya, banana, mango, cashew apple and pine apple, but also in the case of certain fruits like pineapples, jack fruits, pappaya, the quantity of availability is in excess of the consumption requirements. It is therefore a paradox that the fruit processing industry in Kerala has not developed adequately despite the existence of large availability of certain delicious fruits that can be processed to value added products. Here it has been noted that processing facility now available in the state can process less than two percent of total fruits produced in the state, (Govt. of Kerala, Kerala State Planning Board, 1989; 62)

Kerala state has about five percent of licenses in all India; yet it accounts for less than three percent of total production of processed fruits/vegetables in the country.(GOI, Ministry of Food Processing Industries, Annual Report (1995-96) The inference is that fruit /vegetable processing units in Kerala were either small-scale units or there was vast under utilised capacity. Such issues need to be investigated. No significant and comprehensive studies have so far been undertaken to examine the status, problems and prospects of the fruit processing industry in the state. In the liberalisation era, a study of this nature assumes much more significance as there is large-scale entry of Transnational corporations (TNC's) in the fruit processing industry which can have deleterious effects on the domestic industry.

II : 2 Objectives

The specific objectives of the study are -

(1) to examine the status of fruit and vegetables processing industry in Kerala.

(2) to examine the economics of the fruit and vegetable processing industry in Kerala. and

(3) to analyse the major problems and prospects of the fruit and vegetable processing industry in Kerala.

II : 3 Methodology.

The study makes use of both primary and secondary data. Primary data was collected from a sample of eighty fruit / vegetable processing firms in Kerala. The list of FPO licensed fruit and vegetable processing units was collected from the Thrissur center of Small Industries Service Institute (SISI) of Govt. of India. There were altogether two hundred and thirty units in the list (see Annexure II for) From the list,

eighty firms were selected by random sampling method. Data in respect of capital invested, source of financing, output, employment, wages, profit, and export were gathered by making use of a structured questionnaire. (See Annexure III for the Questionnaire) The data was collected by personal interview method by the researcher by visiting the units.

The gathered data was analysed by making use of statistical tools such as production function analysis, critical difference analysis and certain financial ratio analysis to derive meaningful interpretations. These methods are explained in chapter V at the appropriate context.

The secondary data was collected mainly from Annual survey of Industries of Central Statistical Organisation (CSO), reports of Kerala State Planning Board, Ministry of Food Processing industries, Directorate of Bureau of Economics and Statistics, and UNIDO studies. The secondary data was used for presenting a macro picture of the status of FPIs at the global, national and state level, the economic performance of Kerala fruit and vegetables processing industry vis-a-vis all India industry on the basis of the following structural ratios and technical coefficients.

Structural ratios.

1) Fixed capital per factory ($\frac{FC}{N}$) This ratio indicates, the average amount of fixed capital em ployed per factory.

(2) Gross output per factory ($\frac{GOP}{N}$) gives us an indication about the average output per factory.

(3) Net value added per factory ($\frac{NVA}{N}$)provides us with information as to average net value added per factory.

(4) Employee per factory ($\frac{E}{N}$) shows the average number of employees per factory.

(5) Fixed capital per employee ($\frac{FC}{E}$) highlights the amount of fixed capital employed to generate are unit of employment.

(6) Gross output per employee ($\frac{GOP}{E}$)is a crude indicator of labour productivity because it provides us with the average amount of output per employee.

(7) Emoluments per employee present the average emoluments received by an employee.

Technical coefficients.

(1) Net value added to output. ($\frac{NVA}{(GOP)}$) indicates the contribution of labour and capital in the total output.

(2) Fixed capital to output ($\frac{FC}{(GOP)}$) shows the capital output ratio as it provides information as to how many units of capital are needed to produce one unit of output.

II : 4 Limitations of the study.

In evaluating the study the limitations has to be taken note of.

(1) The study was based on a sample of eighty firms out of two hundred and thirty units in Kerla fruit/vegetable processing industry and therefore was only a sample study.

(2) In this context it has to be noted that processing of vegetables in Kerala was undertaken only by a few firms, mainly because of the lack of availability of processable vegetables. Most sample units were concentrated

in the processing of fruits like pineapple, oranges and grapes. Hence the field study focussed more on fruit processing firms.

II : 5 **Organisation of the study.**

The study is presented in seven chapters. The first chapter gives an introduction to the FPIs by presenting the nature and classification of FPIs, their historical development, status of FPIs at the global, national and state levels Chapter II discusses the research problem, objectives methodology and review of literature. The performance of fruit and vegetable processing industry in Kerala in relation to all India is analysed in chapter III.

A general profile of the sample firms and entrepreneurs, the nature of ownership, location and nature of employment is presented in chapter IV. The fifth chapter discusses the economic performance of the fruit and vegetable processing firms by studying aspects like investment, finance, cost structure, factor productivity, profitability and export. An attempt is also made to study the inter category variations of the firms in terms of certain selected parameters.

The principal problems and prospects of the fruit and vegetable processing industry are discussed in sixth chapter. A projection of market demand for selected fruit/vegetable product based on linear projection is also attempted to predict the growth of the industry for 2000 AD and 2005 AD. The penultimate chapter presents a summary of the major findings of the study and also certain policy prescriptions for the healthy development of the fruit and vegetable processing industry in Kerala.

II : 6 Review of Literature.

A lot of research has been done on various aspects of industrial development in India. Most of these studies were with reference to the organised industrial sector because of the easy availability of data. However, of late, there have been attempts to study the role and significance of small-scale industries in the industrialisation process. An attempt is made here to make an overview of some significant studies on certain aspects of small-scale industries. A large part of the studies on small-scale industries in different localities have dealt with the problems of efficiency, marketing choice of technology, co-existence of small and large firms, subcontracting and labour practices.

Scholars have tried to explain the co-existence of small and large units in certain specific industries. Waardenburg found that labour intensity declined with an increase in the size of the firm. But this had not resulted in any increase in capital intensity of those units. He identified factors like variations in factor proportions, cost of production, and quality in influencing the co-existence of large and small firms. (J.George Waardenburg in Suri K.B. (ed) 1988). De Haan's study pointed out that it was the differences in processing technologies that resulted in the co-existence of small and large units. He concluded that large units utilised modern technology where as the small units made use of traditional or intermediate technology. His study revealed that modern technology was more productive than intermediate technology though the intermediate technology created more employment opportunities. (H.H. De Haan. 1988) Nirmala Banerjee's study shows that in the high competitive environment of electric fan industry, large-scale firms preferred to employ small units to

operate as subcontractors rather than to expand their production facilities. (Nirmala Banerjee in Suri K.B.(ed) 1988).

It is pertinent to discuss some research studies that tried to correlate the relative efficiency with size. Dhar and Lydall compared output capital ratios for firms that employed twenty or more persons and found that the ratios for these units increased with the size of the firms. Their study concluded that small-scale units using modern machinery and employing up to forty workers to be the most capital intensive. (Dhar P.N. and Lydall H.F. 1961) Sandesara also found a positive correlation between size and output capital ratios thereby supporting the conclusions of Dhar and Lydall. However it should be noted that his study revealed that for a given volume of investment small sale units as compared to large-scale units neither provide more employment opportunities nor produce more output. (Sandesara J.C: 1969) Mehta by introducing capital investment criteria for classification defnition argued that output capital ratio declined with the increase in size. (B.V.Mehta, 1969) Bhavanis study revealed that for a large number of small-scale industries both capital and labour productivities were lower than large-scale industries. Thus Bhavani's conclusion was more close to the findings of Dhar and Lydall and Sandasara and contrary to Mehta. (Bhavani A:, 1980) Chhina and Raikhy compared the labour and capital productivities of small and large firms and found that labour productivity in large-scale units was much higher than small-scale units where as the capital productivity was much higher in small-scale units than large-scale units. (Chinna Paramjit and Raikhy P.S. 1981) Studies focussing on subcontracting practices differ much in their perspectives as a group of scholars view the subcontracting the context of class struggle. They argued that through subcontracting the laboures are subject to intensive capitalist

exploitations and it also weakened working class consciousness by dividing the workers in to small groups. There fore those economists view subcontracting as a deliberate attempt to discourage working class movements. (Pineda - Ofero R. 1982:281-93) Mundle maintained that large units engage small units as subcontractors to earn more profits (Mundle Sudipto 1981) Friedman posited that large firms resort to subcontracting because it protects them from market fluctuations. The parent unit can pass on the burden of contraction in demand to the subcontractors. During recession the parent unit of ten refuses to take delivery of goods or delays the payments (Friedman A.L. 1974).

It has been pointed out by scholars like Goldar that in a fairly large number of industries, small-scale units are relatively inefficient compared to large-scale units. Goldar's study revealed that small-scale units are efficient only in those industries in which the difference in the capital labour ratio between small and large units are comparatively small. The study also found that small-scale industries created more employment than large-scale. (Goldar Biswanath in Suri K.B. (ed) 1988).

Several Studies have examined labour and wage practices prevailing in the traditional small-scale sector. Exploitation practices like the use of child labour were found to be prevalent in match factories in Sivakasy(Kothari S. 1983) and Jari making in Surat (Desai R.B. 1982) Nambiar has observed the low level of wages and lack of social security in handloom industry in Kerala. (Nambiar ACK 1995) Studies also found labour practices and evasions of statutory provisions in small-scale industries. (Girija Sharan 1980; Street Kark 1981 ; Harris J. 1980)

Having seen some relevant studies on small-scale industries in India, let us focus on a review of important studies made on FPI's.

A number of studies focus on the shift in the pattern of demand for processed food. [Wilkinson J : 1987, Conner J : 1982, Ruth Rama : 1992, Kinsey J and Helen D : 1988] They argue that increased disposable income and changes in the life style of households in the industrialized economies have increased the demand for tertiary processed foods like break fast cereals and other convenience foods. The emergence of monopolies and oligopolies in certain FPIs has been highlighted by a few research studies. [MC Carkle : 1988, Ruth Rama : 1992, Mc Donald etal : 1989, Horst Thomas : 1974, Bieche Bernard : 1994] According to these scholars, this phenomena was the logical outcome of increased mergers, acquisition and takeovers of small and medium food processing firms by giant transnationals like Nestle, Cadbury, Scheweps, Unilever, Coco-Cola and PepsiCo Inc. In general the studies have pointed out that FPIs incur enormous advertising expenditure to promote brand loyalties among the consumers. Such higher outlays for advertising badly affect the small firms. which in turn leads to the takeovers and merges and ultimately to the emergence of monopolies. [Bieche Bernard 1994, Baron C. G. 1980]

It has been argued that in developing economies, entrepreneurs of FPIs may be encouraged to adopt labor intensive technology to reduce cost of production and to increase employment opportunities. He also revealed that labor intensive technique of production generated twenty three times more employment than capital intensive technology in soft drinks manufacturing Industry. [Timmer etal, 1975].

A world Bank study finds that large-scale firms are relatively better equipped to manufacture quality food products than small-scale firms. This observation is based on the evidence that smaller firms usually lack skills and equipment essential for quality control [Cartes Mariluz : 1987].

Studies on the impact of modern technology on the working conditions of the female laborers in FPIs highlight the fact that advances in production process have not benefited the work environment for most female workers because there has not been any change in the nature of work done by them. [Acharya BT etal : 1987, Beena D : 1988]

A study on the processing of edible nuts reveals that economic performance and the size of the firm is directly correlated. This shows that scale economies are substantial in oil processing Industry [Srinivas etal : 1989].

As regards the best location for food processing industries, there is no consensus among scholars. Dhawan's study points out that fruit processing Industry is concentrated in urban areas because of the known advantages of urban centers [Dhawan B.D : 1969]. As against this some studies support the argument that locations ideal for FPIs are near the source of supply of raw materials. [Raucod MY and Yow M B, 1989, Singh D K etal 1989] Other advantages pointed out include the acceleration of rural industrialization and consequent increase in employment opportunities for the rural people. [Singh D.K etal : 1989] From the point of view of agriculturists, the policy of setting up FPIs near the growing regions of food crops, will reduce the glut in the local markets as most of these crops are taken away by processing units. This in turn assures the growers remunerative prices for their crops. [Veerkar P.O and Barude G.G : 1989]

Many research studies highlighted the abysmally low level of industrial utilization of fruits and vegetables for processing into value added products by Indian processing industry. [Mani KP 1980, CFTRI : 1983, Joshy K.T : 1985, Ratnam V.G : 1991,NCAER : 1994] On this basis, these studies argue for the increase in the commercial processing of horticultural crops for the accelerated development of Fruit and Vegetable processing Industry.

Several studies have revealed that processed fruits / vegetables enjoy great potentials for export. [Gera O.P :1978, Prahlad S.N : 1990, Gulati Ashok etal : 1994, Patnaik G : 1995] Recently NCAER analyzed the export competitiveness of selected fruit and vegetable products. It was found that products like Tomato paste, Banana pulp, and mango pulps / juices are competitive in the current economic scenario.[NCAER : 1994]

It is quite surprising to observe that though certain scholars have highlighted the growing demand for processed fruit / vegetable products in India, some other studies reveal that Indian fruit and vegetable processing industry suffers from under utilization of installed capacity. These two findings are quite conflicting but can be explained by taking stock of the unique features of the processing Industry as was done by several researchers. [Nagaraj N etal : 1989, Sanjay Sinha and Saurabha Sinha : 1992] They identify the seasonal availability of fruits / vegetables, lack of working capital and fierce competition as principal factors leading to lesser capacity utilization of the industry.

The level of technology in vogue in most fruit processing firms in India are primitive in relation to those in developed countries according to several research studies [Eipeson W.E and Bhomwnik S.R : 1992, Gulati Ashok etal : 1994,Kejriwal N.M: 1992] Such a technologicai

inadequacy may lead Indian processed food products to lose competitive advantage in world markets. Modern technologies like aseptic packaging, juice and pulp concentration, extraction of fruit juice, tetra filtration and reverse osmosis are just a few of the operations which have to be adopted by the indigenous firms to process quality products for global markets.

Coming to studies on FPIs, in Kerala, Kannan's Study on cashew processing traced the major factors that led to the growth of the industry in the region. He notes that the labor intensive nature of production process and the availability of cheap labor power have resulted in the transformation of Kollam area as a specialised centre for global production of cashew kernels. [Kannan K.P : 1983]

Several studies portrayed the small-scale nature of processing operations of fruit and vegetable processing industry in Kerala. They cite several constraints that put a natural limit to the development of fruit / vegetable processing industry in Kerala. [Mani K.P : 1980, CFTRI : 1983, Joshy :1985]

Summing up, it can be seen that research studies on small-scale industries reached conflicting conclusions. These differences in conclusions were largely due to differences in definitions and methodologies. As regards studies on FPI's are concerned, most of them pointed out that food processing technology in India was largely traditional and need to be modernised. This naturally called forth the need to mobilise more capital for procuring sophisticated machinery and better management systems. Another relevant observation was that most food industries were functioning at a very low capacity levels. The main reasons attributed was the seasonal nature of raw materials and lack of purchasing power among the people to purchase high priced processed foods.

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FRUIT AND VEGETABLE PROCESSING INDUSTRYAND KERALA

Rajeev C.B. “Economics of food processing industries in Kerala with particular reference to fruit and vegetable processing industry ” Thesis. Department of Economics , Dr. John Mathai Centre Thrissur, University of Calicut, 1998

CHAPTER III

FRUIT AND VEGETABLE PROCESSING INDUSTRY AND KERALA.

FPI's comprise a host of individual industries like cereal milling, meat / fish processing, milk products, bakery products, marine foods and fruit / vegetable products. As the focus of our study is on the fruit and vegetable processing industry, this chapter attempts to portray the overall profile of the industry. An attempt is also made to compare some of the features of the industry in Kerala with that of all India.

III : 1 A Profile of fruit and Vegetable Processing Industry in India and Kerala.

According to national industrial classification, 1987 [Annexure I for details] the fruit and vegetable processing industry in India comes under the four digit categorization as 2021, 2022, 2023, 2024, 2025, 2026, 2029. Therefore all artificially dehydrated fruit / vegetable products, fruit juices, concentrates, squashes, fruit powders, sauces, jams, jellies, marmalades, different pickles, chutneys, and canned and preserved fruits / vegetables comes under this industry.

Processing of fruits and vegetables on a commercial scale started in India about one hundred and fifty years ago. [Achaya K . T . 1994 : 162.] It has however to be mentioned that the growth of the industry was very modest during the 1850-1930 period. The processing operations was done mainly as an unorganised activity until 1927. In that year the first large factory for canning fruits / vegetables was set up for the first time in India. During the 1927 - 40 period, the industry manufactured

pickles, squashes, juices, and cordials only. From 1940 onwards, the industry diversified into products such as jams, jellies, and marmalades. The major reason for this was the increased demand for fruit / vegetable products from urban people who could not obtain these products from abroad because of the restrictions on imports imposed at the time of second world war. Moreover, in order to supply to the Indian Defense personnel stationed in different parts of Asia and Africa, more processed fruits / vegetables have to be produced. Those were the principal factors that gave a fill up to the accelerated development of fruit and vegetable processing industry in the country. [Govt. Of India, 1965 ; P : 2-4]

In the initial stages of development, the location of the fruit and vegetable processing industry was mainly concentrated in cities like Madras, Bombay, Calcutta, and Delhi. But after independence, a number of fruit and vegetable processing units were established in the states of Karnataka, Kerala, Jammu and Kashmir, Himachal Predesh, Tamil Nadu, Andhra Pradesh, Uttar Pradesh, and West Bengal. [Mukhopadhya T. K, 1981 : 31]

The manufacture of Processed fruits / vegetables in India is controlled by the Fruit Products order (FPO 1955. An extract of the order is shown in Annexure IV). It is obligatory for all units manufacturing fruits / vegetable products to obtain a FPO license from the Ministry of Food Processing Industries [Govt. Of India, 1993 : 5] Thus the number of FPO licenses is an indication of the total number of units engaged in the production of processed fruit / vegetable products in the country. In addition to this, no doubt there exists a few unauthorized units.

The number of FPO licenses issued, installed capacity, quantity produced and output per unit are shown in table III : 1.

Table III : 1

Growth of the fruit and vegetable processing industry in India.

Year	Number of licenses	Installed capacity in thousand tonnes	Quantity produced in thousand tonnes	Out put per unit in tonnes
1	2	3	4	5
1976	1,331	227	58	43.6
1980	2,026	275	70	34.6
1985	3,100	405	180	58.1
1990	3,846	894	280	72.8
1991	3,925	950	360	91.7
1992	4,057	1,108	469	115.6
1993	4,132	1,260	559	135.3
Aggregate growth rates				
1976 - 93	210.4	455.1	863.8	210.3
(a) 1976 - 85	132.9	78.4	210.3	33.2
(b) 1985 - 93	33.3	211.1	210.6	132.9

Note : The growth rates of respective columns are worked out for the entire period of 1976 - 1993. This is again sub divided into two sub periods 1976 - 85 and 1985 - 93.

Source : Statistics of Fruit and Vegetable Processing Industry in India various issues, Dept. of Food, Govt. of India, New Delhi.

As is observable, the number of licenses, installed capacity, quantity produced and output per unit increased substantially. The entire period 1976 - 1993 is divided in to two sub periods and their respective growth rates are depicted in the table. From this, it can be seen that though there was higher growth in the number of licenses issued during the first sub period, in respect of installed capacity, quantity produced, and output per unit, the growth was much lower than the second sub period. The growth in installed capacity was quite substantial at 211 percent during the second subperiod as against 78 percent in the first sub period. Similarly the growth in output per unit in the second subperiod was more than four times during the first sub period. It is significant to observe that out put per unit has increased by three times over the period of study.

For the licensing purpose, the fruit and vegetable processing firms in India are classified on the basis of installed capacity per year. The classification is as follows :

Those units with installed capacity more than two hundred and fifty tonnes of fruits / vegetable products annually are treated as large scale units. In the small scale segment, there are two groups. Small scale B category covers firms manufacturing annually between one hundred and two fifty tonnes. Small Scale A units cover those units producing annually more than fifty tonnes but less than one hundred and fifty tonnes. Firms producing in the range of ten to fifty tonnes per annum are treated as cottage units. Lastly the home scale firms are those producing less than ten tonnes per year.

The distributions of FPO licenses in India on the basis of this classification is presented in Table III : 2.

Table III : 2

Category wise distribution of FPO licenses in India.

Category	1976	1993	Change in perc-entage share (Col 2 - Col 3)
1	2	3	4
Large Scale	158 [12.6]	372 [10.5]	- 2.1
Small Scale B	157 [12.5]	356 [10.0]	- 2.5
Small Scale A	93 [7.5]	388 [10.9]	+ 3.4
Cottage Scale	258 [20.6]	702 [19.8]	- 0.8
Home Scale	585 [46.8]	1,736 [48.8]	+ 2
Relabellers *	80	578	
Total	1,331	4,132	

* As Relabellers are marketing units, they are left out from calculating the shares of each category.

Source : Govt. of India Ministry of Food Processing Industries, Annual Reports. Various years.

Note : The FPO has classified firms in to five sizes on the basis of installed capacity and minimum manufacturing storage areas. FPO sizes are different from the Ministry of Industry classification which uses a threshold level of investment as a criteria for classifying units in to large, medium, and tiny units.

Table III : 3

Output in the organized sector of fruit and vegetable processing industry in India

Value in Rs Millions.

