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### RESEARCH ARTICLE

#### FINANCIAL EFFICACY OF MANGO FRUIT PROCESSING UNITS IN CHITTOOR DISTRICT OF ANDHRA PRADESH

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#### Abstract

The liberalisation of Indian economy and world trade and rising consumer prosperity have thrown up new opportunities for diversification in the food processing sector and opened new vistas for growth. The study is an earnest attempt to study the production, Marketing, finance and other general factors of Fruit Processing Units in Chittoor District of Andhra Pradesh. The study is based on both primary and secondary data. The Mango fruit processing industry, being at the lowest segment of the food processing industries has not received adequate attention, particularly in Chittoor district of Andhra Pradesh. The present study is basically non-technical; it concentrates on the financial, marketing, production and general issues relating to the mango fruit processing units in Chittoor district of Andhra Pradesh. A brief review of past researches relevant to the present study is presented. Appropriate suggestions to be offered to tune up the performance of the mango fruit processing industry based on the observations of the study. The study will be of an immense help to the policy makers for formulating appropriate policies and allocating funds for the development of fruit processing industry. The study also is useful to the investors, banks and other financial institutions to take various investment decisions in the sub sector.

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#### Introduction:-

The Food processing industry is a part of the fast moving consumer goods (FMCG) sector. The broad categories, that fall under food processing include fruits and vegetables processing, food grain milling, dairy products, sugar, beverages like tea, coffee and cocoa products like chocolates, confectioneries, edible oils, Vanaspati, tobacco and tobacco based products, processing and refrigeration of poultry and eggs, meat and meat products, processing fish, fishing and fisheries beyond territorial waters, specialized packaging for food processing industries, beer, alcoholic drinks from molasses base, aerated waters, soft drinks and other processed food.

The food processing sector is of great importance to India's development, for it establishes a vital linkage and synergy between the two pillars of the economy- Industry and Agriculture. The massive growth potential of this sector can be understood from the fact that food production in the country is expected to twofold in the next 10

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years, and the consumption of value-added food products will also correspondingly raise. The growth of this industry will bring immense benefits to the economy, raising agricultural yields, enhancing productivity, creating employment and raising life-standards of a large number of people across the country, especially those in rural areas.

The Food Processing Industry in India at present is mainly an unorganized sector with 75% of the processing units belonging to the unorganised category. But the organised category though small, is growing fast. The food production as noted earlier is expected to double in the next 10 years and the consumption of value-added food products is expected to grow at the same time at a much faster pace. This growth will benefit the economy, increase agricultural yields, create employment and raise the standard of living of various associated people. Rising consumer affluence and economic liberalization is opening up new opportunities for expansion and development in the sector.

### **Policies and regulations of FPI**

Fruit and vegetable processing industries though no industrial license is required for setting up fruit and vegetable processing industries, setting up 100 % EOUs require specific Government approvals. This sector is regulated by the Fruit Products Order, 1955 (FPO), issued under the Essential Commodities Act. This order lays down product specifications and quality control requirements on production-hygiene, relabeling and marketing of processed fruits and vegetables commodities. The Ministry of Food Processing Industries administers this order. This order lays down product specifications and quality control requirements on production-hygiene, relabeling and marketing of processed fruits and vegetables. All processing units are required to obtain a license under this order. Periodic inspection of units is also carried out. In addition, consignments of fruit and vegetable products intended for export are subject to pre-shipment inspection under the FPO. However, recognized Export Houses and Star Trading Houses are exempt from this inspection. Some items like, pickles and chutneys, tapioca sago and tapioca flour are reserved for exclusive manufacture in the small scale sector.

Export of fruit and vegetable products is freely allowed. Many fruit and vegetable processing industries are eligible for automatic approval of foreign technology agreement and up to 51% foreign equity participation. These include; tomatoes, mushrooms and other frozen vegetables, fruits, nuts, fruit-peel, fruit jellies, marmalades, fruit juices and vegetable juices etc.

### **Fruit Processing Industry in Andhra Pradesh**

Andhra Pradesh is a key state that contributes significantly to the food and food processing sector in India. The state ranks first in the country in area and production of mango, oil palm, chilies and turmeric, second in citrus and coriander. Third in cashew, fourth in flowers and fifth in grapes, banana. Ginger and guava based on area and production. It accounts for a sizeable share of country's aggregate production of rice. It also contributes 25-30 percent to the total sea food exports of the country. The food processing industry contributes 19.36 percent to total industrial production in the state. It ranks second in the production of value added products and beverages with a 10 per cent contribution to the exports of the country.

The state is also well endowed with human resources with the right skill sets. - It is estimated that the agro based industry in the state employs 65 per cent of its total population. Andhra Pradesh is a major fruit and vegetable producing State of India. A variety of tropical and sub-tropical fruits and vegetables are grown in the state. The state occupies a distinct place in the national scenario in respect of some fruits and vegetables.

The state of Andhra Pradesh ranks second in the country in fruit production and the mango production alone is 3 1,64,172 MT while the production of mango pulp is about one lakh fifty thousand tons mostly produced in Chittoor district only. Chittoor district is basically an agricultural district with added potentialities and having good agriculture, horticultural, dairy and mineral resources

The number of fruit processing units in Andhra Pradesh in its various districts. The highest numbers of units are