Years	Value of Output	Organized Sector		Unorganized Sector	
		value of out put	Percentage	Value	percentage
1	2	3	4	5	6
1960-61	46.0	13.2	28.7	32.8	71.3
1965-66	101.0	58.1	57.3	42.9	42.7
1970-71	143.6	66.9	46.6	76.9	53.4
1975-76	279.5	125.9	45.0	153.6	55.0
1980-81	688.1	528.8	76.8	159.3	23.2
1985-86	1,790.1	1,381.8	77.2	408.3	22.8
1986-87	1,862.4	1,189.1	63.8	673.3	26.2
1987-88	2,375.0	1,260.0	53.0	1115	47.0
1988-89	3,682.0	1,940.0	52.7	1742	47.3
1989-90	4,215.0	2,188.0	51.9	2027	48.1

Note : Columns (4) and (6) show the respective percent shares.

Source: (1) For the Industry total Annual reports of Ministry of Food processing Industries. Various years.
(2) For Organized Sector output, Annual Survey of Industries for working factories. Various years.

From column (4) it can be observed that the shares of large scale, small scale B and cottage scale categories have declined over the study period. On the other hand, small scale and home scale categories have improved their respective shares. The over all structure thus reveals that more than eighty percent of the units are small and tiny units with capacity to produce less than one hundred tonnes of fruit and vegetable products per annum. If the Ministry of Industry's investment criterion is adopted, it can be seen that ninety percent of the FPO licenses in the country fall under the category of small scale industries. [Sanjay sinha and Saurabha Sinha 1992 : A 93] Thus it may be argued that in fruit and vegetable processing industry in India, small units dominate.

Production of processed fruits / vegetables is done by organised sector and unorganized units in India. The relative contribution of the organized and unorganized sectors are presented in Table III : 3. From the table, it is evident that the share of the organized sector is increasing though there are mild fluctuations in their relative shares in total out put. It can be observed that the organized sector contributed more than half of the total output in the country. Thus it shows that two hundred and eighteen factories manufactured more than fifty two percent of the processed fruit / vegetable products. This implies that less than six percent of FPO licenses accounted for over fifty percent of total output. Here we have not considered the contribution of the unauthorized fruit / vegetable processing units.

The state wise distribution of FPO licenses in India is shown in Table III : 4. From the table, it is clear that Maharashtra accounted for the highest number of licenses. [19.8 percent] The share of Kerala comes to about 5.6 percent which is much significant when we relate this share to the share of the state's population in all India.

Having seen an over view of the fruit and vegetable processing industry in India, we may now turn to have a look at some of the characteristic features of the industry in Kerala. The fruit and vegetable processing industry in the state originated by 1947 when the first unit

Table - III : 4

State wise distribution of FPO licenses issued in India - 1993.

State	No.of FPO Licenses	Percent Share
1. Maharashtra	817	19.77
2. Uttar Pradesh	415	10.04
3. Tamil Nadu	385	9.32
4. Karnataka	327	7.91
5. West Bengal	260	6.29
6. Andra Pradesh	252	6.10
7. Delhi	245	5.93
8. Kerala	230	5.56
9. Gujarat	224	5.42
10. Punjab	175	4.23
11. Hariyana	143	3.46
12. Goa	140	3.39
13. All other states / UTS	519	12.58
Grand Total	4132	100

Source: Govt. of India, Ministry of Food Processing Industries. Annual Report 1994 - 95

Table : III : 5

District wise FPO licenses issued in Kerala.

Districts	1981	1993	Change during 1981-'93 (col 3-col 2)
1	2	3	4
1. Kozhikode	32	40	8
2. Ernakulam	31	28	-3
3. Thrissur	23	28	5
4. Kottayam	22	30	8
5. Palakkad	16	30	14
6. Trivandrum	10	25	15
7. Kollam	8	13	5
8. Pathanamthitta *	--	6	6
9. Alapuzha	8	7	-1
10. Malappuram	2	8	6
11. Kannur	4	6	2
12. Idukki	4	9	5
Total	160	230	70

* Pathanamthitta district was not formed in 1981.

Source : 1. SISI Thrissur
2. CFTRI Mysore
3. Ministry of Food Processing Industries, New Delhi. Annual Report 1994 - '95

Canning industries Cochin Ltd. (Caico) was established in Thrissur. It was a success and this led to the emergence of a number of fruit / vegetable processing firms particularly in Punalur, Vazhakulam, Kottayam, Kozhikode and Kannur during the period 1948 - 64. The increased demand for processed fruit / vegetables in the state due to changes in socio-economic environment and dietary habits helped the industry to expand. Moreover, steady export orders from the Middle East countries after 1970 helped the development of this industry in other parts of the state.[C.F.T.R.I,1983 : 3,4]

The District wise FPO licenses in Kerala is presented in the Table III : 5. From the Table, we can observe that the number of FPO licenses have increased from 160 in 1981 to 230 in 1993 recording forty three percent growth. Column (4) shows the increase / decrease of FPO license in each district. There was increase in the number of FPO licenses in all districts except Ernakulam and Alapuzha. In these two districts, there was a decline in the number of FPO licenses over the twelve year period.

Table III : 6 presents Kerala's share in the fruit and vegetable processing industry of India. In 1969, the number of FPO licenses account for 4.8 percent of all India licenses and the share of production was placed at three percent. However there was steady growth and by 1981, Kerala's share in the total number of units have increased to 6.1 percent and share in total production to 8.5 percent. But the second period (1981 - 1993) witnessed slow growth as the share of FPO licenses and production of Kerala were much lower than All India. To note, the decline was from 6.1 to 5.1 percent in number of FPO licenses and from 8.5 percent to 3.4 percent in the out put of the industry. It is thus clear that the fruit and vegetable processing

industry could not keep pace with the accelerated development that had taken place at all India level in the eighties and early nineties.

Table III : 6

Kerala's share in fruit and vegetable processing industry in India

production in tonnes

	Kerala		All India	
Years	No.of licenses	Production	No of licenses	Production
1	2	3	4	5
1969	44 [4.8]	2,200 [3.03]	904	72,610
1981	160 [6.1]	11,600 [8.5]	2,611	136,000
1993	230 [5.5]	17,680 [3.4]	4,132	512,100
Growth	422.7	703.6	357	605.3
(a)1969-81	263.6	427.3	188.8	87.3
(b)1981- 93	43.7	52.4	58.3	276.5

Note: Figures in parenthesis are state's share in all India figure.

Source: 1. Govt. Of India, Directorate of Marketing and Inspection, Ministry of Food and Agriculture. Fruit and Vegetable Processing Industry,1965
2. CFTRI : Status Report of Fruit and Vegetable Processing Industry in Kerala, 1983.
3. Malabar Coast Products, Kottayam, 1995.
4. Ministry of Food Processing industries. Annual Report 1994 - '95.

The product wise output of processed fruit and vegetable products in Kerala and all India is presented in Table III : 7. It can

be observed that in 1981, Kerala accounted for 16.2 percent of canned fruits / vegetables and by 1993, this share has been reduced to 5.9 percent. Similarly,

Table III : 7

Kerala's share in the manufacture of processed fruits and vegetables, product wise.

Products	19 81		19 93		Change in Shares
	Kerala	All India	Kerala	All India	
1. Canned fruits and vegetables	2,136 [16.2]	13,150	1,350 [5.9]	22,810	-10.3
2. Jams etc.	704 [6.9]	10,235	925 [5.8]	15,805	-11.2
3. Squashes / Syrups	3,650 [13.6]	26,840	5,120 [17.1]	29,915	35
4. Pickles	396 [1.7]	22,910	2,575 [4.0]	64,620	23
5. RTS beverages	4,360 [29.3]	14,870	6,690 [4.4]	152,100	-24.9
6. Others *	354	47,995	1,020	226,850	
Total	11,600 [8.5]	136,000	17,680 [3.4]	512,100	-5.1

* Note : 1. Other categories in Kerala include vinegar, dehydrated fruits / vegetables and others. For all India, this group comprises more diversified items which are not at all manufactured in Kerala like frozen fruits / vegetables.

2. Figures in parenthesis are respective shares of Kerala in All India Production.

Source : For 1981 data, CFTRI, 1983.

For 1993 data, Ministry of Food Processing Industries.

Annual Report 1994-95.

the share of Kerala in the manufacture of jams and RTS beverages have also fallen over the period of study. On the other hand, Kerala's share in the production of squashes / syrups and pickles have increased considerably

Table III : 8

Exports of processed fruits and vegetables from Kerala and all India.

	Quantity in Tonnes.		
Years	Kerala	All India	Share of Kerala
1	2	3	4
1. 1980 - 81	3,076	31,694	9.7
2. 1985 - 86	4,958	60,910	8.1
3. 1986 - 87	2,019	46,993	4.3
4. 1987 - 88	3,475	38,120	9.1
5. 1988 - 89	1,597	42,974	3.7
6. 1989 - 90	1,873	35,728	5.2
7. 1990 - 91	1,574	67,588	2.3
8. 1991 - 92	2,184	79,952	2.7
1980 - 1992	-28.9	152.3	
Aggregate	Growth rates		
1980 - 86	61.2	92.2	
1986 - 92	-55.9	31.3	

Source : 1. Ministry of Food Processing Industries.
Annual Reports, Various Years.
2. Cochin Chamber of Commerce and industry.
Annual Reports. Various years.

during the same period. However, it is to be noted that Kerala's share in all India production has declined over the period 1981 -'93.

The exports of processed fruits / vegetables from Kerala and all India are shown in Table III : 8. It can be observed that though all India exports have increased substantially over the study period, Kerala's share fell from 9.7 percent to 2.7 percent during the period under study. If we divide the entire period in to two sub periods, it can be seen that during the 1980 - '86 exports from Kerala has grown by 61.2 percent against 92.2 percent in respect of all India. But during the second sub period 1986 -'92, the exports from Kerala declined by about 56 percent as against all India growth of 31.3 percent.

From the above analysis, it is only logical to argue that the fruit and vegetable processing industry in Kerala has not been able to maintain the level of development record at the all India level in terms of production and exports.

III : 2 Structural features of the fruit and vegetable processing industry in Kerala in relation to all India.

In this section, we attempt to analyse some of the structural features of fruit and vegetable processing industry in Kerala with that of all India over the period from 1974 -'90 in terms of number of factories, productive capital, number of employees, gross emoluments, value of output and net value added. This comparison is shown in Table III : 9. From the table, it can be observed that all the indicators had shown a lower growth in the state. This goes in accordance with the above observation that the fruit and vegetable processing industry in Kerala has not kept the pace of development recorded at all India level.

In order to analyse the structural features of fruit and vegetable processing industry in Kerala compared to all India, we have computed certain structural ratios and technical coefficients. The same is presented in Table III : 10. From a comparative review of this table, the following observations can be made.

Table III : 9

Relative position of Kerala's factory sector of fruit and vegetable processing industry in all India.

Indicators	1974- '75		1989- '90		growth of Kerala	Aggregate percent of All India
	Kerala	All India	Kerala	All India		
1	2	3	4	5	6	7
1. No. of factories	11 [11.3]	97	11 [5.0]	218	0	124.7
2. Productive capital	5,621 [5.1]	110,300	12,741 [1.1]	1,116,700	126.7	912.4
3. No. of employees	673 [9.8]	6,859	389 [2.7]	14,301	-73	108.5
4. Gross emoluments	1,578 [9.3]	17,000	2,598 [1.6]	160,900	64.6	846.5
5. Value of output	52,086 [2.6]	199,300	29,597 [1.3]	2,188,100	-43.2	997.9
6. Net value added	3,270 [12.6]	26,000	4,782 [1.8]	260,000	46.2	900

Note: Figures in parenthesis are respective shares of Kerala fruit and Processing Industry in All India.

Source : Computed from A.S.I. 1974-'75 and 1989-'90, Summary Results for Factory Sector. State X Industry.

1. The fruit and vegetable processing industry in Kerala employs only thirty one percent of the average fixed capital of all India in 1974 -'75. This percentage has declined sharply to eighteen percentage in 1989 -'90. Thus over a period of sixteen years, the rate of growth of fixed capital in Kerala has been much lower than that of All India.

Table III : 10

Fruit and vegetable processing industry : Kerala and all India.

1. Structural ratios	1974 - 75		Col.2 as a	1989 - 90		Col.5 as a
(a) Per factory unit	Kerala	All India	percent of col .3	Kerala	All India	percent of col.6
1	2	3	4	5	6	7
1. Fixed Capital (Rs.lakhs)	2.16	7.01	0.31	6.56	35.51	0.18
2. Gross value Output (Rs.lakhs)	20.5	27.4	0.75	26.9	100.4	0.27
3. Net Value added (Rs.lakhs)	3	2.7	1.11	4.4	11.9	0.37
4. No. Of Employees (In Nos)	61	71	0.86	35	66	0.53
(b) Per employees						
5. Fixed Capital (Rupees)	3,530	9,914	0.36	18,566	44,714	0.42
6. Gross value of Output (Rupees)	77,394	29,057	2.66	70,085	153,003	0.5
7. Emoluments (Rupees)	2,345	2,478	0.95	6,678	11,251	0.59
II Technical Coefficients						
1. Net value added to output	0.06	0.13	0.46	0.16	0.12	1.33
2. Fixed capital to output	0.04	0.34	0.12	0.24	0.4	0.6
3. Emoluments to output	0.03	0.09	0.33	0.09	0.07	1.29

Note : Columns 4 and 7 shows the share of Kerala's ratio coefficient to that of All India. These are computed to get an insight as to the relative posi share of Kerala industry.

source : Computed from Annul Survey of Industries 1974 - 75 and 1989 -90 Summary results for Factory Sector. State X

2. The average value of out put per unit was only seventy five percent of all India out put per unit. The average out put in Kerala over the period of analysis has fallen by twenty seven percent of all India there by indicating that the growth of output in Kerala was much lower than all India.
3. The average net value added in Kerala in 1974 -'75 was higher than that of all India. But after sixteen years, the average net value added in Kerala has been lower than all India.
4. Another relevant observation is that on an average Kerala fruit processing units provided lesser employment. Over the period of study, the average employment per unit which was eighty six percent of all India declined to fifty three percent.
5. The fruit and vegetable processing industry in Kerala employed lesser fixed capital per employee to that of All India over the reference period, The rate of growth of the fixed capital per employee in Kerala has been higher than all India.
6. Labour productivity as measured by gross output per employee in Kerala has declined sharply over the study period. In 1974 - '75, labour productivity in Kerala was about 2.7 times higher than that of all India.
7. The average emoluments in Kerala which was only ninety five percent of that of all India declined to fifty percent over the study period.
8. The coefficient of net value added to output of Kerala has increased over the period. The same was 46 percent of the all India level in 1974 - '75 but had risen to hundred and sixty three percent by 1989 - '90. The inference is that per unit of out put, more value addition has taken place in the fruit and vegetable processing industry in Kerala compared to all India.

9. The capital out put ratio in Kerala has increased over the study period. Still it stood lower than the all India ratio. This means that the industry is becoming more capital intensive in the state.
10. The coefficient of emoluments to output has increased phenomenally in Kerala where as for all India, it has declined over the period of analysis. The result indicated that the wage cost is on the rise in the state.

From the above analysis, it can be argued that fruit and vegetable processing industry in Kerala as compared to All India was lesser capital intensive and lesser productive. The study also showed that though average emoluments in Kerala was lower, the wage cost in relation to a unit of out put was on the rise indicating a rising trend in wage cost in the state.

GENERAL PROFILE OF THE SAMPLE FIRMS

Rajeev C.B. “Economics of food processing industries in Kerala with particular reference to fruit and vegetable processing industry ” Thesis. Department of Economics , Dr. John Mathai Centre Thrissur, University of Calicut, 1998

CHAPTER - IV

GENERAL PROFILE OF THE SAMPLE FIRMS

During the field survey, data regarding capital invested, value of production, employment generated, value added, and profit were collected from eighty sample firms. In this chapter we present a general profile of the sample firms in respect of ownership, year of establishment, location entrepreneurial profile, employment pattern and average investment.

IV : 1. SIZE

Table IV : 1

Classification of firms on the basis of installed capacity.

Installed capacity	Category	No of Firms	Percent to Total
1. Less than 10 Tonnes	Home-scale	30	37.5
2. Between 10 to 50 Tonnes	Cottage-scale	20	25
3. Over 50 and Less than 250	Small Scale	16	20
4. Over 250 Tonnes	Large-scale	14	17.5
Total		80	100

We classify the sample firms on the basis of installed capacity as done by the Ministry of Food Processing Industries. The four categories are as follows.

(a) Home-scale units are those producing less than ten tonnes of processed fruits / vegetables.

(b) Those manufacturing in the range of ten to fifty tonnes per annum are classified cottage units.

(c) Small scale units are those producing fifty to two hundred and fifty tonnes per year.

(d) Large-scale units are those producing more than two hundred and fifty tonnes per year.

From the Table, it can be observed that fifty firms (62.5 percent) were producing less than fifty tonnes of processed fruits/vegetable per year. Small scale firms constituted twenty percent of the total and large-scale firms accounted for 17.5 percent. This (82.5 percent) revealed that substantial percentage of the sample firms were tiny or small.

IV : 2. OWNERSHIP PATTERN.

Table IV : 2

Type of ownership

Type	Propri-etory	Partner ship	Pvt. Ltd.	Public Ltd.	Co- op Society	Govt. Owned	Total
1.Home Scale	14	16	-----	-----	-----	-----	30
	[46.7]	[53.3]					[100]
2.Cottage Scale	7	10	-----	-----	3	-----	20
	[35]	[50]			[15]		[100]
3.Small Scale	5	10	-----	-----	1	-----	16
	[31]	[62.5]			[6.2]		[100]
4.Large Scale	2	10	-----	1	-----	1	14
	[14.3]	[71.5]		[7.1]		[7.1]	[100]
Total	28	46	0	1	4	1	80
	[35]	[57.5]		[1.3]	[5.0]	[1.3]	[100]

The ownership pattern of firms category wise is shown in Table IV : 2. From the table it can be observed that, the majority sample we were partnership firms (57.5 percent). The second highest share (35 percent) was accounted by proprietary firm. Five percent of the firms were under the Co-operative sector. Out of the remaining two firms, one was a public limited company, and the other a Govt. of Kerala undertaking. Category wise analysis reveals that, in all categories, partnership firms dominate. In home-scale firms, partnership accounts for 53.3 percent and the remaining firms were the proprietary. In cottage-scale, fifty percent were partnership, 35 percent proprietary and the remaining Co-operative firms. In small scale, 62.5 percent firms were partnership and 31 percent firms were proprietary and only 6.2 percent were in co-operative sector. In large-scale 71.5 percent firms were partnership, 14.3 percent proprietary and the rest in public sector.

IV : 3. YEAR OF ESTABLISHMENT.

Table IV : 3

Year of establishment

Category	Before 1950	Between 1952-55	Between 1956-60	Between 1961-65	Between 1966-70	Between 1971-75	Between 1976-80	Between 1981-85	After 1986	Total
1. Home Scale	---	---	---	---	6 [20]	12 [40]	10 [33.3]	1 [3.3]	1 [3.3]	30 [100]
2. Cottage Scale	---	---	---	---	---	4 [20]	8 [40]	7 [35]	1 [5]	20 [100]
3. Small Scale	---	---	---	---	---	6 [37.5]	4 [25]	4 [25]	2 [12.5]	16 [100]
4. Large Scale	1 [7.1]	1 [7.1]	4 [28.6]	3 [21.5]	1 [7.1]	1 [7.1]	1 [7.1]	2 [14.2]	---	14 [100]
5. All	1 [1.2]	1 [1.2]	4 [5]	3 [8]	7 [8.8]	23 [28.8]	23 [28.8]	14 [17.5]	4 [5]	80 [100]

The sample firms were grouped category wise on the basis of year of establishment and the result is presented in Table IV : 3. It can be seen that majority of firms were established after 1971, as out of eighty units, sixty-four (80 percent) were established after 1971. Category wise analysis shows that out of thirty home-scale units, twenty two (73.3 percent) were established during 1971-'80 period. All the cottage-scale and small scale units were set up after 1971. In respect of large-scale firms, ten firms out of fourteen (71 percent) were established before 1971. Thus the table reveals the fact that ninety percent of home-scale, cottage-scale and small-scale firms were established after 1971 while only twenty eight percent of large-scale firms were set up after 1971. Seventy two percent of large-scale firms were established before 1971. It was during the 1971-'80 period that majority of sample firms (57 percent) were set up. The major reason for this can be identified as the increased demand for processed fruits / vegetables in the state. In this context it has to be mentioned that the same period experienced a substantial increase in foreign remittance from Middle East.

IV : 4. LOCATION

On the basis of location, the sample firms were grouped as urban and rural . Table IV : 4 revealed the distribution of units by location. It can be observed that 68.7 percent of the sample firms were located in urban areas and 31.2 percent of firms were rural in nature. Category wise analysis showed that most of the units in all categories (63.3 percent) were located in urban areas and the share of urban units was highest (75 percent) in small scale units. The lowest share (63.3 percent.) was in home-scale units. The share of units in urban areas were 71.4 percent in large-scale and 70 percent in cottage-scale units. Thus it can be seen that

fruit/ vegetable processing firms preferred urban areas to set up units rather than rural areas.

Table IV : 4

Location of the firms.

Categories	Urban	Rural	Total
1. Home-scale	19 [63.3]	11 [36.7]	30 [100]
2. Cottage-scale	14 [70]	6 [30]	20 [100]
3. Small Scale	12 [75]	4 [25]	16 [100]
4. Large-scale	10 [71.4]	4 [28.6]	14 [100]
5. All	55 [68.7]	25 [31.2]	80 [100]

(Figures in brackets are respective percentages to row total.)

IV : 5. REGISTERED / UNREGISTERED FIRMS.

Table IV : 5

Registered and unregistered firms.

Category	Registered	Unregistered	Total
1. Home Scale	---	30 [100]	30
2. Cottage Scale	2 [10]	18 [90]	20
3. Small Scale	12 [75]	4 [25]	16
4. Large Scale	14 [100]	---	14
Total	28 [35.0]	52 65.0]	80 [100]

The sample firms are all registered as per the norms of the F.P.O. order 1955 which is controlled by the Ministry of food Processing industries. At the same time all of these units were not registered under the Factories Act 1948. A classification of the sample units as registered and unregistered is shown in Table IV : 5. It reveals that only twenty eight firms (35 percent) ware registered factory units. Majority of firms(65 percent) were registered. Category wise analysis shows that ten percent of cottage-scale, seventy five percent of small scale, and all large-scale units were registered. There were no registered units in home-scale category. Ninety percent of cottage-scale and twenty five percent of small scale were unregistered. From the table, it is obvious that the share of registered units increased as the size of the firm increased. It can also be observed that the majority of units in fruit and vegetable processing industry in Kerala are outside the purview of Factories Act, 1948.

IV : 6 PROFILE OF ENTREPRENEURS.

An examination of the profile of entrepreneurs in terms of age, sex, education, and religion assumes significance. Though the number of firms were eighty, we are excluding six as they belong to the category of co-operative sector and public sector. Thus only in the case of seventy four units, data in respect of the profile of entrepreneurs was available and the same is discussed below.

(a) Age

The age wise distribution of sample entrepreneurs is presented in Table IV : 6. From the table, it can be seen that seventy three percent of entrepreneurs belonged to the age group of forty one and above. Only three entrepreneurs (4 percent)were under the young group of below thirty years. Seventeen (23 percent) belong to the 31 - 40 years age group.

From the table it is also evident that all entrepreneurs managing large-scale and small scale categories were persons aged above forty one. Over seventy percent of entrepreneurs in the cottage-scale units were also over forty one years of age. The table thus revealed that as the size of the firm increased the percentage of aged entrepreneurs also increased.

Table IV : 6

Age -wise distribution of entrepreneurs

Type of Firm	25 - 30	31 - 40	41 - 50	51 and above	Total
1. Home-scale	3 [10]	12 [40]	6 [20]	9 [30]	30 [100]
2. Cottage-scale	---	5 [29.4]	5 [29.4]	7 [41.2]	17 [100]
3. Small Scale	---	---	11 [75]	4 [25]	15 [100]
4. Large-scale	---	---	4 [28.6]	8 [71.4]	12 [100]
Total	3 [4]	17 [23]	26 [35.1]	28 [37.8]	74 [100]

Figures in Parenthesis are percentages of the row total

(b) Sex

Table : IV. 7 shows the sex differences of the entrepreneurs. Males dominate in the activity as they accounted for sixty five percent of total entrepreneurs. When analyzed category wise, it can be seen that the females dominate in home-scale units as they account for sixty percent of the total. In cottage-scale and large-scale units also, their presence was significant at 41.2 percent and 35.1 percent respectively. At the same time in the small scale segment, there was no female entrepreneurs.

Table IV : 7

Sex differences of entrepreneurs

Type of Firms	Male	Female	Total
1. Home-scale	12 [40]	18 [60]	30 [100]
2. Cottage-scale	10 [58.8]	7 [41.2]	17 [100]
3. Small Scale	15 [100]	---	15 [100]
4. Large Scale	11 [91.7]	1 [35.1]	12 [100]
Total	48 [64.9]	26 [35.1]	74 [100]

Figures in parenthesis are respective percentage to row total.

(c) Education

Table IV : 8

Educational qualification of entrepreneurs.

Type of Firm	Primary School	High School	Pre-Degree	Grad-uate	Post-Graduate	Total
1	2	3	4	5	6	7
1. Home Scale	8 [26.7]	6 [20]	9 [30]	7 [23.3]	----	30 [100]
2. Cottage Scale	----	6 [35.3]	9 [52.9]	2 [11.8]	----	17 [100]
3. Small Scale	----	6 [40]	5 [33.3]	4 [26.7]	----	15 [100]
4. Large Scale	----	----	4 [33.3]	6 [50]	2 [16.7]	12 [100]
Total	8 [10.8]	18 [24.3]	27 [36.5]	19 [25.6]	2 [2.8]	74 [100]

Note : Figures in parenthesis are respective percentage to row total.

The educational qualifications of the entrepreneurs are presented in Table IV : 8. From the table, it can be observed that all the entrepreneurs were educated though there were variations in their levels of educational attainments. The table also revealed that while sixty five percent of entrepreneurs are college educated, thirty five percent were having only school education. Of the total, only twenty eight percent had qualifications of graduations and above. Thirty seven percent had only completed their Pre Degree course. Eight entrepreneurs (10.8 percent) had completed the high school level. No entrepreneur in the sample possessed formal education in food preservation technology. Eight entrepreneurs (10.8 percent) had attended short term training courses in food technology conducted by the Small Industries Service Institute.(SISI).It was evident that the number of entrepreneurs with higher education increased when we move from smaller size categories to larger size categories. Thus the share of those having college education increased from 53.3 percent in home-scale units to 100 percent in large-scale units.

(d) Religion

Table IV : 9 shows the religion wise distribution of the entrepreneurs. Christians account for the largest share (39.2 percent). This is well above their share in the population of the state which is about twenty percent. Hindus though accounts for more than fifty percent in Kerala's population, they are underrepresented as their share was only 37.2 percent. Muslim entrepreneurs constitute about twenty three percent more or less maintaining their respective share in the population of the state. Thus it was evident that the Christian entrepreneurs dominate the fruit and vegetable processing industry in Kerala. Category wise analysis showed that Christians account for the highest share (66.7 percent) in large-scale firms and the

Table IV : 9

Religion wise distribution of entrepreneurs.

Type of Firm	Hindus	Muslims	Christians	Total
1. Home Scale	12 [40]	3 [10]	15 [50]	30 [100]
2. Cottage Scale	7 [41.2]	5 [29.4]	5 [29.4]	17 [100]
3. Small Scale	6 [40]	8 [53.3]	1 [6.7]	15 [100]
4. Large Scale	5 [25.3]	1 [8.3]	8 [66.7]	12 [100]
Total	28 [37.8]	17 [23]	29 [39.2]	74 [100]

Figures in parenthesis are respective percentages to row total.

IV : 7. EMPLOYMENT PATTERN

Table IV : 10

Average number of labourers.

Category	Total employment	No.of units	Average per unit
1. Home scale	90	30	3
2. Cottage scale	228	20	11.4
3. Small scale	376	16	23.5
4. Large scale	676	14	48.3
5. All	1370	80	17.1

lowest in small scale (6.7 percent) firms. Hindus constitute 41.2 percent share in cottage-scale units, and accounted for the lowest in large-scale (25.3

percent) Muslims account for the highest percent in small scale units (53.3 percent) and lowest in large-scale units (8.3 percent).

Labour is very crucial in any productive activity and assumes special significance in the case of fruit and vegetable processing Industry as it is labour intensive in nature. Table IV : 10 presents the category wise average number of labourers employed per unit. The home-scale units provide average employment to three; the cottage-scale firms employ eleven; the small scale units twenty four and the large-scale twenty eight. The average number of labourers for the industry as a whole were seventeen.

Table IV : 11

Division of workers as permanent and casual workers.

Category	Permanent Labour	Casual Labour	Total
1. Home Scale	30 [33.3]	60 [66.7]	90 [100]
2. Cottage Scale	36 [15.8]	192 [84.2]	228 [100]
3. Small Scale	64 [17]	312 [83]	376 [100]
4. Large Scale	151 [22.3]	525 [77.7]	676 [100]
Total	28 [20.5]	1109 [79.5]	1370 [100]

The total number of labourers in each category are divided in to permanent and casual and presented in Table IV: 11. From the

table it can be observed that the share of casual labourers was very high (79.5 percent) in the industry. Category wise analysis revealed that the share of casual labourers was the highest (84.2 percent) in cottage-scale and the lowest (66.7 percent) in home-scale units.

The labourers can also be classified as family labourers and hired labourers. The distribution of labourers in permanent and casual categories are shown in Table IV : 12. The share of family labourers was ten percent for the total sample firms which implies that the contribution of family labourers was not very much significant in the fruit and vegetable processing industry. Category wise analysis showed that the share of family labourers was the highest (38.9 percent) in home-scale units and the lowest in

Table IV : 12

Division of workers as family and hired labour.

Category	Permanent Labour			Causal Labour			Total family Labour	Total Hired Labour	Grand Total
	Family	Hired	Total	Family	Hired	Total			
1. Home Scale	25 [83.3]	5 [16.7]	30 [100]	10 [16.7]	50 [83.3]	60 [100]	35 [38.9]	55 [61.1]	90 [100]
2. Cottage Scale	20 [55.5]	16 [44.5]	36 [100]	20 [10.4]	172 [89.6]	192 [100]	40 [17.5]	188 [82.5]	[228] [100]
3. Small Scale	18 [28.1]	46 [71.9]	64 [100]	10 [3.2]	302 [96.8]	312 [100]	28 [7.4]	348 [82.6]	[376] [100]
4. Large Scale	34 [22.5]	117 [77.5]	151 [100]	---	525 [100]	525 [100]	34 [5.0]	642 [95]	676 [100]
All	97 [34.5]	184 [65.5]	281 [100]	40 [3.7]	1049 [96.3]	1089 [100]	137 [10]	1233 [90]	1370 [100]

Note : Figures in parenthesis are respective shares.

large-scale (5 percent). Thus the share of family workers declines as we move from home-scale to large-scale units. From the table, it can also be observed that in all categories family labourers are employed more as permanent labourers than casual labourers. This is the highest in home-scale (83.3 percent) and lowest in large-scale units (22.5 percent). In respect of casual labourers, the share of family labourers is the highest in home-scale and lowest in small scale (3.2 percent). In large-scale units, there are no family labourers employed as casual workers.

Table IV : 13

Sex division of workers.

Category	Permanent Labour			Causal Labour			Total	Total	Grand
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1. Home Scale	24 [80]	6 [20]	30 [100]	8 [13.3]	52 [86.7]	60 [100]	32 [35.5]	58 [64.5]	90 [100]
2. Cottage Scale	14 [38.9]	22 [61.1]	36 [100]	38 [19.8]	154 [80.2]	192 [100]	52 [22.8]	176 [77.2]	228 [100]
3. Small Scale	22 [34.4]	42 [65.6]	64 [100]	46 [14.8]	226 [85.2]	312 [100]	68 [18.1]	308 [81.9]	376 [100]
4. Large Scale	33 [21.8]	118 [78.2]	151 [100]	94 [12.2]	461 [81.8]	525 [100]	97 [14.4]	579 [85.6]	676 [100]
All	93 [33.1]	188 [66.9]	281 [100]	156 [14.3]	933 [85.7]	1089 [100]	249 [18.2]	1121 [81.8]	1370 [100]

It is also relevant to classify the permanent and casual workers by sex. This is shown in table IV : 13. From the table it is clear that the share of female workers was substantially higher at 81.8 percent

Table IV : 14
Jobwise Classification of Workers.

Cate-	I. Administration			II. Processing			III. Packing			IV. Marketing			Total	Total	Grand
gory	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
H.S	21	9	30	---	32	32	11	17	28	---	---	---	32	58	90
	[70]	[30]	[100]		[100]	[100]	[6.5]	[93.5]	[100]				[35.5]	[64.5]	[100]
C.S	28	20	48	12	110	122	---	40	40	22	6	28	52	176	228
	[58.3]	[41.7]	[100]	[9.8]	[90.2]	[100]		[100]	[100]	[78.6]	[21.4]	[100]	[22.8]	[77.2]	[100]
S.S	25	37	62	4	192	196	---	79	79	57	---	57	68	308	376
	[40.3]	[59.7]	[100]	[2.0]	[98.0]	[100]		[100]	[100]	[100]		[100]	[18.1]	[71.9]	[100]
L.S	22	122	144	---	339	339	---	118	118	47	---	47	97	579	676
	[15.3]	[84.7]	[100]		[100]	[100]		[100]	[100]	[100]		[100]	[14.3]	[95.7]	[100]
All	74	188	284	16	673	689	11	254	265	126	6	132	249	1121	1370
	[26.1]	[73.9]	[100]	[2.3]	[97.7]	[100]	[95.9]	[45.9]	[100]	[95.4]	[4.6]	[100]	[18.2]	[81.8]	[100]

Note : Figures in patenthesis are respective percentages to total.

for the fruit and vegetable processing industry. Category wise analysis showed that large-scale units employed the highest percent of females (85.6 percent) and the home-scale units lowest share (64.5 percent). The share of females was higher(85.7 percent) in casual workers than permanent workers (66.9 percent). The highest share of females in permanent labourers was observed in large-scale (78.2 percent) and lowest share in home-scale (20 percent) firms. In respect of casual workers, the share of females was highest (86.7 percent) in home-scale and the lowest in cottage-scale units. (80.2 percent). It is thus clear that females were employed more as casual labours than permanent labourers in all categories.

With in the units labourers are employed in various process and can be mainly divided in to the following four categories; Administration, processing, packing and marketing. The relative shares of male and female workers category wise are presented in Table IV : 14. It can be observed that the highest share of females was seen in processing operations (97.7 percent) and lowest in marketing (4.6 percent). In the case of administration, the highest share of female participation was observed in large-scale firms (84.7percent)and the lowest in home-scale. (30 percent) For processing, home-scale and large-scale firms entirely depend on female labourers as can be seen from the table. The job of packing was exclusively done by female labourers in cottage-scale, small scale and large-scale units. Only in the case of home-scale units there was low participation of male workers in packing (6.5 percent). Female participation in marketing was observed to be insignificant as their share varied between only 4-6 percent. From the above table, it was obvious that the share of female labourers was very much high in all the three jobs, of administration, processing and packing.

Table IV :15

Distribution of units by size of fixed investment.

(Investment in Rs. lakhs.)

Category	Below 1 lakh	1.01-1.5 lakhs	1.5 - 2 lakhs	2.01 - 3 lakhs	3.01 - 4 lakhs	4.01 - 5 lakhs	5.01 - 6 lakhs	6.01 - 7 lakhs	7.01- 10 lakhs	Over 10 lakhs	Total firms	Average fixed unit
1. Home Scale	----	6 [20]	14 [46.7]	10 [33.3]	----	----	----	----	----	----	30 [100]	1.8 [100]
2. Cottage Scale	----	----	----	7 [35]	5 [25]	8 [40]	----	----	----	----	20 [100]	3.9 [100]
3. Small Scale	----	-----	----	----	7 [43.7]	6 [37.5]	2 [12.5]	1 [6.2]	----	----	16 [100]	10.3 [100]
4. Large Scale	----	----	----	----	----	----	2 [14.3]	1 [9.1]	2 [14.3]	9 [64.3]	14 [100]	23.1 [100]
All	----	6 [7.5]	14 [17.5]	17 [21.3]	12 [15]	14 [17.5]	4 [5]	2 [2.5]	2 [2.5]	9 [11.2]	80 [100]	9.7 [100]

Note : Figures in brackets show the respective shares.

IV : 8 AVERAGE FIXED INVESTMENT.

The sample firms had invested varying amounts of fixed capital. In order to capture the category wise investment pattern, an attempt was made to present the different ranges of fixed investment in the four different categories in table IV: 15. The highest average fixed investment of 23.1 lakhs was in large-scale firms and lowest fixed investment of Rs. 1.8 lakhs was in home-scale units. The average fixed investment for the fruit and vegetable processing industry was Rs. 9.7 lakhs. Sixty percent of sample firms had invested in fixed capital in the range of Rs. 1- 4 lakhs. Category wise analysis reveals that majority home-scale units (66.7 percent) had invested fixed capital in the range of Rs.1- 2 lakhs. The range of average fixed investment of seventy percent of cottage-scale units was between Rs. 2-4 lakhs. Majority of small-scale firms(80 percent) had invested between Rs. 3.01 - 5 lakhs as fixed capital. Sixty five percent of large-scale firms had invested more than Rs. 10 lakhs. Thus it is evident that small categories of home based and cottage firms had invested lesser fixed capital than relatively larger size categories. (Small scale and large-scale units.)

Summary.

A study of the general characteristic of the sample firms revealed that in Kerala, very small units (annual installed capacity less than fifty tonnes) dominate (62.5 Percent). The industry was organised mostly on partnership (57.5 percent) and proprietor ship (35 percent). The industry in Kerala was mostly urban based as sixty nine percent of the sample firms were located in urban centers. Taking stock of the characteristics of labour of these firms, it was observed that professionalism was absent even in large-scale firms. This led to poor co-ordination and management . Even firms with good market potential were not aggressive in their expansion plans. An examination of entrepreneurial features revealed that more than seventy-five percent were above forty years of age and well educated. Religion wise, Christian entrepreneurs dominate as their share was above thirty-five percent though their share in the state's population was less than twenty percent.

The sample firms produce only traditional items of fruit and vegetable products like pickles, jams, and squashes, very little innovations has been attempted to introduce product heterogeneity and new varieties of products that have been introduced in other parts of the country. Modern preservation techniques like freeze drying, radiation and block-freezing have not been so far made use of in the state.

ECONOMICS OF THE FRUIT AND VEGETABLE PROCESSING IN KERALA

Rajeev C.B. “Economics of food processing industries in Kerala with particular reference to fruit and vegetable processing industry ” Thesis. Department of Economics , Dr. John Mathai Centre Thrissur, University of Calicut, 1998

CHAPTER - V

ECONOMICS OF THE FRUIT AND VEGETABLE PROCESSING IN KERALA

In this chapter, an attempt is made to study the investment and financing pattern, cost structure, productivity and profitability of the sample firms. In addition an analysis of the export performance and sub contracting practices prevalent in the industry is also undertaken.

VI. I Investment and financing pattern.

The total productive capital in a manufacturing firm is generally divided in to two components; fixed and working capital. Table V.I presents the structure of productive capital in the different size categories of sample firms. From the table, it was clear that the share of fixed capital in the industry as a whole constituted about fifty-nine percentage. The working capital accounted for forty one percent. Thus the share of fixed capital in the productive capital was higher than working capital. Category wise analysis also revealed that the share of fixed capital increased from 56.2 percent in home scale to 60.3 percent in large-scale firms. This implied that the larger size categories employed higher share of fixed capital. It also showed that as the size of the firm increased from small-scale to large-scale, the share of working capital declined from 43.8 percent in home scale to 40.7 percent in large-scale firms.

Fixed capital was invested in three major forms land, buildings and machinery. The divisions of fixed capital in to these three constituents in the different size categories are presented in table V: 2. From the table, it is evident that the fruit and vegetable processing industry utilized

the highest share of fixed capital (52.6 percent) for purchasing plant and machinery. The second highest share was invested (24.7 percent) in buildings and the lowest share (22.7 percent) in land. Category wise analysis showed that large-scale firms utilized the highest percentage of fixed capital for procuring plant and machinery where as the home scale units utilised only 16.8 percent of their fixed capital for investing in plant and machinery.

Table V : 1

Investment pattern.

(value in Rs. lakhs.)

Category	No:of firms	Average Fixed Capital	Average Working Capital	Average Productive Capital
Home Scale	30	1.8 [56.2]	1.4 [43.8]	3.2 [100]
Cottage Scale	20	3.9 [56.5]	3 [43.5]	6.9 [100]
Small Scale	16	10.3 [57.9]	7.5 [45.1]	17.8 [100]
Large Scale	14	23.1 [60.3]	15.2 [40.7]	38.3 [100]
All	80	9.7 [59.1]	6.7 [40.9]	16.4 [100]

Note : Figures in parenthesis are respective percentages.

The share of fixed capital in buildings was the highest (30.8 percent) in cottage scale and the lowest in large-scale (22.1 percent) The share of fixed capital in land was the highest (61.1 percent) in home scale units and the lowest (16.0 percent) in large-scale units. Thus the table revealed that except for home scale units, all other categories invested the highest percentage of fixed capital in plant and machinery.

Table V : 2

Constituents of fixed capital.

Value in Rs. lacks.

Category	Land	Buildings	Plant and machinery	Total
Home Scale	1.1 [61.1]	0.4 [22.2]	0.3 [16.8]	1.8 [100]
Cottage Scale	1.3 [33.3]	1.2 [30.8]	1.4 [35.6]	3.9 [100]
Small Scale	2.8 [27.2]	2.9 [28.1]	4.6 [44.7]	10.3 [100]
Large Scale	3.7 [16.0]	5.1 [22.1]	14.3 [61.9]	23.1 [100]
All	2.2 [22.7]	2.4 [24.7]	5.1 [52.6]	9.7 [100]

Note : Figures in parenthesis are respective shares.

Conventionally, working capital of a firm can be divided into the following three - physical working capital, cash in hand and at bank, and net amount to be received from creditors.

Table V: 3

Components of working capital

value in Rs. lakhs

Categories	Physical working capital	Cash in hand and at bank	Net amount to be received from banks	Total
1	2	3	4	5
Home Scale	0.8 [57.1]	0.2 [14.3]	0.4 [28.6]	1.4 [100]
Cottage Scale	1.8 [60]	0.5 [16.7]	0.7 [23.3]	3 [100]
Small Scale	4.5 [60]	1.4 [18.7]	1.6 [21.3]	7.5 [100]
Large Scale	11.2 [73.7]	1.6 [10.5]	2.4 [15.8]	15.2 [100]
All	4.5 [67.2]	0.9 [13.4]	1.3 [19.4]	6.7 [100]

Note : Figures in parenthesis are respective percentages.

Table V. 3 presents the composition of working capital in different categories. From the table it was evident that industry utilized about Rs. 6.7 lakhs as working capital on an average. The highest share (67.2 percent) of this was the physical working capital and the lowest share was cash in hand

and at bank (13.4 percent) Looking at the composition of working capital, category wise, it was revealed that the physical working capital accounted for the highest share in large-scale and lowest share in home scale units. Cash component was the highest in small-scale units and lowest in large-scale firms. The share of net amount to be received from creditors was the highest in home scale units and the lowest in large-scale units. Thus the share of net amount to be received from creditors declined from 28.6 percent in home scale to 15.8 percent in large-scale firms. This implies that smaller firms have to rely more on credit sales than cash sales than larger firms.

Table V : 4
Financing pattern.

(value Rs. In lakhs.)

	Own Funds	Investment Subsidy	Total borrowed	Total Capital and liabilities
1	2	3	4	5
Home Scale	2.1 [65.6]	0.2 [6.3]	0.9 [28.1]	3.2 [100]
Cottage Scale	2.3 [40.6]	0.5 [7.2]	3.6 [52.2]	6.9 [100]
Small Scale	5.9 [33.1]	1.1 [6.2]	10.8 [60.7]	17.8 [100]
Large Scale	9.15 [23.9]	1.75 [4.6]	27.4 [71.5]	38.3 [100]
All	4.5 [27.4]	0.96 [5.9]	10.6 [64.6]	16.4 [100]

Note : Figures in parenthesis are percentages to total.

In this respect it is also very significant to know the pattern of financing in the sample firms. Table V : 4 shows the financing pattern in different categories of firms. The total capital and liabilities have been divided in to three components. Owned funds (equity), investment subsidy provided by Govt. institutions and borrowed funds (debt). From the table it is clear that the highest share of finance was from borrowed funds (64.6 percent) The share of equity (owned funds) was only 27.4 percent and the subsidy element constituted 5.9 percent. Thus it was evident that the industry relied heavily on debt as a means of financing the processing operations in the state.

Category wise analysis revealed that debt constituted the highest (71.5 percent) share in the total capital and liabilities in large-scale units and the lowest (28.1 percent) in home scale units. This implied that as the size of the firm increased, the share of borrowed funds also increased. Conversely it was evident that the share of owned funds declined as the size of the firm increased as can be seen from the table. The share of investment subsidy (7.2 percent) was the highest in cottage and lowest (4.6 percent) in large-scale firms.

The relative shares of debt and equity in the different size categories are presented in table V : 5. From the table it was clear that the debt equity ratio for the industry was 2.35 implying a higher share of debt to equity. It is also clear that the debt equity ratio increased from 0.43 in home scale units to 2.99 in large-scale firms. This corroborates the evidence obtained from table V : 4 A careful analysis of the two tables, (V:4 and V:5) reveals that the sample firms utilized a higher share of debt to finance their operations.

Table V : 5

Debt - equity ratio

(Value in Rs. lakhs.)

Categories	Total Debt	Equity Capital	Debt / Equity Ratio
Home Scale	0.9	2.1	0.43
Cottage Scale	3.6	2.8	1.29
Small-scale	10.8	5.9	1.83
Large-scale	27.4	9.15	2.99
All	10.6	4.5	2.35

The liquidity position of sample firms can be studied by computing current ratios of different size categories which are shown in the table V: 6. From the table, it is evident that the liquidity ratio for industry as a whole was 1.42 signifying that the liquidity position was satisfactory. This is on the basis that there is ample provision for discharging the liabilities with assets. Category wise analysis revealed that the liquidity position declined as the size of the firm increased as can be seen from the table. The highest ratio was observed in home scale and the lowest ratio was in large-scale firms. From the table, we can observe that in all categories of firms, the current ratio is more than one but less than two. It is thus clear that all firms had higher current assets to discharge current liabilities.

Table V : 6

Current ratio

(value in Rs. lakhs.)

Categories	Current assets (in Lakhs)	Current Liabilities (in Lakhs)	Current Ratio
Home Scale	1.6	0.83	1.94
Cottage Scale	3.2	1.74	1.84
Small-scale	7.8	5.35	1.46
Large-scale	15.6	11.9	1.31
All	7.05	4.96	1.42

From the above analysis, it is clear that there are inter category differences among the fruit and vegetable processing industry respect of average fixed and working capital. Further there was positive correlation between the size of the firm and the share of physical working capital. It was also observed that the share of debt capital increased as the size of the firm increased. Moreover debt capital accounted for a substantial share in the liabilities structure of the firms under study. As regards the liquidity position of the firms, all categories exhibited a satisfactory performance because all firms had more current assets than current liabilities.

V. 2 . Cost structure.

In economic analysis, cost structure is conventionally studied under two broad categories as fixed and variable costs. The element constituting fixed cost are (a) rent, (b) depreciation, (c) insurance

and (d) interest. On the other hand, the variable cost consists of (a) raw materials costs (b) labour expenses (c) packing costs and (d) miscellaneous expenses. Table V : 7 presents the cost structure of the different categories of sample firms.

Table V : 7

Cost structure, Category wise.

Major cost elements	Home Scale	Cottage Scale	Small Scale	Large Scale	All Categories
A. Fixed costs	24.3	19.6	16.2	15.9	19.2
(a)Rent	---	---	---	---	---
(b)Depreciationl	16.2	10.2	6.96	5.4	9.8
(c)Insurance	0.10	0.18	0.24	0.33	0.20
(d)Interest	8.0	8.5	9.0	10.17	9.2
B.Variable costs	75.7	80.4	83.8	84.1	80.2
(a)Raw materials	37.9	36.6	34.4	32.9	34.9
(b)labour costs	12.2	15.7	10.1	16.7	15.8
(c)Packing costs	10.2	12.3	16.6	19.0	15.2
(d)Other costs	14.7	16.8	17.7	25.5	14.9
Total costs (A+B)	100	100	1001	1001	100

It can be observed that the share of fixed cost declined from 24.3 percent in home scale to 15.9 percent in large-scale firms. Conversely, the share of variable cost increased from 75.7 percent in home scale to 84.1 percent as in large-scale firms. this shows that as the size of the firm increases the share of fixed cost decreases because of the economies of scale in operation.

From the table, the shares of various elements of costs can be studied. The share of fixed cost has declined from the home

scale to large-scale units indicating economies of scale in operation. We can divide the fixed cost element in to rent, depreciation insurance and interest cost.

A) Rent.

No firm under the sample firms has taken buildings on rent. Every firm has its own premises to engage in production. Hence this element has no significance under the present study.

(B) Depreciation.

During the manufacturing process, the fixed assets of a firm experience physical deterioration. This capital consumption is also considered as a part of the cost of production because in the long run, all fixed assets have to be replaced which entailed a future cost. Thus depreciation is perceived as a cost element regarding apportionment of the cost of replacement of fixed assets as and when necessity arises.

It was observed that the share of depreciation cost was the highest in home scale firms and lowest is large-scale firms. This was because the average output increased as the size of the firm increased resulting in declining shares of fixed cost.

(C) Insurance.

The share of insurance has increased from 0.10 percent in home scale units to 0.33 in large-scale units. This showed that as the size of the firm increased, the share of insurance cost correspondingly increased.

(D) Interest.

The share of interest on * fixed capital has increased from 8.0 percent in home scale to 10.17 percent in large-scale. Thus it can be argued that the share of interest cost increased with the

increase in the size of firm. This was because of the fact that larger firms utilized more borrowed funds than smaller firms.

II **Variable cost.**

The share of variable cost increased from 75.7 percent in home scale to 84.1 percent in large-scale units. This indicated that as the size of the firm increased, the share of variable cost increased. The variable cost can be subdivided in to four types.

(A) **Raw material cost.**

The share of raw material cost declined as the size of the firm increased from 37.9 percent in home scale to 32.9 percent in large-scale firms. This was because of the large-scale economies of scale in procurement of bulk quantities of fruits/vegetables and other inputs.

(B) **Labour costs.**

The share of labour cost increased as the size of the firm increased as in home scale it was only 12.2 percent which increased to 16.7 percent in large-scale firms. This was the result of higher wages and other benefits to labour available in larger size categories relative to small firms.

(C) **Packing cost.**

From the table, it can be observed that the share of packing cost increased from 10.9 percent in home scale to 19.0 percent in large-scale firms. The implication was that as the size of the firm increased, the share of packing cost also increased. The principal reason for this difference in shares of packing cost was that the smaller size categories often utilized second hand bottles for packing which naturally reduced the cost of packing. Large-scale firms never indulged in this practice which logically increased their packing cost.

(D) Other costs.

The cost of fuels, repair and maintenance, transportation, marketing expenses and all other costs not included elsewhere were grouped under this. From the table, it was observed that the share of this element increased with the size of the firms as the lowest cost (14.7 percent) was in home scale and the highest (25.5 percent) in large-scale firms.

V : 3. Productivity.

Productivity can be defined as the efficiency in the use of factor inputs and in the overall allocation of resources. Productivity can be analysed with reference to labour and capital either by way of partial productivity ratios or total factor productivity approach.

a) Partial factor productivity analysis.

(i) Output -capital ratio (Capital productivity)

This ratio was estimated by dividing the total output in money terms by the productive capital. This is a very crude measure of productivity as it does not provide the individual contribution of

Table V : 8

Out put capital ratio

(value in Rs. Lakhs)

Categories	Output	Productive Capital	Out put Productive Capital
Home Scale	2.4	3.2	0.75
Cottage Scale	9.1	6.9	1.32
Small-scale	30.2	17.8	1.69
Large-scale	90.1	38.3	2.35
All	32.9	16.6	1.98

capital alone but only the combined effects of all factors of production. Table V. 8 shows the output capital ratios of different categories of sample firms. From the table, it can be observed that there was a positive correlation between output capital ratios and the size of the firms. The ratio increased from 0.75 in home scale to 2.35 in large-scale units.

(ii) Output labour ratio. (Labour productivity)

The ratio was computed by dividing the total value of output in money term (Rs. Lakhs) by the number of man days. The table V : 9 reveals the output labour ratios of different categories of the sample firms. From the table, it can be seen that the ratios increased from Rs. 195 in home scale units to Rs.838 in large units. There was thus a positive correlation between the output labour ratio and the size of the firms.

Table V : 9

Out put labour ratio

Categories	Value of Output in Rs Lakhs	Number of Man Days Worked	Out put in Man days(in rupees)
1	2	3	4
Home Scale	2.4	1230	195
Cottage Scale	9.1	2670	341
Small-scale	30.2	7240	417
Large-scale	90.1	10750	838
All	32.9	5472	601

Productivity measured as the rate of output / input of any single factor suffered from the limitation that it did not discount the contribution of other factors in the out put. It is therefore important to attempt a production function analysis to measure productivity of capital and labour. The same is attempted below.

Table V : 10

Estimates of production function (Logarithmic Regression)

Categories	A	a	b	R ^ 2	a + b
Home Scale	1.68	0.849 t=7.163	0.043	0.967	0.893
Cottage scale	1.36	0.763 t=1.482	0.331 0.693	0.448	1.094
Small Scale	1.25	0.909 t=2.271	0.1 0.269	0.593	1.009
Large Scale	0.58	0.522 t=2.498	0.001 0.008	0.460	0.523
All Category	2.84	0.81 t=7.965	0.246 1.642	0.914	1.056

b) Production function analysis.

This approach owed its origin to Solow (1957) and subsequent developments made far reaching contributions in extending

this analysis. We have undertaken a production function analysis of the Cobb. Dougles type as outlined below.

$$Y = AL^{\alpha} K^{\beta}$$

where Y = Quantity of output

A = Efficiency parameter

K = Capital

L = Labour

α = Elasticity of output with respect to labour.

β = Elasticity of output with respect to capital.

The variable output (Y) was the quantity of fruit / vegetables products produced in a year. Capital (K) refers to the productive capital in money terms. Labour (L) refers to the number of man days employed to produce the given level of out put.

The elasticity of output with respect to labour and capital were given by the coefficient α and β respectively. The value of β was not very much significant for all categories except for cottage scale firms which implied that the industry was not capital intensive. A relatively high value for β in cottage scale category was due to the idling of fixed capital. The value of coefficient α was significantly higher in all categories showing that the industry was labour intensive.

In the equation, $\alpha + \beta$ was the scale factor in the Cobb. Doughles production function. The combined values of the two coefficient showed the returns to scale. From the table V : 10 it can be seen that the industry was experiencing only constant returns to scale as the sum of $\alpha + \beta$ for all categories did not exceed one.

Category wise analysis revealed that cottage scale firms experienced highest value and large-scale firms the lowest (0.523). The logical conclusion was that medium level firms (annual capacity from 10 tones to 250 tones) experienced higher returns to scale.

c) **Capacity utilization.**

Another measure of productivity was the degree of capacity utilization. The higher the capacity utilization, higher would be productivity of the industry. Table V : 11 reveals that the overall capacity utilization was fifty three percent only. Category wise analysis showed that the highest capacity utilization (61 percent) was in small-scale and the lowest in cottage scale units (39 percent).

Table V : 11

Capacity utilization.

Categories	Average Installed Capacity	Average Actual Production	Average Capacity Utilisation
Home Scale	10	54	54
Cottage Scale	57.1	22	39
Small-scale	170	104	61
Large-scale	1008	526	52.6
All	226	120	53.1

We have analysed the principal reasons for the gross under utilization of capacity. The emerging reasons are presented in table V.12. Twenty five units (45 percent) ascribed the major reason for under utilisation of capacity as competition. Twenty seven units (33.8 percent) identified lack of adequate finance as the cause for the under utilization of capacity. The third major reason was the lack of raw materials for processing.

Table V : 12

Reasons for under utilization of capacity

Categories	Competition	Avail of Finance	Raw Materials	Others	Total
1	2	3	4	5	6
Home Scale	16 [53.3]	11 [36.7]	3 [10]	Nil	30 [100]
Cottage Scale	10 [50]	6 [30]	2 [10]	2 [10]	20 [100]
Small Scale	6 [37.5]	4 [25]	4 [25]	2 [12.5]	16 [100]
Large Scale	4 [25]	6 [37.5]	3 [18.8]	3 [18.8]	14 [100]
All	36 [45]	27 [33.8]	12 [15]	7 [8.7]	80 [100]

The existence of gross under utilisation of capacity in all categories of firms revealed the fact that the productivity of the sample

firms would be increased without any additional investment in fixed assets by aggressive marketing strategies and providing liberal credit for these units to tide over their working capital needs. The measures to increase capacity utilization would also reduce the unit cost of production thereby increase the overall profitability of the sample firms.

d) **Inventory turnover ratios.**

It is possible to link productivity and the inventory turnover ratios. Inventory turnover ratio indicates the efficiency of the firms to sell its product. It is calculated by dividing the cost of goods sold by the average inventory (average of opening and closing balance of inventory) Higher the ratio, the lower will be the time, a firm has to keep its inventory.

Table V : 13

Inventory turnover ratios.

Categories	Costs of Goods Sold	Average Inventory	Inventory turn over Ratio	Day of Inventory Holdings
Home Scale	1.8	0.65	2.77	132
Cottage Scale	7.3	1.7	4.29	85
Small-scale	37.4	5.92	6.32	58
Large-scale	202.1	24.85	8.13	45
All	62.15	8.28	7.51	49

This implied that the manufactured products could be sold very quickly. Thus the higher the ratio, lower will be the holding time of the inventory. When the number of days in a year (365) are divided by this ratio, we obtain days of inventory holding (DIH).

Table V : 13 showed the inventory ratios and days of inventory holdings for the four size categories. From this table, it can be observed that the highest ratio (8.13) was in large-scale firms and the lowest ratio (2.77) was in home scale units. It was thus clear that large-scale units were the highest efficient since these firms need hold the inventory for the shortest period (45 days). Conversely the home scale firms were the least efficient since they need to hold their inventory for about 132 days.

e) Assets turn over ratio.

A lot of money was invested in fixed assets by the sample firms to produce output and consequent sales to generate profits. The better the management of assets the larger the amount of sales. Assets turn-

Table V : 14

Assets turnover ratio.

Categories	Sales	Assets	Sales / Assets Ratio
Home Scale	2.2	3.2	0.69
Cottage Scale	8.8	6.9	1.27
Small-scale	41.6	17.8	2.34
Large-scale	210.4	38.30	5.49
All	48	16.6	2.89

over ratio was employed to evaluate the efficiency with which the firm managed and utilized its assets. It indicated the speed with which assets were being turned over to sales.

The assets turnover ratio was estimated by dividing total sales of the firms by productive capital. These ratios of different size categories are presented in table V:14. The highest ratio (5.49) was observed in large-scale units and the lowest ratio (0.69) was in home scale units. Thus it can be seen that assets turnover ratio increased as the size of the firms increased. From the table, it is thus possible for us to observe that there was a positive correlation between the productivity and size.

From the above discussion on productivity, it can be observed that productivity and size of the firm was correlated. We have worked out five measures of productivity and in all of them, the correlation was found to be true.

V : 4 . **Profitability.**

A firm should earn profits to survive and grow over a long period of time. Profitability is used as a standard of financial performance of any business firm. On the one hand, profitability is a measure of economic efficiency and on the other hand, the motivation for profit provides an incentive to attain efficiency. As there are no single measure of profitability, we had calculated three ratios of profitability.

(A) **Net profit margin.**

It indicates the relationship between net profits to net sales. The prosperity of a firm depends on the ratio of net profit to sales. A higher ratio indicated the higher overall efficiency of the firm and better utilization of economic resources. On the other hand a low ratio implied lower utilization of resources and lower efficiency.

Table V : 15

Net profit margin

Categories	Net Profit	Sales	Net Profit Margin
Home Scale	0.4	2.2	18
Cottage Scale	1.25	8.8	14
Small-scale	3.3	41.6	8
Large-scale	4.9	210.40	2
All	2.46	65.75	4

Table V : 16

Ranges of net profit margins, Unit wise.

Categorie	below 2 %	between 2 - 5	between 5 - 8	between 8 - 12	over 12-15%	over 16 %	Total
Home Scale	---	---	---	9 [30]	15 [50]	6 [20]	30 [100]
Cottage Scale	---	---	7 [35.0]	8 [40]	5 [25]	---	20 [100]
Small Scale	---	3 [18.8]	9 [56.2]	4 [25]	---	---	16 [100]
Large Scale	3 [21.4]	9 [64.3]	2 [14.3]	---	---	---	14 [100]
All	3 [3.7]	12 [15]	18 [22.5]	21 [26.3]	20 [25]	6 [7.5]	80 [100]

The net profit ratios for the sample firms category wise were presented is table V : 15. The aggregate ratio for the industry was estimated at 4 showing a modest rate. Category wise the highest ratio was observed in home scale (18 %) and lowest ratio in large-scale units (2 percent). It can thus be seen that the net profit margin fell when the size of the firm increased from home scale to large-scale where as productivity increased as the size of the firms increased. (Tables V : 8 and V : 9)

Table V : 16 presents the ranges of net profit margins unit wise. The majority of sample firms (51.3 percent) obtained net profit margins between the range of 8 to 16 percent. Net profit margins for fifteen units (18.7 percent) were less than five percent. Category wise analysis reveals that eighty percent of home scale units got less than 16 percent of net profit margin. Net profit margins for the majority of cottage scale firms (75 percent) were between 5 to 12 percent. Seventy percent of small-scale units got between 2 to 8 percent of net profit to sales. More than 85 percent of large-scale units obtained less than 5 percent of net profit.

(B) **Return on investment.**

Table V : 17

Return on investment, Category wise.

(Value in Rs. lakhs.)

Categories	Net Profit	Productive capital	R O I
1	2	3	4
Home Scale	0.4	3.2	12.5
Cottage Scale	1.25	6.4	19.5
Small-scale	3.30	17.8	18.5
Large-scale	4.90	38.30	12.8
All	2.53	16.4	15.2

This ratio is calculated by dividing the net profit by capital employed. It aids in the overall economic efficiency and provides a starting point to study the influences and trends in the performance of an industrial enterprise. The ratio for the total sample firms was 15 percent. Category wise analysis revealed that the highest rate (19.5 percent) was in cottage scale and lowest in home scale. (12.5 percent)

Table V:18 reveals the ranges of return on investment unit wise. Majority of firms (53.8 percent) had 12 to 20 percent of rate of return on investment. Category wise analysis revealed that in majority of home scale firms (53.4 percent), the return on investment was between 5 to 12 percent. Sixty percent of cottage scale firms had return on investment with in the ranges of 12 to 20. Majority of small-scale units (56.2 percent) had return on investment in the range of 5 to 16 percent. Majority of the large-scale firms (64.3 percent) had 8 to 16 percent return an investment. Only three large-scale firms (21.4 percent) had less than five percent return on investment.

(C) **Return on equity.**

This is estimated by dividing the net profit with equity. This ratio gives an idea as to the earnings a firm makes on the owners capital (equity). It is helpful in knowing whether the investment would be with making in terms of return as compared to the risk involved. The ratio of net profit to equity is shown in table V : 19. It can be observed that the rate of return on equity for the industry was very high at 55 percent. Category wise analysis revealed that the highest return was in the small-scale units and lowest in home scale.

Table V : 18

Ranges of return on investment, Unit category wise.

Categorie	below 2%	between 2 - 5	between 5 - 8	between 8 - 12	between 12-15%	over 16%	All
1	2	3	4	5	6	7	8
Home Scale	---	---	8 [26.7]	8 [26.7]	10 [33.3]	4 [13.3	30 [100]
Cottage Scale	---	---	7 [35]	1 [5]	2 [10]	10 [50]	20 [100]
Small Scale	---	---	2 [12.5]	3 [18.7]	4 [25]	7 [43.8	16 [100]
Large Scale	1 [7.1]	2 [4.3]	2 [14.3]	3 [21.4]	6 [42.9]	---	14 [100]
All	1 [1.3]	2 [2.5]	19 [23.7]	15 [18.7]	22 [27.5]	21 [26.3	80 [100]

Table V : 19

Average return on equity

Categories	Net Profit	Equity	R O E
1	2	3	4
Home Scale	0.4	2.1	0.19
Cottage Scale	1.25	2.8	0.45
Small-scale	3.30	5.9	0.56
Large-scale	4.90	9.15	0.53
All	2.46	4.5	0.55

Table V : 20

Ranges of ROE, Category wise

Cate-gories	10	10 -15	15-20	20-25	25- 30	30-40	40-50	50-60	All
1	2	3	4	5	6	7	8	9	10
Home Scale	8 [26.7]	11 [33.3]	12 [40.0]	---	---	---	---	---	30 [100]
Cottage Scale	---	---	1 [5]	1 [5]	2 [10]	3 [15]	7 [35]	6 [30]	20 [100]
Small Scale	---	1	2 [12.5]	---	2 [12.5]	---	4 [25]	7 [43.8]	16 [100]
Large Scale			2 [14.3]	---	1 [7.2]	---	3	8 [57.2]	14 [100]
All	8 [10]	11 [13.8]	17 [21.2]	1 [1.2]	5 [6.3]	3 [3.7]	14 [17.5]	21 [26.3]	80 [100]

Table V: 20 shows the ranges of return on equity (ROE) unit wise. Majority of units realised ROE in the range of 25.60 percent. Sixty percent of home scale firms got less than 15 percent ROE. In cottage scale units, sixty five percent units obtained ROE with in the range of 40 to 60 percent. Eleven units (68.8 percent) in small-scale realised ROE in the range of 40 to 60. Seventy eight percent of large-scale units got ROE in the range of 40 to 60.

From the above analysis, the profitability of the fruit and vegetable firms in Kerala was observed to be satisfactory though there were sharp differences among the various categories of firms.

V: 5 Subcontracting.

Subcontracting in economic literature is used to imply a contractual relationship between the "parent or main firm" and the subcontracting in firm on mutually agreed terms and conditions. The subcontractors perform and execute specific 'jobs' that conform to the specifications of the orders placed in advance by the parent / main firm. Therefore the supplies from subcontractors are specialised commodities produced for a definite purpose to a specific company. Marx and Lenin recognized subcontracting as a specific industrial organisation during the initial stages of capitalism. According to them, this system constituted technologically lower firm of capitalism based on the worst form of exploitation. (Karl Marx : 1883, V. I, Lenin 1899). Subcontracting system prevails in both the traditional and modern industries in developing economies. Home scale and cottage scale units are found to be interlinked by a series of subcontracting relations to medium/large-scale processors in India.

Table V : 21

Incidence of subcontracting

Categories	No. of firms in the sample	Firms engaged in Sub category	Percent
Home Scale	30	2	6.7
Cottage Scale	20	1	5.0
Small-scale	16	4	25.0
Large-scale	14	---	---
All	80	7	8.8

In Kerala the subcontracting has been in existence even in traditional industries like coir, cashew, handlooms and beedi from the nineteenth century onwards. (Bose A.J.C. 1987).

The incidence of sub contracting is prevalent in fruit / vegetable processing firms. It had been observed that seven firms in our sample were engaged in the manufacture of semi processed and finished fruit / vegetable products for large parent companies situated outside Kerala. Table V : 21 reveals the prevalence of subcontracting category wise. Category wise in the rate of prevalence was the highest (25 percent) in the small-scale and lowest (5 percent) in cottage scale units. In respect of home scale units, the prevalence of this practice was 6.7 percent. No large-scale firm was engaged in this subcontracting system.

The details of subcontracting firms are shown in table V: 22. Four out of seven firms manufactured exclusively for parent units (57 percent). The other three firms sold respectively fifty, forty and thirty percent of their output to parent units. As all the parent units were situated outside Kerala, it was not possible to discuss the subcontracting arrangements with them. Therefore the market price of the product was obtained from the prices of similar products which were sold in the Kerala market.

The first four firms A,B,C and D manufacture exclusively for the parent units. Company A was home scale producer of pickles which sold its entire productions to three large-scale firms situated nearby areas. The entrepreneur of this firm was satisfied with this arrangement because there was no need for the firm to build up a brand name for his product. As long as these main firms purchased from him, he could earn a normal profit.

Table V : 22
Details of subcontracting

Firms	Share of Subcontracting business in total Business	Products	Unit cost of producti-on transpor-tation	Price obtained per unit Product	Market Price of the product	Price diffe-rence (6)-(5)	Annual average sales to parent unit	Price cost margin (5)-(4)	Profit obtained subcon-tracting
1	2	3	4	5	6	7	8	9	10
1.Company A (Home scale)	100	Mango Pickles in oil	23.5	28.5	42	13.5	9,500 (kgs)	5	47,500 [100]
Company B (Small scale)	100	Pineapple pulp Pineapple juice	8.5 9	10 10	NA	NA	300 140	1.5 1	450,000 140,000
Company C (Small scale)	100	Pineapple pulp Pineapple juice	8.5 9	10 10	NA	NA	300 140	1.5 1	375,000 120,000
Company D (Small scale)	100	Pineapple pulp Pineapple juice	8 8.5	10 10	NA	NA	170 100	2 1.5	340,000 150,000
Company E (Cottage scale)	50	Cut mango pickles Lemon pickles	22.5 24	27 28	45 45	18 17	12,000 3,000	4.5 4	54,000 12,000
Company F (Small scale)	40	Mango pickles Mixed Fruit Jam	23 27	28 30	46 50	18 20	45,000 92,000	5 3	22,500 27,600
Company G (Home scale)	35	Mango pickles in oil	24	28	42	14	3,500 (kgs)	4	146,000 [20]

Note : 1. As the three small scale companies B. C and D firms sells only semi processed pineapples to transnational company for furhter processing, it is not possible to determine their market prices.

2. Figures in parenthesis in col (10) are respective shares.

Companies B, C and D were processing substantial quantities of pineapple to manufacture semi processed materials like pineapple pulps and concentrated juices for a transnational corporation. Though price cost margins were very low, the large volumes provided these entrepreneurs with good profits to continue in the business. This was mainly because of the fact that all these three firms were located in pineapple growing regions of central Kerala where the pineapples were available in plenty at very competitive prices.

Company E was manufacturing cut mango pickles and lemon pickles both for a parent firm and also for direct sale. Though the share of his subcontracting business accounted for 50 percent of his total output, the share of profit from this amounted to only thirty two percent. This implies that the subcontracting firm was not getting its due share but had to be content with lesser share. The entrepreneur continued with this less than satisfactory state of affairs mainly because of his apprehension that he could not be able to sell all his output directly.

Company F manufactured mango pickles and mixed fruit jam and supplied forty percent of its production to a main firm. But it obtained only twenty three percent of the total profit out of this subcontracting business.

Thirty five percent of the total output of company G was supplied to parent firms but received only twenty percent of its profit from this management.

From the above analysis, it is only obvious that all subcontracting in firms failed to reep the price benefits from subcontracting arrangement but preferred to continue it only on the fear that they could not market their products effectively. The parent units benefit much out of the

subcontracting system. By entering into subcontracting arrangements with smaller firms, large firms can reduce their cost of production. Thus the subcontracting system evolved in the industry was to reduce labour cost and circumvent labour legislations. In some cases, this was done to reduce the transportation of perishable fruits like pineapples over long distances.

V: 6 Export performance.

We have already observed elsewhere (Chapter III Table III : 8) that exporting of processed fruit / vegetable products from Kerala has been stagnant since 1985. There it has been revealed that Kerala's exports in relation to all India's exports of processed fruit / vegetable products have been declining both in quantity terms and also in relative terms. In this context an analysis of the export performance of sample firms assumes significance.

Table V : 23 shows the number of firms having export business among the sample firms. As evident from the table, ten(12.5 percent) out of the eighty firm have exported their products. Category wise analysis revealed that highest share (42.8 percent) was in large-scale and the lowest (24 percent) in small-scale category. In fact only these two categories of firms exported.

Table V : 24 reveals the major items exported and the destination. It can be seen that the major items exported were products like tender mango pickles, mango pulp, pineapple jam, mixed fruit- jam, canned pineapple juices and mango juices. The most important export market for processed fruit / vegetables was the Middle East countries.

Table V : 23

Incidence of exporting.

Categories	No. of firms	No.of exporting Firms	Percent
Home Scale	30	Nil	---
Cottage Scale	20	Nil	---
Small-scale	16	4	25.0
Large-scale	14	6	42.8
All	80	10	12.5

Table V : 24

Export items and destinations.

Products.	Major countries to which exported.
1. Mango Pickles	Bahrain, Iraq, Kuwait, U A E, Malaysia Saudi Arabia,
2. Garlic Pickle	Australia, New-Zeland, U A E, Hong-Kong
3. Mango Pickle	Belgium, Malta, Norway, Spain,
4. Canned Pineapple Slices / Juices and Jam.	Israel, Japan, France, U K.
5. Mixed Fruit Jam and Others	Bahrain, U A E, Saudi Arabia, Nigeria.

Table V : 25 - Details of Exports.

	Firms	Annual Production	Products Expected	Quantity Exported in	Net export price	Net Domestic price	Price difference	Export benifits.
	2	3	4	tonnes (5)	6	7	8	9
1	A. Large Scale	1420	Canned pineapple slices	-250	33,500	26000/ton	7500/ton	1,875,000
			Tender mango pickles	-75	26,700	20000/ton	6700/ton	502,500
			Pine apple jams	-40	36,200	31,500	3,700	148,000
				365[25.7]				2,525,500
2	B. Large Scale	1500	Mango juices	-120	27,300	23,500	3800	456,000
			Pineapple bits in sugar	-80	27,100	24,700	2400	192,000
			Tender mango pickle	-120	26,700	6,700	6700	804,000
			Mixed fruit jams	-30	35,400	4,400	4400	132,000
				350[23.3]				1,584,000
3	C. Large Scale	1250	Tender mango pickles	-70	26,700	20000	6,700	469,000
			Garlic pickles	-85	27,600	22000	5,600	476,000
			Pineapple juices	-50	29,500	29000	4,500	225,000
			Pineapple jams	-70	31,500	31500	4,700	329,000
				275 [22.0]				1,499,000
4	D. Large Scale	750	Tender mango pickles	-70	26,700	20000	6,700	469,000
			Pineapple jams	-30	36,200	31000	4,700	141,000
			Mango juices	-20	23,500	23000	3,800	76,000
				120 [16.0]				686,000
5	E. Large Scale	650	Tender mango pickle	-40	26,700	20,000	8,700	348,000
			Mango pulp	-30	29,200	26,100	3,100	93,000
			Pineapple jam	-20	36,200	31,500	4,700	94,000
			Mixed fruit jam	-15	35,400	31,500	4,400	66,000
				105 [16.1]				601,000

Details of Exports.

	Firms	Annual Production	Products Expected	Quantity Exported in tonnes	Net export Price	Net Domestic Price	Price difference	Export benifits.
1	2	3	4	5	6	7	8	9
6	Scale		Mango pulp	-30	29,200	26,100	3,100	93,000
			Pineapple jam	-20	36,200	31,500	4,700	94,000
			Mixed fruit jam	-15	35,400	31,500	4,400	66,000
				105 [16.1]				601,000
7	G. Small Scale	240	Tender mango pickle	-20	26,700	20,000	6700	167,500
			Mango pulp	-15	29,200	26,100	3100	46,000
				40 [13.3]			6700	214,000
8	C. Small Scale	225	Tender mango p	-20	26,700	20000	6,700	134,000
			Garlic pickles	-10	27,600	22000	4,400	44,000
				30 [13.3]				178,000
9	I. Small Scale	210	Mango juices	-15	27,300	23000	5,600	84,000
			Tender mango p	-10	26,700	2000	6,700	67,000
				25 [11.9]				151,000
10	J. Small Scale	185	Pineapple juices	-20 [10.8]	34000	29,500	4,500	90,000
	Total	7150		1410				8,031,500

Note : Net export price means the price obtained by the firms after deducting freight changes, duties and other service charges. Net Domestic price implices the price git by the firms after deducting cost of sales, duties, and other miscellaneous expences. Figures in parenthesis are percentage of exports to annual production.

The details of exports of the ten firms were depicted in table V : 25. It can be observed that the share of exports in total products was twenty percent though there were individual variations among the ten exporting firms. The highest share was seen in firm A. (25.7 percent) and the lowest share in firm J (10.8 percent) from the table. It is evident that from exporting their products, all the ten firms benefited monetarily. This can be observed from the high price differences between net export prices and net domestic prices which is shown in column (7). Column (8) reveals the total export benefits (in monetary terms) of all ten firms.

From the analysis it is evident that by exporting the processed fruits / vegetablesnall the Kerala firms obtained higher profits than they earned from domestic sales.

V : 7 Critical Difference Analysis.

From the earlier discussions, it is observed that there are quite distinct variations in operational and financial performance among the four categories of the firms we studied. Therefore in this section we attempt to analyze whether there is significant inter group differences. We have made use of seven parameters like fixed capital, productive capital, raw materials labour cost, output profit and net value added in order to find out the inter group differences. For this purpose, we make use of critical difference test. The result is presented in Table V. 26.

The Critical Difference (CD) is calculated as C.D = S Ed x ta, error .f. The degree of freedom for 't' are those for error, the treatment of means are given as

Ti / ri (I = 1.....2,.....3,.....t) These means can be compared with the help of critical difference. Any two treatment means are said to differ significantly if their difference is larger than the critical difference.

Table V : 26
Inter Category Variations
1,2,3,4 Group numbers : 1) Home scale, 2) Cottage scale, 3) Small scale, 4) Large scale.

Parameters	Mean	Vari-ance	Mean	Vari-ance	Mean	Vari-ance	Mean	Vari-ance	Mean	Vari-ance	Mean	Vari-ance
1	12		13		14		23		24		34	
Fixed Capital	-4.056 S	1.649 NS	-2.761 S	64.095 S	-1.494 NS	26104 S	-1.98 NS	38.87 S	-1.46 NS	15833 S	407 S	-1.34 NS
Productive Capital	-8.446 S	1.988 NS	-3.984 S	110.83 S	-4.621 S	669.8 S	-3.4 S	55.74 S	-4.3 S	336.9 S	-2.82 S	6.04 S
Raw Materials	-4.957 S	9.162 S	-4.399 S	752.28 S	-4.123 S	18608 S	-3.85 S	82.1 S	-4 S	2031 S	-3.58 S	24.7 S
Labour Cost	-10.22 S	2.573 NS	-2.959 S	178.83 S	-3.023 S	4907 S	-2.11 NS	69.49 S	-2.83 S	1907 S	-2.45 S	27.4 S
Output	-5.38 S	28.98 S	-5.993 S	1057.1 S	-4.242 S	51056 S	-5.31 S	36.47 S	-4.11 S	1761 S	-3.44 S	48.3 S
Profit	-2.701 S	16.79 S	-5.784 S	32.84 S	-3.478 S	87.4 S	-3.23 S	1.955 NS	-6.12 S	52.23 S	-7.34 S	62.1 S
Net Value	-3.948 S	14.81 S	-7113 S	72.72 S	4.827 S	4747 S	-5.12 S	4.91 S	-4.7 S	320.5 S	-3.96 S	65.3 S

(12),(13),(14),(23),(34) Groupings. Test for Mean S : Significant (three is difference)
Flat for Variance NS : Non sufficient (three is difference)

The effect of 'I' th treatment is estimated using the principle of least square and is

$$ti = \frac{Ti}{r} \quad \frac{\Sigma\Sigma}{ij} \quad \frac{YI}{rt}$$

We have made use of T test for mean and F Test for variance. From the Table V : 26, we can make the following observations.

1. Comparing home Scale category with cottage Scale category, there are significant differences in respect of all the seven parameters we considered, by conducting T test for mean. But in respect of variance (F Test) only with regard to raw material cost, output, profit and net value added, there were significant differences between these two categories. There were no significant differences between these two categories for the remaining four parameters.

2. There were significant differences in both mean and variance in all the parameters considered, when we compared the small-scale category with home Scale categories.

3. There were significant differences in all parameters, except for the mean in respect of fixed capital between home scale and large-scale firms.

4. In terms of fixed capital and labour Cost, there was no significant differences between cottage scale and small-scale categories. (T-test for mean) In the case of all the six remaining parameters, there were significant differences. F Test also showed that except profit, the two categories differed significantly in all the residual seven parameters considered.

5. As regards the cottage scale and large-scale categories, there were significant differences in all economic parameters except for fixed capital. T test showed that there was no significant difference between these two categories in fixed capital.

6. T test and F Test showed that there were significant differences except for fixed capital (variance) between small-scale and large-scale firms.

From the critical difference analysis, it was evident that there were high degree of inter category differences in fruit and 13 vegetable processing industry in Kerala.

V : 8 Working conditions.

As the fruit / vegetable processing industry is a labour intensive, a special reference may be made of the working conditions of labour prevailing in this industry. We have already observed the pattern of employment in chapter IV.

The constitution of India (Article 43) impresses on the Govt. of secure by suitable legislation to all workers living wages, better conditions of work to enjoy leisure and to have a comfortable standard of living. It is on this basis, Minimum Wages Act, Bonus Act, and a host of other labour legislation have been enacted. These legislation direct the employer to provide the workers social security, healthy work environment, reasonable, wages, bonus, gratuity and other welfare measures to achieve good social life for the working class.

Table V: 27 reveals that out of the eighty units, only eleven units have gratuity scheme (13.7 percent),only 5 units provides ESI benefits (6.0 percent) and 5 units have EPF scheme (6.3 percent). Paid leave was given to permanent employees in 18 firms (22.5 percent). Bonus on the basis of the annual earnings was provided in sixteen units only(20

percent). No firm has provided any recreational facilities to give the workers relaxation from the monotony of factory work.

Table V : 27

Working conditions of labour.

Categories	Paid Leave	Bonus	Gratuity	Recreation Facilities	E S I Benefits	E P F Scheme
1	2	3	4	5	6	7
Home Scale	Nil	Nil	Nil	Nil	Nil	Nil
Cottage Scale	3 [15]	2 [10]	Nil	Nil	Nil	Nil
Small Scale	7 [43.8]	6 [37.5]	3 [18.7]	Nil	2 [12.5]	1 [6.2]
Large Scale	8 [57.1]	8 [57.1]	8 [57.1]	Nil	3 [21.4]	4 [28.6]
All	18 22.5]	16 [20]	11 [13.7]	Nil	5 [6.3]	5 [6.3]

Note : Home scale and cottage scale firms employ less ten labors which make them not to be under the factory's Act and E PF Act. Naturally the working conditions in this categories are pathetic.

In home scale / cottage scale units, most of the work was done by casual workers, and the entrepreneurs had not provided even minimum wages to them. Small-scale and large-scale firms though employ permanent labourers in supervisory / administrative positions, failed to provide healthy working conditions security of tenure, old age benefits and sick leave to them.

In the context of economic liberalization measures initiated since July 1991, there was an erosion of formal regulations that governed the functioning of labour markets. Firms preferred to employ contract labourers as they can be terminated after a specific job was completed. We can argue that this was the major reason for the use of casual / temporary / contract and female labourers in the sample firms. The avoidance of labor legislation's becomes easier, given the high levels of unemployment among women and men labourers in Kerala. Females of the age group 18-30 are attracted to jobs in the sample firms not because of the high wage rates but because of the light nature of work involved such as cutting fruits / vegetables, cooking and packing. That is, they do not have to exert physically like high paid jobs in construction and agricultural sectors.

From our observation in the field, firms in the fruit and vegetable processing Industry are either trying to circumvent the labor laws by clever tactics like employing contract / casual workers or implementing the welfare schemes for labourers in a half hearted manner. Only one or two firms have attempted to provide the working class their due. Though Kerala is famous for worker friendly trade union movement since the dawn of the twentieth century, the exploitative nature of non-formal work arrangements in the industry has not been focused so far. Surprisingly, there is little trade union movement at the firm level in this industry.

Summary

The pattern of investment in the sample firms revealed that the share of average fixed investment increased from home scale to large-scale firms implying that the size of the firms and the fixed capital are positively correlated. The share of debt not only increased as the size of the firm increased but also forms a substantial share of the funds employed by the sample firms. It is however satisfactory to note that the firms had more current assets than current liabilities. An analysis of the cost structure showed that the share of fixed cost declined from home scale to large-scale units. Conversely the share of variable cost increased as the size of the firm increased because of the differences in labour costs and packing costs.

Productivity analysis revealed that the productivity and size of the firm was correlated. Productivity analysis showed that the ratio of net profit to sales declined as the size of the firm increased. On the other hand the return on investment was highest in cottage scale and lowest in home scale. An analysis of return on equity revealed that the ratio increased up to the small-scale category and then declined in large-scale units.

A small percentage of the sample firms (8.8 percent) were engaged in subcontracting. Though the arrangement hardly benefited the subcontracting firms, they continue to enter in to this sort of relationship mainly to reduce marketing risks.

An analysis of export performance of the sample firms revealed that export were more profitable than selling in the domestic market. From the critical difference analysis, it was obvious that there were high degree of inter category differences in respect of fixed capital, labour

cost, raw material cost, out put, profit and net value added in the sample firms.

It was also clear from an analysis of working conditions of labour in the sample firms, that most of the entrepreneurs were attempting to circumvent the labour laws by engaging casual female workers. Most of the workers were paid daily wages with no other employment benefits like sick leave, contributory provident fund, ESI benefits and other labour welfare measures.

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PROBLEMS AND PROSPECTS OF KERALA FRUIT AND VEGETABLE PROCESSING INDUSTRY

Rajeev C.B. “Economics of food processing industries in Kerala with particular reference to fruit and vegetable processing industry ” Thesis. Department of Economics , Dr. John Mathai Centre Thrissur, University of Calicut, 1998

CHAPTER - VI

PROBLEMS AND PROSPECTS OF KERALA FRUIT AND VEGETABLE PROCESSING INDUSTRY

In this chapter, we outline the major problems that inhibit the development of fruit and vegetables processing industry. An attempt is also made to examine the prospects for the growth of the Industry. By taking into account of the supply side and demand side factors the projection of demand for 2000 AD and 2005 AD made provides an insight in to the growth potential of the industry.

VI : 1/ Problems.

The major problems of the industry are the following.

(a) Finance.

For smooth operation and expansion of any Industry accessibility to finance on reasonable terms is important and this is well documented in economic literature. This is more so of fruit and vegetable processing industry due to its seasonal characteristics. The industry has to procure the fruits / vegetables during the harvesting period which is short. They have to be stored for a considerable period of time and this necessitates large investment in working capital. The commercial banks are reluctant to lend huge funds for working capital needs of this industry.

(b) Inputs.

In Kerala fruits / vegetables are grown largely as subsidiary crops rather than as a main crop. No large orchards / estates for growing vegetables / fruits are available to facilitate the processors to obtain quality fruits / vegetables. Thus processors have to depend on agents to procure fresh fruits / vegetables which invariably increase their prices.

Problems in respect of other raw materials also exist. Processors indicated that as the availability of sulphur free sugar in the market is low, they were forced to utilise the ordinary sugar which reduce the quality of jams, squashes, syrups and canned fruits manufactured.

Also the packing materials like glass bottles, plastic jars, tin cans, plastic cups, cartons and wooden boxes are also in short supply in Kerala. This is mainly due to the fact that the firms producing these materials are located outside the state.

Another problem is the acute shortage of electricity which is required both in processing operations and also for the storing semi processed and raw materials for future processing. This is more so in Kerala as the state is facing severe power crisis since the early 1980's.

(c) Quality Control.

Quality plays a crucial role in the marketing of food products in general and the fruit / vegetable products in particular. Quality products can be produced only if proper quality inspection can be made at different stages such as at the time of procurement of fruits / vegetables, processing operations and packaging stages.

In India FPO Act 1955 and prevention of Food Adulteration (PFA Act 1954) lay down certain statutory provisions regarding the quality of fruit / vegetable products. Only very few firms in Kerala have laboratory facilities and technical personnel to test the quality of processed products. This is mainly because of the fact that majority of Kerala firms are home scale and cottage scale units which find it difficult to set up individual quality control facilities. Thus lack of common quality control laboratories in Kerala force many processors not to control the quality of their fruit / vegetable products.

(d) **Marketing.**

Another problem of the industry is its inability to market effectively its products even in Kerala markets. this is mainly due to the stiff competition faced by the industry in the state from the well known brands of transnational companies like Brook Bond Lipton India Ltd. (BBLIL), Nestle, and Kissan products situated outside Kerala. Their brands - Kissan, Dippys, Maggi - because of the well organised marketing strategies have positioned themselves in the Kerala market by various sales promotional campaigns. Most of Kerala firms could not counter the penetration of the state / regional markets by these transnational brands. Moreover the marketing intelligence net work of Kerala firms are poor or non existent. All these limitations of the Kerala firms are the consequence of little resource power at their disposal for spending heavily for capturing market like the transnational firms.

In export marketing, the firms have to deal with frequent exchange rate fluctuations, face political and legal uncertainities or modify the products to a different set of needs and expectations. They have to acquire and maintains a good knowledge of the changing international marketing environment.

Kerala firms find it difficult to increase sales in world markets because of the following constraints.

(1) Inorder to build up contacts with foreign purchases and to popularise products in international markets, the exporting firms have to participate in world fairs and exhibitions abroad which is expensive.

(2) Exporters have to invite potential purchasers to their manufacturing facilities to impress on them the quality and standards of their products.

(3) Inorder to keep the relations continuing with the importers abroad, the entrepreneurs / managers of the firms have to visit them frequently.

It can be observed from Table VI : 1 and 2 that Kerala firms have very limited market areas and seldom spend on advertisements to attract consumer's attention to their products.

Table VI : 1

Area of marketing

Categories	Local Market Only	Home District Only	Neighbou-ring Distr-ict also	Region	Whole state	Export also	Total
1	2	3	4	5	6	7	8
Home Scale	19 [63.3]	11 [36.7]	Nil	Nil	Nil	Nil	30 [100]
Cottage Scale	13 [65]	2 [10]	5 [25]	Nil	Nil	Nil	20 [100]
Small Scale	2 [12.5]	2 [12.5]	3 [18.7]	Nil	9 [56.3]	4	16 [100]
Large Scale	Nil	Nil	Nil	3 [21.4]	11 [78.6]	6	14 [100]
All	34 [42.5]	15 [18.8]	8 [10]	3 [3.3]	20 [25]	10	80 [100]

Table VI : 1 reveals the area of market of the sample firms. Forty nine firms depend on the home district market only (61 percent). Ninety two percent of this group come under Home scale and Cottage scale categories. This implies that tiny units are satisfied with small niche markets fearing that they could not penetrate into large markets because of the lack of popular brand names. Eleven firms (13% of the total) cater to two or three District markets. It is interesting to note that three firms from

large scale category come under this group. Only twenty firms (25% of the total) have a statewide market. Forty five percent of this group are small scale firms and the large scale.

From the table, it can be seen that a very few firms have a wider market area and the number of firms exporting are still lesser.

Table VI : 2

Mode of advertising

Categories	Posters Banners Only	News Papers Weeklies Only	Radios Only	T V Only	All the Mass Media	Total
Home Scale	1 [100]	Nil	Nil	Nil	Nil	1 [100]
Cottage Scale	4 [50]	2 [25]	2 [25]	Nil	Nil	8 [100]
Small Scale	3 [42.8]	3 [42.8]	1 [14.3]	Nil	Nil	7 [100]
Large Scale	2 [18.2]	1 [9.1]	3 [27.3]	3 [27.3]	2 [18.2]	11 [100]
All	10 [37]	6 [22.2]	6 [22.2]	3 [11.1]	2 [7.4]	27 [100]

Table VI : 2 shows the mode of advertising the sample firms adopted. It is worthy to note that only twenty seven firms (34% of the total) are advertising in one or other forms. The most popular mode of advertising is by posters and banners followed by print media and radios. Only five firms are making use of visual media to advertise their products. It

is thus obvious that lack of advertising is one of the reason for the failure of brand images for Kerala firms. The national brands like Priya, Kissan, Maggi and Mother's recipe are spending substantial amount for advertisement in visual and print media. Thus the problem of marketing of Kerala products will be graver in the years to come as more transnationals like Unilever, Nestle, Heinz, PepsiCo and Cadburys are entering the national processed fruit / vegetable product markets after the economic liberalisation of 1991.

(e) Govt. Policy.

In this connection, entrepreneurs have pointed out that certain Govt. policy measures are not conducive for the healthy development of fruit / vegetable processing industry.

The Kerala Land Reforms Act 1964 had exempted plantations like tea, coffee, rubber and cardamom from ceiling - but neglected estates growing pineapples, cashew and other fruits / vegetables. Several studies have shown that this has resulted in large scale shifting of crops from fruit / vegetables to plantation products. This naturally take away incentives to grow fruits / vegetables for processing. [Joshy K. T., 1985, CFTRI 1983]

Govt. imposes several arbitrary duties and levies on fruit / vegetable products which invariably increase the market prices of these products beyond the capacity of middle income groups. The prevailing slab system of sales tax on the sales turnover of fruit products forces many firms to reduce their annual production under threshold levels. Firms producing more than fifty lakhs worth of fruit / vegetable products like jam, squash and juices, per year have to pay twelve percent sales tax where as others producing less than fifty lakhs per annum need only pay four percent sale tax. Thus this discriminatory system of salestaxation forces many entrepreneurs to reduce their annual production with in fifty lakhs only. Tax

incidence on many food processing equipment like freezers, air conditioners and machinery are very high leading to high costs of fixed investments.

VI : 2 Prospects of the industry.

The prospects of the industry in Kerala can be studied by taking stock of two factors - Supply and Demand.

Supply side factors

It is well documented that the production of vegetables in Kerala has been inadequate for the daily consumption of households. More than seventy percent of the state's requirement is met through imports from the neighboring states of Tamil Nadu and Karnataka. Thus there is no availability of vegetables for processing except for green mangoes.

Table VI : 3 shows that Kerala produces about two million tonnes of fruits every year which accounts for more than six percent of the national production. The Table VI :4 gives the District wise details of four selected fruits which are not properly utilised for producing value added products. Major share of pineapples grown in the state goes out as raw materials for being industrially processed to metropolitan centers like Bangalore, Coimbatore, Madras and Mumbai. Only a marginal proportion of Kerala pineapples are processed in the state to produce pineapple jams and squashes. The other three fruits, papaya, jack fruit and cashew apple are not industrially processed. CFTRI Mysore has developed technologies to utilise these fruits in commercially viable projects.

Table VI : 3

Production of fruits and vegetables Kerala and all India. 1992 - '93.

Production in lakh tonnes

Crops	Kerala	All India	Kerala's Share
I Fruits			
(a) Mangoes	2.7	87.4	3.1
(b) Banana	2.6	77.7	3.3
(c) Pineapples	0.6	7.7	7.8
(d) Other Fruits *	14.1	157.2	8.9
Sub Total	20	330	6.1
II Vegetables **	29	710	4.1
Grand Total (I+II)	49	1040	4.7

Note : * Other fruits include papaya, cashew apples, guava, jack fruits and others in Kerala and for all India, it includes a lot of fruits not grown in Kerala significantly like apples, oranges, grapes, oka, supota, and others. Hence it is not possible to make a comparison of these production of these fruits.

** Details of vegetables grown in Kerala are not available for comparison

Source : (1) CMIE (1995) India's Agricultural Sector, September, Page 293.

(2) Govt. of Kerala, D. E. S. (1994).

Table VI : 4

District wise production of selected fruits in Kerala. 1992 - '93.

(Qty. in tonnes.)

District	Pine apples	Papaya	Jack fruits	Cashew apple	Total
1. Trivandrum	1,208	3,272	19,475	3,505	27,460
2. Kollam	2,718	688	27,133	5,745	36,284
3. Pathanamthitta	1,533	3,092	16,311	1,152	22,088
4. Alapuzha	392	4,196	7,808	2,614	15,010
5. Kottayam	5,855	5,073	17,126	383	28,437
6. Idukki	2,903	736	19,375	495	23,509
7. Ernakulam	16,040	4,553	22,101	1,177	43,871
8. Trichur	1,607	5,297	14,490	3,542	24,936
9. Palakkad	580	6,551	14,565	3,395	25,091
10. Malappuram	2,096	1,013	28,577	9,757	41,443
1. Kozhikode	1,635	743	24,650	3236	30,264
12. Waynad	304	1,957	21,455	379	24,095
13. Kannur	9,165	6,305	62,297	43,176	120,943
14. Kasargod	670	1,863	8,297	17,067	27,897
Total production(in tonnes)	46,706	45,339	303,660	95,623	491,328
Total area (in hectares)	5,033	12,108	70,850	109,035	197,026

Note : Here we have selected only four important fruits that are abundantly grown in Kerala principally because these fruits are under utilzes by thr Fruit / Vegetable Processing Industry. Fruits like Pappaya, Jack fruits and Cashew, apple are not at all commercially utilized to produce processed items

Source : Govt. of Kerala, Directorate of Economics and Statist ics, (1994)

Human resources.

The contribution of human factor to the success of the industry includes entrepreneurship, skilled and semi skilled labour and socio - cultural milieu. An entrepreneur is a catalytic agent who coordinates

Table VI : 5

Resources in Kerala and all India.

I. Human Resources	Kerala	All India
a) Population (1991) in millions	29.1 [3.4]	846.3
b) Literacy (1991)	89.8	52.1
c) Circulation of news papers / journels per 1 lakh persons	19.17	6.37
II. Financial Resources		
a) Per capital deposit of scheduled commercial banks (March 1993)	3,920	3,125
b) Per capital cumulative assistance by financial institutions (March 1993)	760	1,704
III. Infrastructure		
a) Railway route length per 1000 sq. km. (1992 - '93)	26.45	19.01
b) Road length (in Kms. per 1000 sq. km.)	3173	544
c) Power deficit as percentage of requirement	3.3	7.8

Source : CMIE (1994) Basic Statistics relating to states of India, September.

the natural and physical resources into appropriate manufacturing possibilities. Entrepreneurship being an individual based characteristic is mostly influenced by education, skills, innovation and ambition. In Kerala, there are a large number of young men / women who have these talents if proper direction is provided. Kerala has the highest Human Development index among the various states in India. (UNDP, Human Development Report 1997: 116)

It is a well documented fact that commercial banks in Kerala get huge deposits from the middle income / high income groups from the state and Non resident Indians working abroad. Thus there are inverstible financial resources at the hands of financial institutions in the state which can be made use of to start new industries. Several studies have pointed out that the credit / deposit ratio has been very low in the state owing to lack of feasible investment projects. [George K.K. 1988]

Infra structural facilities in Kerala are also better than other states. Table VI:5 shows that the state is far ahead in infrastructure than the national average. To note, it was observed that both in terms of road and railways, Kerala was far developed than other parts of India.

Demand side factors.

The market demand for the processed fruits / vegetables comes from the following two major sources.

Domestic consumer demand.

It is an observed fact that Keralites consume more processed foods than average Indians. This was mainly due to structural charges in the dietary habits of the people of the state due to the increased exposure to international food habits. Since the 1970's the number of Keralites going abroad seeking employment has increased phenomenally.

The increased remittances from them have fueled the market demand for all types of consumer goods. The increased contact of Keralites with various cultures and civilisation also changed the nature of food consumed by the middle class and high income groups in Kerala.

Export demand.

The export demand for processed fruits/ vegetables like pickles, jams, juices are on the increase as several studies have shown (Institute of Foreign Trade 1972, Trade Development Authority 1986). There is great scope for accelerating exports of Banana pulp, jack fruit jam to middle east countries and papaya pulp to European economies if proper export development strategies are taken.

It can be argued that most of the supply and demand factors are favorable for the setting up of more fruit processing firms by introducing sophisticated technique of processing. In this context, it is pertinent to observe that fruit processing industry has not industrially utilised even one percent of the fruits like pineapples, jack fruit, papaya and cashew apple. By increased processing of these fruits, it is possible for the state to accelerate the industrialisation process by creating more employment and income opportunities.

VI.3 Forecasting Production Trends.

On the basis of available production data in respect of five major fruit / vegetable products in Kerala, it is possible to project production trends for AD 2000 and AD 2005. This is computed by making use of linear model.

$$AAGR = [\,AL\,(\ \frac{Log\ Qn - Log\ Qo}{N}\ ) - 1\,]\,100$$

Where Al : Antilogarithm

Log Qn : Logarithm of quantity produced in the terminal year.

Log Qo : Logarithm of quantity produced in the base year.

N : Number of years.

We have estimated the average annual growth rate of production of each product group during 1968 - 1982 period and 1982 - 1995 period. From Table VI : 6, it can be seen that during the first period, RTS beverages recorded the highest growth (30.6 percent) followed by pickles (11.4 percent), jams (9.3 percent), squashes and syrups (6.9 percent), and canned fruits / vegetables (4.6 percent). In the second period, pickles recorded the highest growth rate (14.9 percent), followed by RTS beverages (3.4 percent) squashes and syrups (2.6 percent) and jams (1.0 percent), canned fruits / vegetables have shown a negative growth of -3.7 percent in the same period.

On the basis of the annual growth rates calculated, we have projected the productions of selected processed fruits / vegetables in the state of Kerala. From the table, it is clear that for the year 2000 AD the RTS beverage category continue to have dominant share at 7949 tonnes. The second highest share will be for squashes and syrup. Pickles, canned fruits / vegetables and jams will have third fourth and fifth positions respectively. Thus the total production projected will be above twenty two thousand tones. The only product that shows a negative growth is canned fruits / vegetables and the main reason for this decline according to industry sources is the lack of adequate availability of open tin cans. Moreover, new techniques in canning operations adopted by large scale processors elsewhere in India have forced Kerala processors out of this market.

For the year 2005 AD, the highest share will be for pickles and the second highest share for RTS beverages. Squashes / Syrups may hold their third place in this year also. But for items like jams, there is

only modest growth in demand. This may be because of the penetration of Kerala market by other brands from outside state.

Table VI - 6

Projection of production up to AD. 2000 and 2005.

Products	1968	1982	Average annual growth rate for 1968 - 82	1995	Average annual growth rate for 1982 - 95	Projected Production for 2000	Projected Production for 2005
1. RTS Beverages	104	4,367	30.6	6,960	3.4	7,949	9,387
2. Pickles	87	396	11.4	2,790	14.9	4,873	9,784
3. Squashes / Syrups	1,426	3,649	6.9	5,240	2.6	5,809	6,607
4. Jams	202	704	9.3	810	1	848	885
5. Canned fruits and vegetables	1,143	2,137	4.6	1,260	3.7	1,083	897
6. Other items	98	332	9.1	1000	8.6	1,518	2,298
Total	3060	11585		18060		22080	29858

Source : 1. SISI Thrissur for 1968.

2. CFTRI (1983) Opict for 1982.

3. Malabar Cost Products, Kottayam for 1995.

From the above analysis, we can observe that Kerala processors have to concentrate on pickles, RTS beverages and

squashes / syrups rather than going for tomato sauces, canned products and jams. The projection points out the fact that Kerala fruit and vegetable processing Industry will experience modest growth in the coming eight years. Thus we can conclude that though there are numerous constraints, the potentials for growth of the industry are also strong.

TABLE VI : 7

Additional employment created during 2000 AD.

Categories	Additional value of output in lakhs	Capital output ratio	Additional capital to be employed in lakhs	Product-ivity of labour (Rs.)	Additional employment generated in Man days	Capital labour ratio
Home scale	1608	0.75	2144	195	8,24,615	260
Cottage scale	1608	1.32	1218	341	4,71,554	258
Small scale	1608	1.69	951	417	3,85,611	247
Large scale	1608	2.35	684	838	1,91,885	356
Combined	1608	1.98	812	601	2,67,554	303

Note : Additional value of output is estimated at constant prices. A uniform price of Rs. 40,000/ ton is taken arbitrarily to get money value of increased output in 2000 AD than that of 1995. Thus it can be seen that increased output will be 4020 tonnes (22080 - 18060) (4020*40,000 = Rs. 1608 lakhs)

From the projections made, it is only logical for us to point out that the industry can benefit much if more importance can be

given to the manufacture of various pickles and soft drinks since these two categories present the highest potential for growth.

It is also possible for us to estimate the amount of capital required and the employment generated during 2000 AD and 2005 AD by making use of capital output ratio and labour productivity measure of 1995 AD. Such an exercise is attempted in Tables VI : 7 and VI : 8.

TABLE VI : 8

Additional employment created during 2005 AD.

Categories	Additional value of output in lakhs	Capital output ratio	Additional capital to be employed in lakhs	Employ-ment pro ductivity in Rs.	Additional employment generated in man days	Capital labour ratio
Home scale	3111	0.75	4148	195	15,95,384	260
Cottage scale	3111	1.32	2357	341	9,12,316	258
Small scale	3111	1.64	1897	417	7,46,043	247
Large scale	3111	2.35	1324	838	3,71,241	356
Combined	3111	1.98	1571	601	5,17,637	303

Note : See note in Table VI : 7. Here the additional value of output is estimated as 3111 lakhs by multiplying 7778 tonnes with Rs. 40,000. (29858 - 22080)

Table VI : 7 shows the additional amount of capital needed to produce the projected production in 2000 AD in different size categories. It can be observed that additional capital investment is the lowest if we choose large scale size category and the highest if the home scale

category is adopted. But the large scale category would be able to create least employment. Thus from a private entrepreneur's perspective, it is better to choose large scale category of production so that additional capital to be invested is the least and the additional labour input is the least. Only from an employment perspective, we can argue for the setting up of more home scale and cottage scale units.

Table VI : 8 depicts the additional amount of capital required to manufacture the projected production for 2005 AD in various size categories. Here the implication is the same as observed in Table VI : 7. The large scale categories are the most productive in the sense that this category utilises the minimum amount of capital and labour to produce the same level of output.

From the foregoing analysis, it is evident that the fruit and vegetable processing industry has good prospects in the future as it is possible to absorb more labourers with lesser amount of capital as the capital labour ratio of this industry is one of the lowest. Most of processed fruit / vegetable products will be having sufficient market demand for the entrepreneurs to raise production either by expanding existing firms or by selling up new firms.

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SUMMARY AND CONCLUSIONS

Rajeev C.B. “Economics of food processing industries in Kerala with particular reference to fruit and vegetable processing industry ” Thesis. Department of Economics , Dr. John Mathai Centre Thrissur, University of Calicut, 1998

CHAPTER - VII

SUMMARY AND CONCLUSIONS

This chapter summaries the major findings of the study and make certain policy prescriptions for accelerating the development of fruit processing industry in the state of Kerala.

VII : 1 Summary of Findings.

Food processing industries are those which transform agricultural produces like cereals, fruits, vegetables, milk, eggs, chicken, meat and marine organisms in to edible commodities for human consumption. Depending on the degree of processing operation, these industries can be divided into different categories. Historically food processing started from hand pounding of cereals, pressing of oil seeds, and crushing of sugarcane. In course of time, several important processing techniques were introduced by trial and error methods. We can argue that the pace of technical advancement in this sector remained relatively slow until the industrial revolution in Europe. During the course of the last two and half countries, revolutionary changes have taken place in the method of processing different kinds of food in home, hotels, bakeries and factories. The entry of transnational corporations during the nineteenth century in America and West Europe have brought in these drastic changes.

Like other sectors of manufacturing, the food processing operations in most of the developing economies started very late. The twentieth century witnessed the beginning of food processing industries in these economies also. These were primarily joint efforts of the indigenous

capital with technical collaboration from European and American corporation. This may be the reason for the continue dominance of transnationals in the food processing sector of many developing countries of Asia, Africa, and Latin America.

One of the most important advantage of food processing is that it reduces the economic waste of perishable agricultural commodities by converting them into value added edible forms that may be stored for long time. A lot of ready to eat foods are available in our supermarkets / provision stores that help women to reduce the time for making food in our households. Further, processing creates more employment and income to the developing countries by accelerating the industrialization process. Presently the world is manufacturing about 2000 billions worth of processed foods which accounts for more than ten percent of the total manufactured commodities in the world. The developed economies though supports less than fifteen percent of world population produce and consume more than sixty percent of the total processed foods.

In India, the food processing sector has been growing at phenomenal rates during 1980's and 1990's. Though Indian exports of processed food have registered substantial increase, her share of most processed food items in global exports has declined during the 1980's. Many scholars are of view that food processing sector has great potentials for development in India because of the prevailing supply and demand factors. Quite substantial investments (both foreign and domestic) have been approved (during the seven years from 1991) in this sector.

It is in this background, the present analysis of the fruit processing industry in the state of Kerala is attempted. The major focus of the study is to make an economic appraisal of the working of the industry

in Kerala. The work is mainly an empirical one. Apart from attempting economic evaluation of firm level efficiency on the basis of primary data collected, the thesis also tries to highlight the major problems the industry presently confronts in the state.

After presenting an overview of the food processing sector in the state of Kerala, we have examined the present status of fruit and vegetable processing industry at all India level with special focus on Kerala. Based on the Annual Survey of Industries data, a comparative analysis of the industry in India and Kerala was done by utilizing major structural ratios and technical coefficients. The results of such an exercise, reveals that Kerala industry utilizes lower capital, produces lesser output, creates lesser net value added and lesser employment opportunities per factory. This implies that the industry in the state is relatively small in the scale of operation. It has been observed that Kerala fruit / vegetable processing industry creates more employment with one unit of fixed capital, more output per employee but provides lesser average emoluments. In utilizing fixed capital, Kerala fruit / vegetable processing industry is better than all India as revealed by higher output per unit of capital.

A sample of eighty firms were selected by the random sampling technique out of two hundred and thirty units. They are classified on the basis of installed capacity as Home-scale, (Below ten tonnes) Cottage-scale (Between ten to fifty tonnes) Small-scale (Between Fifty to two fifty tonnes) and Large-scale (Above two fifty tonnes)

The location preferences of the firms were in cities and towns because sixty nine percent of our sample firms were situated in cities and towns. In other words the revealed preference suggested that the

industry was located near the consuming centers rather than near the sources of supply of fruits/ vegetables.

In respect of ownership, it was observed that the industry was mostly organized as partnership (fifty eight percent) and proprietary (thirty five percent units). Co-op. Societies accounted for five percent ; Public limited company and Govt. owned company account for one percent each.

Taking stock of management structure of these firms, it was observed that professional managers and cost accountants were lacking even in large-scale firms. The major functions of purchasing, supervising production and finding markets and other allied functions are managed by the proprietor or partners themselves. This was one of the major weakness of the industry in the state. This state of affairs lead to poor co-ordination and lack of perspective planning considering the market situations. Even firms with good market potential were not growth oriented but preferred to produce less in order to reduce competition.

A study of entrepreneurial characteristics revealed that more than seventy five percent of entrepreneurs were above forty years of age ; a good percent of them were well educated ; Religion wise, they represented all three major religions Hindus, Muslims, and Christians. As against the population share of about eighteen percent, Christians form thirty nine percent; the proportion of Muslims is in conformity with their share in the state's population. Hindus account for about sixty percent in the state ; but their share in the entrepreneurial class is far below at thirty-eight percent. This implies that sociological theories placing entrepreneurial attributes to Protestant values has some relevance. However only a detailed analysis can put forward any definite conclusions.

Analyzing the nature of employment and working conditions in the industry, one of the most striking feature was the dominance of female casual employment. Most of the female workers were paid daily wages with no claim of sick leave, contributory provident fund, ESI benefits and other labour welfare measures. The working conditions were not congenial for the healthy development of the faculties of workers. Less than forty percent of our sample firms provide any kind of labour welfare measures apart from the remuneration paid.

The industry in Kerala produced traditional items of fruit / vegetable products. Very little innovation has been attempted to introduce product heterogeneity and new varieties of products that have been launched in other parts of the country. This lack of initiative was also observed in respect of methods of preservation. Even old processing technique of canning was done by very few firms on the argument that open tin cans were not available in time. Freeze drying, radiation and block freezing had not been introduced in the state so far.

The fruit and vegetable processing industry required less investment in plant and machinery in Kerala as the processing operation was labour intensive. The share of fixed asset was highest in large-scale and lowest in home-scale firms. Similarly, the variable cost was highest in large-scale and lowest in home-scale firms.

Production function analysis reveal that capital contribution to output is insignificant and labour is the major significant factor influencing the level of output. This fact can be observed by the higher value of coefficient α and lower value of β in the Double log Cobb Douglas

model. At the aggregate level, the industry is operating at increasing returns to scale.

Critical difference analysis highlighted the fact that there were high degrees of variations among the four categories of firms. There was substantial difference among the four categories of firms in respect of net value added per fixed capital. Interestingly, the analysis pointed out that net value added per unit of output was highest in home-scale firms. This may imply that value addition process was more efficient in lower scales of production. The profitability analysis also revealed that there was no simple correlation between the size of the firm and profitability. Quite unexpectedly, smaller firms showed higher profitability performance than large-scale units.

Another interesting fact emerged out of this study was that about thirteen percent of the total output of the sample firms were manufactured for being marketed under brands of big firms located outside the state. An analysis of their price-cost margin revealed that by this subcontracting practice, the state economy is losing substantial opportunities for creating income and employment. More over, the sample firms were also getting lower profit margins out of this relationship. But they were continuing in this practice because of their fear of risks in marketing their products in the state.

It is true that in the present liberalized economic environment the industry was facing multifarious constraints to development. The major among them were the problem of mobilizing adequate finance for working capital needs, penetration of markets because of brand images built by transnationals and big national players, lack of quality control and difficulties in procuring quality fruits and vegetables. Though these

constraints dampen the prospects of the industry in Kerala, several positive factors like availability of unique fruits, infra-structural facilities and market demand potentials make us to conclude that the industry can be developed to accelerate the industrialization process of the state provided the state government and Union Govt. take adequate policy support measures.

VII : 2 **Policy Prescriptions.**

Fruit and vegetable processing can economically utilize the surplus horticultural production in the peak harvesting season to avoid losses, improve the quality of the diet of the people by providing off season fruits / vegetables, create large-scale employment for uneducated men and women and also accelerates the value addition process in the state. Because of these advantages, this industry has to be supported by suitable policy changes by the state Govt. and union Govt. The following are the principal suggestions for aiding the healthy growth of the fruit and vegetable processing industry in Kerala.

(1) Adequate finance is a sine-qua-non of developing any industry. The existing fruit / vegetable processing firms have to be modernized by introducing cost effective machinery's so that unit cost of manufacturing may be reduced. For achieving this end, long term finance at concessional rates for purchasing machinery should be available. Moreover, as the industry has to procure fruits during the harvesting seasons, it may require huge working capital which can be financed through banks. Presently banks are reluctant to lend money to fruit processors as they have little immovable property to offer as collateral securities. Naturally the conventional credit policy makes them to lose large important export orders. Govt. may take appropriate steps to direct public sector banks to finance the procurement and processing operations of efficient firms which process fruit / vegetable products.

Commercial banks can also encourage new entrepreneurs to establish processing units to introduce new products based on cashew, apple, pappaya, and jack fruits which are not properly utilized for commercial purposes in the state.

(2) Though government has withdrawn excise duties in many processed fruit / vegetable products, tax rates on food processing equipment and packing materials are still very high. This should be reduced so that the processors can sell their product at lower market prices to enable more people to be able to consume processed fruits / vegetables.

(3) Govt. Should declare land under fruits / vegetables as plantations so that these fruit orchards may be exempted from Land Ceiling Act. Such a move may motivate farmers to grow more fruits with in Kerala. This is on basis of the observation that many pineapple estates were converted to rubber / cardamom estate to avoid Land Ceiling Act in the 1970's in the state.

(4) Another policy Govt. may take in this respect is to allot large tracts of Govt. land on long lease for fruit processors to enable them to grow good quality fruits for processing. Large processors may also be encouraged to enter into contracts with growers of pineapple and banana, so that farmers get remunerative prices for these fruits.

(5) Govt. also can introduce management / technical training programs for upgrading / structuring the skills of present day managers / workers of the industry to attain higher productivity.

(6) Govt. may set up a central coordinating agency for providing the following strategic services to the small scale processors in Kerala because these firms could not afford to set up such facilities individually.

(A) Data regarding availability of fruits / vegetable and nature of demand for processed fruit / vegetable may be made available to the small

firms for taking important decisions in respect of procurement and manufacturing. In the present context of revolution in information technology, this is a thrust area where the Dept. of Horticulture can act as a catalyst for the growth of the industry.

(B) Provide infrastructure for testing the quality of processed fruit / vegetable in order to ensure consistent good quality of products. The small firms may find it difficult to set up their own quality control laboratories.

(C) Act as an agency for promoting the marketing of processed fruits / vegetables with in the state and outside Kerala by pooling together the products of small firms which could not spend heavily for brand promotion strategies. It will be preferable for this agency to promote a common brand name for processed fruits / vegetables. This is also very helpful in the present highly competitive environment where large firms like Kissan, BBLIL, and American dry fruit are spending huge amounts to capture Kerala market.

Kerala has the potential to increase the level of industrial processing of fruits from the present level of less than one percent to more than five percent within the next ten years, provided the state Govt. Along with private entrepreneurs chalk out conducive policy environment to modernize this under utilized sub sector of food processing actively. By accelerating employment and income generation through proper utilization of fruits grown in the state, the industry can add momentum to the industrialization of the state in the coming years.

Annexure - I

NATIONAL INDUSTRIAL CLASSIFICATION (NIC) 1971 CODES AND DESCRIPTIONS - AN EXTRACT.

Industry code Division Group	Description of Industry
20 - 21	Manufacture of Food Products.
200	Slaughtering, preparation and preservation of meat.
201	Manufacture of dairy products.
202	Canning and preservation of fruits and vegetables.
203	Processing, canning and preservation of fish, crustacean and similar foods.
204	Grain milling.
205	Manufacture of bakery products.
206	Manufacture and refining of sugar (vaccum pan sugar factories)
207	Production of indigenous sugar, boora, khandsari, gur, etc. from sugarcane, palm jui ce etc.
208	Production of common salt.
209	Manufacture of cocoa products and sugar confectionery (including sweet meats)
210	Manufacture of hydrogenated oils and vanaspati, ghee, etc.
211	Manufacture of vegetable oils and fats / other than hydrogenated.
212	Manufacture of animal oils and fats, manufacture of fish oil.
213	Processing and blending of tea including manufacture of instant tea.
214	Coffee curing, roasting, grinding and blending etc.
215	Processing of edible nuts.
216	Manufac ture if ice.
217	Manufacture of prepared animal and bird feed.
218	Manufacture of starch.
219	Manufacture of food products n . e . c .

Annexure - II

NAME AND ADDRESS OF THE LICENSES IN KERALA

Sl. No	Name & Address of the factories
1.	Canning Industries Cochin Ltd., Caico Road, Valarkavu, Thrissur. 680 006
2.	Malabar cost Products, Thodupuzha Road, Vazhakulam. Ernakulam. 686 670.
3.	Visc o Food Products, Vazhakulam, Ernakulam. 686 670.
4.	Malabar Fruit Products., Neelampuzha Kavala, Vazhakulam, Ernakulam. Dt.
5.	Kalyan Products, Kuttanellur, Thrissur. 680 006.
6.	Kerala Agro Products, Arampuzha, Punalur, Quilon Dt.
7.	Madurai Soft Drinks P. Ltd., Ayikarpadi PO. Malapuram Dt.637 637.
8.	Kerala Co-operative Milk Marketing Federation Ltd.,Central Producyion Dairy, K.C.M.M.F. Ltd., Punnakara, Aleppy Dt.
9.	Accelerated Freeze Drying Co., Ltd., Ezhupunna. Allapuzha. 688 548.
10	S.L.K Food Pro cessing, 328/12, Poovattuparamba, Calicut.
11.	Maruty Foods Private Ltd., PB No.1658, Cochin. 682 015.
12.	Darlco Canning Ltd., Moospet Road, Thrissur.
13.	Elenjikal foods and Beverages (India) P. Ltd., Edathala PO, Alwaye, Ernakulam Dt. 683 651.
14.	Techno Chemicals Industries Ltd, PB No. 74, Oyittil Road, Calicut-1.
15.	The Canning Industries Cochin Ltd., Edacochin, Cochin. 682 006.
16.	Malabar Fruit Products Pb. No. 1. Bharananganam, Kottayam Dt.

17. The Thrissur Fruit & Vegetable Marketing Society Ltd., Nadathara, Via Mission Hospital, Thrissur.
18. Premier Food Products, NH. Mannuthy, Thrissur. 680 651.
19. Uniroyal Marine Export Ltd., 11/9. Vengalam PO, Changanacherry. Calicut. 673 303.
20. Uma Exports, V/97. Karumani Road, Kannara PO, Thiruvananthapuram. 695 040.
21. S. S. Food Packers, MIE, angamally, Ernakulam. 653 872.
22. Regional Agro Industries Development Corporation Ltd., PB. No. 407, Cannanore. 670 002.
23. Standard Beverages, Aruvikara PO, Via. Karakulam, Thiruvananthapuram Dt.
24. Nirmal Beverages, Aruvikara PO, Via. Karakulam, Thiruvananthapuram Dt.
25. West India Beverages & Foods Products, Thottada, Cannanore. 670 007
26. Foodpacks Indiana, Trikariyoor, Via.Kothamangalam, Idukky.686 692.
27. Pineapple Marketing Co-op P. Society Ltd., K. 454, Amayanur, Ernakulam. 686 025.
28. Sri. Mahalaxmi Food Industries, Cheramal Chambers, 27/354. Kurugupally Road, Ernakulam. 682 015.
29. Tata Tea Ltd., Mushooms Project, Munnar, Idukki. 685 612.
30. Allied Beverages, 19/223. Puthiyapalam, C alicut.2
31. Malabar Coast Products, Palathingal House, T. B. Road, Kottayam-1
32. Herbal Isolates P. Ltd., Panacode PO, Ernakulam Dt. 682 310.
33. Sree Sadan Beverages co., Onden Road, Cannanore.
34. Naveen Enterprises, X/754. Kollad PO, Kottayam. 686 029.

35. Easrtern condiments P. Ltd, Eastern Valley, Adimali, Idukki. 685 561.
36. Namputhiries Pickle Industries, Manakad PO, Thodupuzha, Idukki Dt.
37. Narasu's food Products, 1/440. Temple Road, Chalakara, Thrissur Dt.
38. Kalpaka Processing Co., Neelamp eroor, Alleppy Dt.
39. Pepper India Corporation, Opp. Vellappally lane, K K Road, Kottayam-1
40. Spice Valley Products Ward No. K.V. III. H. No. 2164, Palai, Kottayam. 686 575
41. Naveen Marcose, XII/125 A. Nattakam, Kottayam, 686 013.
42. Gandhigram Village Industries Co-Op. Complex. TICCOS Ltd, Vazhoor PO, Kottayam.
43. Malabar Food Products, 32/402. A. Chalikavattom, Vennela South, Cochon-25.
44. Kalyan Food & Bevetages, VII/270. Bridgeview, Bank Junction, Alwaye.683 001.
45. Avon Be verages, (Cochin) Chitrapura Road, Irimpanam, Ernakulam. 682 309
46. Malabar canning , XXXVI/1545. M.G Road, Ernakulam.
47. Vamana Food Products, 1/705, Karanthur PO, Kunnamangalam, Kozhokode. 673 571.
48. ABC Food Products Kakkathuruthy Road, Chetiparamba, Irinjalakida, Thrissur. 680 121.
49. Manna Food Industries, Adooparamba, Muvattupuzha. Ernakulam. Dt.
50. Home Maid Foods & spices, Vadookara, Thrissur. 680 007.
51. Shati Food Products, Badagara, Kozhikode, 673 106.
52. Khatai Food Industries, Kh atai Mahal, V. R. Menon Road, Cochin-16.
53. Manoor Enterprises, Kumbazhamuni PO, Pattanamthitta. 689 653.

54. Gayathri Food Products, MIE Manarcaud PO, Thodupuzha. Idukki Dt.
55. Uma Exports, 597. Thanni moodu, Kallar PO. Idukki Dt.
56. Amrutha Fruit Products, Rural Development Centre PO, Pakalamuttam, Kuruvilangad PO, Kottayam Dt. 686 642.
57. Priyadarshini Fruit Products, Vazhakulathu Pariyaram, Kottayam-21.
58. Thankam Food Products, 22/118. Single Street, Nurani, Palghat-4
59. Geo Food Products, Adoop arambu, Muvattupuzha PO, Ernakulam Dt.
60. President, Sagar Society (Reg. No.P/193/89), Kuriyanoor Po, Tiruvalla, Pathanamthitta Dt. 689 550.
61. Malabar Agro Fruit Processors, XIV/88.(New No. X10/467), Chittathukkara, Kakkanad, Kochi. 682 030.
62. The Pharmaceuticals and Chemicals (Travancore) P. Ltd.,TC/473, Saminath Vilas Pettah, Vanchiyoor Po, Thiruvananthapuram. 695 035.
63. A. N. M Products, Beliapatnam, Cannanore-10.
64. Superintendent, Agricultural Reaearch Stn, Nelliampathy, Palghat Dt.
65. Sw adeshi Fruit Products, 16/70, Kuttichira, Calicut-1.
66. Gecy Food Products, Punkunnam Road, Palai, Kottayam Dt.
67. Bymor Food Products, 26/184, Govindapuram, Calicut-6.
68. Hero Fruit Products, 16/114. Thangals Road, Calicut-1
69. Mariana Food Products, Kawdiar Road, Thiruvananthapuram-3.
70. Multi Food Products, 33/654 T. D. Road. Coahin 1.
71. Vertex Food Products, Thanackal PO, Thiruvananthapuram. 695 313.
72. Keral Food Products, Kunnampurathu veedu, Olessa, Kottayam-14.
73. M.C. Fruit Products, 3/ 1 82 B. Near 6 th Rly.Gate. Calicut-1.
74. Arasco Fruit Products, 15/768. South Beach Road, Calicut-1
75. Society of St. Vincent De Paul, Near Railway station, Alwaye-1

76. India Food Industries (workshop) Co-op. Society Ltd, No.S. Ind (K),135, Puthenangadi Bazar, Market Road, Kanjirapally, Idukki Dt.

77. Asian Spices, MIE Pampady, Kottayam Dt.

78. Malabar Spices, 2. MIE Manimala, Kottayam Dt.

79. The Eves' Foods Products, Spice India Bldg, Quilon-2.

80. Volga Food Products, 15/502. West Kallai, Calicut-3.

81. Arikuzha K.I.I.C.S. Ltd,. No.K.V. Ind (E)12. Arikuzha PO, Idukki Dt.

82. Malabar Cost Enterprises, 24/1458. Karumpaidyam, Arts College, Meenachandai, Calicut.

83. Fine Food and Allied Products, 12/474, Kuttichira, Calicut-1

84. Kerala Soft Drinks, 10 & 4 B. Alappat Cross Road, Ravipuram.

85. Vikas Products, 23/ 169, Kannamchery, Calicut.673 003.

86. Variety Edible & Palatables, 16/453, annie Hall Road, Calicut-23.

87. Kerala Rural Indl. Service centre, Ambady Naga, Erevichira PO, Thottakadu. Kottayam.

88. Foursome Corporation, 3/28. A. Post Alavil, Kannur. 670 008.

89. Neo Food Industroes, Paranchockal House, Thukkalassery, Thiruvalla, Kottayam Dt. 6689 101.

90. Garden Fruit Products, Edakattuvayal, Arrakkunnam, Ernakulam Dt.

91. Indo Food Packers, Kodugoor Junction, Vazhoor. 686 504.

92. Kalyan Soft Drinks, Kuttanallur, Thrissur. 680 004.

93. Azad Processed Food, 20/957, Kallai, calicut-3.

94. The Secretary, Nedumangad Processing & Mktg, Girijan Vanitha Co-op. Soc. Ltd., Nedumangad, Thiruvananthapuram. Dt. 695 541.

95. Central Marketing Products, 8/49. A. Kurumandal, South Paravur PO, Quilon Dt.

96. Mount Sahiya, Attapattam, Kumli, Idukki Dt.

97. High Range Products, 12/ 150. A. Nattakam, Kottayam.

98. Director, Food Processing & Nutrition Centre, Balussery, Calicut Dt.

99. Capital Products, PO. Farook college, Calicut. 673 632.

100. Fruit Preservation Centre, Changanacherry social Service Society, Mallapally West PO. Pathanamthitta. 686 101.

101. Arkeyan Food Products, 24/ 285. Easwari Vilas, Sasthan Koil road, Thycaud, Thiruvananthapuram. 695 014.

102. Kumar Fruit Products, 39/1145-6. Ashok Road, North Kaloor, Cochin-17.

103. National Beverages, H. No. XX/71. Valiyakunnu Kizhuvaliram PO. Attingal. 695 104.

104 Feast Food Products, 4/439 (D) Industrial area, Tellicherry. 670 661.

105. Archana Fruit Products, Kothala PO, Pambady, Kottayam Dt.

106. Naveen Food Products, 425. A. Marathakara, thrissur Dt.

107. Dual Beverages, Thekkumbhagam PO, Thodupuzha. 685 525.

108. Thirst Aid Beverages Co. Muthoor, PO. Thiruvalla. 689 107.

109. Volga Food Products, 15/1341, Pallikandi Road, Calicut-3.

110. Aisty Fruit Products, Thallakam PO, Kottayam. 686 016.

111. Elite Drinks, Pattankad PO, 688 531.

112. Shiaaj Industries, Kalakuttam, Thiruvananthapuram. 695 582.

113. Malankara Food Products, Pattam, Thiruvananthapuram. 695 004.

114. Arun Giri Food Products, Radhika Gardens, Panniyampadam, Mundur, Palghat. 678 592.

115. Indiana Dry Foods & Exports, Puthoor, PO. Kottarakara tk,Quilon Dt.

116. Modern Canning Industries, 49/1218. Chettupadukkara, Ponakkara Road, Edappally PO, Cochin. 682 024.

117. Sagra Food Products, Panachakam. IX/536. A.. Mannuthy. 680 651.

118. Southern Food Products, 8/81. A. Ollur Panchayat, Kuttanellur, Nethaji Road, Thrissur-14.

119. Super Drinks, Kokkalai, Thrissur-1.

120. Malabar Palatables, 15/1552. Puthiapalam Road, Chalapuram PO, Calicut. 673 002.

121. Marry Fruit Products, Lavana Vazhakulam, Muvattupuzha. 686 670.

122. Namimuthar Farm Products P. Ltd., TC 24/1028. W & C Hospital Road, Thycaud, Thiruvananthapuram.

123. Fruiton Products, Nettiadu, Panmana, Edappallikara PO, Kollam. 691 583.

124. Riya Condiments, 20/1103,Cherumanassery Road, PO Kallai,Calicut-3.

125. Thripthy Products,1/204. A. Ollur Panchayat, Thrissur Dt. 680 306.

126. Konkan Food Industries, 4/1158. Cheralai, Cochin. 682 002.

127. Indian Foods & Species, 48/1748 B, Perumbatta Road, Elamakara, Cochin. 682 026.

128. Priyadarshini Charitable Society, 216/A. Ward No. 3. Puthupariyaram PO, Thodupuzha. 685 584.

129. Thriveni Foods, AP 4/703. Nellimoodu PO, Thiruvananthapuram. 695 524.

130. Grandmas Food Products, S. No. 549/7B/549/7A./2. Peringuzha.

131. Seven Charitable Association, 61-V, Temple Road, Vengoor, Kidangoor PO, Angamally. 683 591.

132. Pooram Foods, 11/70. A. WestVellanikara, Madakkathara PO, Thrissur. 680 656.

133. Tranvancore Pineapple Canning Co. Chemmathur, Punalur.

134. Popular Cool Drinks Factory, 1/ 21. Bazar Road, Mattancherry, Cochin-2.

135 Kerala Pickles, TC No. 36 / 293. Palkulangara, Drainage Road, Thiruvanthapuram.

136. Chatta Products, Chatta House, Chalad, Kannur-1.

137. Tropical Canners, Vellikulangara, via Kodakara, Near Chalakudi, Thrissur Dt.

138. Aluvilla Cottage Inds. Co-op. Soc. Ltd., Ayanimoodu, Vedivachakoil, 695 501

139. Malappuram Handicrafts & Cottage Inds, Service Co-op. Soc Ltd., 12/510. Jubilee Road, Malappuram Dt.

140 Darling Food Products, Alacode, Elamadesam PO, Thodupuzha Tk, Idukki Dt.

141. Kizhakkanakara Mahila Samajam (KIMS), Manvilla, Attipura Panchayat, H. No. A 189/111- Manvetta, Palakad Road, Kulathoor, Thiruvananthapuram. 695 583.

142. Samco Fruit Products, 32/15. Padanapalam, Chalat Road, Cannanore. 670 001.

143. Kerala Gandhi Smarak Nidhi Fruit Product Processing Centre, Poovachal PO. 695 575.

144. Standard food Products, 16/466. Mohiuddinpatti, Parappil, Calicut-1

145. A. D. Mohamed Ashraf Production, 12/55. Pilakool Main Road, Tellicherry-2

146. Arkay food Products, 28/741. Patturackal, Thrissur-1.

147. Rasana Foods, 12/484. Chalapuram PO, Calaicut-2

148. Paico Home Products, 9/717. B. Manthara Road, Cochin. 682 002.

149. Kwallity Condiments, west Kallai, Calicut-3.

150. Mini Food Products, Chettikulangara, Mavelikara-6.

151. Naveena Food Products, J J Bhavan, Keezhattingal, Attingal PO.

152. Acclerated Freeze Drying Co., Ezhupunna. 688 548.153. Basraj Food Products, Puranattukara. 680 551.

154. Meghna Exports, Pariyaram, Kuppani, P.O, Thaliparamba, Cannanore Dt.

155. Indian Foods & Flavours, Olavanna Road, Calicut.

156. Jaycee Products, 43/404. C orrea Road, Pachalam, Cochin. 682 012.

157. Lara Pickles & Condiments,11/560. A. Maradu. Ernakulam. 682 304.

158. Kamala Food Products, 1/564. Temple Road, Chalikara, Thrissur Dt.

159. Omega food Products, 20/588. Customs Road, Tellichery-1.

160. Niyo condiments,20/468. Attikkal, Sae Mills road, East Kallai,Calicut-3

161. Asian Products, 3/138. Sri. Laxmi Mukkai Palghat.

162. Food Processing Co. Brindavan Gardens, Killikavu, Quilon. 691 004.

163. Sosya Pickles, Rachna theatre, Opp. Palipuram, Palghat Dt. 679 305.

164. Simpson Food Products, Maliyilpauttu Veenad, Near Pashashilkavu, Vadakkevila, Quilon-10.

165. Devaki Cottage Inds., 3/82, Choliya edakulam, calicut. 633 306.

166. Modern Fruit Products, Marathakara PO, Ollur, Thrissur Dt. 680 306.

167. Seenu Products, 7/592. College road, Palghat,

168. Chakola Beverages, Muringoor PO, Chalakudi, Thrissur Dt.

169. Vocatioinal Training Centre, Bethel Ashram, Mission Qrs. Thrissur.

170. Tropical Fruit Products, XVI/322. Main Road, Near Muncipal office, Tripunithura. 682 301.

171. Mak Food Products, Gujrathi St. Calicut-1.

172. Attarwala Fruit Products Co., Needa parambakunnu PO. Veliparamba, Calicut-8

173. Pycot Foods & Condiments, 24/263, Kalapadam Paramba, Kunhikoya Road, Azechavattam, calicut-7.

174. Ponithura Industries, Kangazha. Kottayam Dt. 686 541.

175. S. B. Food Products, New House, VII/422, Perumkulam. 695 102.

176. Mascot Food Products, 14/480. Thottulipadam Road, Vallampoil west, Calicut.

177. Dean, The College of Horticulture, Kerala Agri. University, Vallanikara, Thrissur-54.

178. Prathiksha food Products, Panummandam, Mala puram. 676 106.

179. Guruji Food Products, 26/1451. A. Heera Manzil, Kommeri, Calicut. 673 007.

180. Chitra food Products, Perumanzal, Mana PO, attur, thrissur Dt.

181. Jessy Products, Gandhi Road, 4/345, Nakkadiparamba, Calicut. 673 032.

182. Modern Food Products. 2/184. Nathalam Bazar, Nallalam, Calicut. 673 027

183. Super King, Choondal House, Choondal Village, Thrissur. 680 502.

184. Preethi Food Products, 1/52 U.C. College, P.Alwaye. 603 102.

185. Leo foods & Spices, 10 p/402 Chalad, Cannanore. 670 014.

186. Beekay Food Products, 6/399. Chennkkal PO, Randathani, Malapiram. 676 510.

187. G. G. Beverages, D. No. 699 A. Pazhaveedu PO, Alleppy-9.

188. Abraham David, Rose Bldgs, Kayankulam PO, Alleppey Dt.

189. Parvathi Food Products, Parvathi Nivas, Pulikkal Mada, Chelakara, Thrissur Dt.

190. Aswathi Food Industries, Market Road, Udyampanoor, Ernakulam Dt.

191. Sree Vishnu Pickles, Manakad PO, Thodupuzha. 685 584.

192. Sarath i Food Packers, Mini Indl. Estate, Manakad PO, Thodupuzha.

193. Amba Foods, IV/198. A. Chalakkottukara, Thrissur. 680 005.

194. Divine Food Products, 12/398. Kayaparamba Road, Halwa Bazar, Calicut.

195. Major Food Products, Kaithakkad, Cherrathur, 671 313.

196. Tas Foods & Syrup, 15/2006, South Beach Road, Calicut. 673 001.

197. Tilak Food Products, Kayikara Lane,Muttathara,Thiruvananthapuram. 695 008.

198. Roshni Food Products, 46/1402. Vaduthala, Kochi. 682 023.

199. Bismi Entreprises,VII / 412 , Gunap ai Road, Marakadavu, Cochin-2.

200. Essjay Cultivators & Food Processors, 1/426. Taj Mahal, Nalanchira, Thiruvananthapuram.

201. Delicious Food Products, Ward XI. H. No. 261, Mangad, Kilikollam, Kollam, Kerala.

202. Vinayaka Food Products Mancaud, PO. Thodupuzha. Kerala.

203. Varma Foods & Spices, 9/730. A. Olavanna, Calicut-25.

204. Annapurna Condiments, 15/2010. South Beach Road, Calicut. 673 001.

205. Mangala foods, RS No. 78/1. Palakulangara PO, Taliparamba, Kannur Dt.

206 Nishi Foods & Condiments, 21/1697. A. Patterthodi, Payyanakkal PO. Kallai, Calicut.

207. Malavika Food Processing unit, C/o Block Devp. Officer, Mala Block, Kuruvilassery PO, Thrissur Dt.

208. Athithi Food Products, 69 B. Vijaupuram Panchayat, Mannercaud PO, Kottayam. 686 019.

209. Cranny's Food Products, VI/26. Mundakayam PO, Varikany. 686 513.

210. Tastee Food Products, Food Products, Onambalam. Mulavana PO, Kolam. 691 503.

211. K.K. Food Products , 4/213. B&C Palathara, Kottakkal, MalapuramDt.

212. Sagi Food Products, Karimkulam, Puthiyathura, PO. Thiruvananthapuram Dt.

213. Harisree Food Processing Unit, Haripad Block, Mannarsala PO, Alleppey Dt.

214. Rafny Food Products, 31/139. Opp. St.Peter's Church, Chalil, Tellicherri-4.

215. Green Valley Beverages, VII/324/A. Kuttanellur PO,Thrissur.

216. Anugrah Enterprises, IX/210. A. Nanthiattukunnam, Ezhikkara, N.Paravur, Ernakulam Dt.

217. Jyothi Brothers, VIII/205. Love Dale Railway Station Road, Thiruvananthapuram. 695 582.

218. Tropical Fruits, Kuravilangad, Kottayam Dt.

219. Fine Food Products, 4/370. Chenakkal, Kuttipuram, via Kottakkal, Malapuram Dt.

220. Pickles, Ambady.TC 10/1064 (2) Co-op. Housing Gardens, Mannanmoola, Peroorkada PO, Thiruvananthapuram. 695 005.

221. Block Development Officer, Food Processing & fruit Preservation Unit, Vypin Block, Ayyampilly PO, Ernakulam Dt.

222. Karikattil Enterprises, Ward No. III/621. S No. 77/4 B, Tycauttucherry PO, Shertallai. 688 528.

223. Lovely Food Industries, Ward No. VII,D. No.203. Poochakkal PO, Shertalai. 688 526.

224. Neema Food Products, Kunnupuram, Abdurachiman PO,

Malapuram Dt.

225. Prakesh Food Products, 356/XX. Muthoor, Thruvalla-7.

226. Chithra Foods, H. No.252. Vettarakad PO, Thrissur Dt. 680 584.

227. Puthur Food Products, Puthur PO, Thrissur.

228. Sumithra Food Products, Ancherry PO, Thrissur.

229. Devi Foods, Chirakkal Kovilakam, Kodungallur, Thrissur.

230. Nirkan Food Products, Kalathode, Thrissur.

Annexture - III

RESEARCH CONFIDENTIAL

QUESTIONNAIRE

Economics Of Fruit and Vegetable Processing Industry in Kerala.

No Information will be disclosed or used for any purpose other than Research

Block I

1.	Name and Address of the Unit	:	
2.			
3.	Location	:	Urban / Rural
4.	Brand name of the product	:	
5.	Type of ownership	:	Proprietary / Partnership Pvt. Ltd. / Public Ltd. Joint sector / Co-operative.
6.	Registered / Unregistered	:	
7.	Year of establishment	:	
8.	Do you own any other fruit processing units.	:	yes / No
9.	Do you own any other manufacturing Un its. If yes, state the nature of products.		
10.	Whether operating in own premises or rented.	:	Own / Rented
11.	Installed capacity	:	

12. Details of the entrepreneur :

a) Name :

b) Age :

c) Sex :

d) Qualifications :

e) History of occupation :

Period	Nature of Employment

F) Have you undergone any managerial and technical training. : No / Yes

BLOCK - II

ASSETS OWNED

A. FIXED ASSETS

		Original Value	Current Value
		Rs.	Rs.
1.	Land		
2.	Buildings		
3.	Plant & Machinery		
4.	Transport equipment		
5.	Tools etc.		
6.	Furniture		
7.	Electrical Fittings		
8.	Others		
	.....		
	.....		
	.....		
	Sub Total (A)		

B. CURRENT ASSETS

1.	Raw materials, stores & fuel		
2.	Semi finished goods		
3.	Finished goods		
4.	Amount receivable		
5.	Cash in Hand & Bank		
	Sub Total (B)	Grand Total	(A+B)

BLOCK - III

A. **Financing pattern at the time of establishment.**

	Sources	Amount (Rs.)
1.	Own Finance	
2.	Govt. Subsidy	
3.	Banks	
4.	Other Financial Institutions	
5.	Money lenders	
6.	Friends / Relatives	
7.	Others (Please specify)	

B **Borrowing and other liabilities**

Sources	Duration S / M / L	Amount	Purpose	Rate of interest

C. 1. Are you entitled to any concessional loans. Yes / No

2. If yes, state nature

a) Amount

b) Rate of interest

c) Purpose

d) Subsidies element

3	How much of this amount was actually utilized for the purpose	:
4.	If directed for other purpose, state the	:
a)	Amount	:
b)	Purpose	:

BLOCK - IV

COST OF PRODUCTION

A. Basic materials consumed during the last year.

		Quantity	Value
1.	Fresh fruits		
2.	Dried fruits		
3.	Fruit juices		
4.	Fruit pulps		
5.	Fresh Vegetables		
6.	Dries Vegetables		
7.	Edible oils		
8.	Sugar		
9.	Spices		
10.	Ghee		
11.	Tamarind		
12.	Mustard		
	.....		
	.....		
	Sub Total (A)		

B. **Chemicals**

1.	Sodium Chloride	
2.	Acetic Acid	
3.	Food colors	
4.	Essences	
5.	Potassium metasulphate	
6.	Sodium benzoate	
7.	Citric Acid	

.....

.....

Sub Total (B)

C. **Packing Materials**

1. Bottles & Jars
2. Cartons / Wood boxes
3. Labels

.....

.....

Sub total (c)

D. **Other Inputs**

	Quantity	Value
1. Electricity		
2. Water		
3. Fire wood		
4. Coal		
5. Gas		
6. Others		

.....

.....

Sub total (D)

E. **Labor Expenses**

1. Manager
2. Food Technologist
3. Supervisor
4. Skilled workers
5. Unskilled workers

6. Peon

7. Sales man

.....

.....

Sub Total (E)

F. **Other Expenses**

1. Stationary and Postage
2. Telephone and Postage
3. Rent
4. Interest
5. Taxes
   a) Excise duty
   b) Income Tax
   c) Sales Tax
   d) Octrol
6. Transport
7. Commission
8. Depreciation

.....

.....

Sub Total (F)

Grand Total (A+B+C+D+F) =

BLOCK - V **VALUE OF PRODUCTION DURING THE LAST YEAR.**

Products	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12) Total

BLOCK - VI **SALES DURING THE LAST YEAR.**

Products	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12) Total

BLOCK - VII

MAN POWER DATA FOR THE YEAR.

Category	Casual			Permanent			Family Workers			Total		
	Women		Men	Women		Men	Women		Men	Women		Men
	A	B C	A	B	C	A	B	C	A	B	C	A	B	C
1. Manufact-uring.														
2. Packing.														
3. Marketing.														
4. Adminestrative and Marginal.														
Total.														

BLOCK - VIII

AMENITIES PROVIDED FOR WORKERS.

1.	Medical	:	Yes / No
2.	Canteen	:	Yes / No
3.	Recreation	:	Yes / No
4.	Co-operative Society	:	Yes / No
5.	No. of casual leave for one year	:	.....
6.	No of paid holidays for one year	:	.....
7.	No of privilege leave	:	....
8.	Maternity leave / year	:	Yes / No
9.	Sick leave / year	:	.....
10.	Are the workers enjoying ESI benefits	:	Yes / No
11.	Are they came under EPF. Scheme	:	Yes / No
12.	Gratuity	:	Yes / No
13.	Bonus / Exgratia payments	:	Yes / No
14.	Any other (please specify)	:	
15.	Are the labors organized	:	Yes / No
16.	State the labor management relation	:	Excellent / Good / Bad
17.	If not smooth, state the reason	:	

BLOCK - IX

GENERAL PROBLEMS

I. Managerial

II Labor

Was there any s trike / Lockout agitation during the past five years. If yes, give the details of such incidents . Below are given some other labor problems. Please rank them as 1, 2, 3, & 4 according to the severity of each. :

1. Non availability of skilled man power :
2. Low motivation :
3. Lack of sincerity :
4. Absenteeism :

III **Please specify your problems related to** :-

A. TECHNOLOGY.

B. TRANSPORT.

C. RAW MATERIALS

D. GOVT. POLICY.

E. **POWER.**

F. **FINANCE.**

G. **ENVIRONMENT.**

BLOCK : X

SUGGESTIONS

What are your valuable suggestions for the development of the fruit and vegetable processing industry in Kerala ?

BLOCK : XI

DETAILS OF SUBCONTRACTING, IF ANY

1. Name of the company with which you have entered sub contracting. :

2.

	Products	Quantity	Price	Profit
	1	2	3	4
a)				
b)				
c)				
d)				
e)				

3. How long has the unit entered in to subcontracting. :

4. How much proportion of your production is slid to th e Main firm. :

5. Do you know the reason for the main firm to enter in to sub contracting :

6. Have the products been rejected by the main firm if yes, What are causes ? :

7. Do you think that this sub-contracting business has benefited your growth ? :

8. Do you receive any kind of assistance / direction for the production from the main firm :

9. How are you marketing your own products? :

10. What are your suggestions for improving the sub-contracting business :

BLOCK : XII

DETAILS OF EXPORTS, IF ANY

1. Are you exporting directly or through other exporting houses ? :

2. If indirect, furnish the details of the arrangements :

3. Year-wise details exports

Year	Qty (last 5 years preferably)	Value

4. Major countries to which you exports

Country	Items	Qty	Value

5. Please give the share of total exports to total production per year :

6. Do you find export business more profitable than domestic ? :

7. What are the major hurdles in export business ? :

BLOCK : XIII

GOVERNMENT AND INDUSTRY

Tax payment for the last five years.

Sales Tax

Years	Amount of Tax

Income Tax

Years	Amount of Tax

Institutional Support.

Please provide details of the extent and nature of supports for the healthy development of the Industry.

Annexure - IV

FRUIT PRODUCTS ORDER 1955

To ensure the manufacture of fruit products under hygenic condition and to enforce minimum standard for these products, Government of India has issued and order called Fruit products Order 1955. By this order the manufacture should have a license. There will be inspecting staff to inspect the factory periodically, to ensure the minimum standard. They will also collect random sample of the product from the market and analyze it. They are enforced to destroy the products which are found to be below standard.

To obtain a F.P.O license the entrepreneur should fulfill the following conditions.

1. Before the construction of the building one should approach the Deputy Director of the Department of food of his region and get the approval of the proposed site.

2. The building should have the required area for manufacturing, offices, stores, laboratory etc.

3. The building should be located in open surrounding, in hygienic locality, with good ventilation, permanent roof and cement floor. It should be on independent and solely used for factory, and not be used as residence or directly connected with residence.

4. The rooms should have prescribed area (not less than 200 Sq.ft.)

5. The water used should be got analyzed chemically and bacteriologically. Well water should be lifted to an overhead tank and pipe connection should be taken inside the factory.

6. All outlets i.e. Windows, doors, etc. should be fluproofed. The required machinery and equipment are to be installed as per suggestions given by the inspecting officer.

7. Application along with plan of factory, list of machinery and equipments, water analysis report etc. should be submitted to the Deputy director in duplicate.

8. After getting the approval of Director, the license fee should be deposited in time. The printing of labels should as per specifications laid down.

9. The entrepreneur should keep the accounts of production and disposal of his products. An annual statement should be submitted in prescried form by 31 st January.

10. He should apply for the renewal of license for next year along with the license fee by 30 th November.

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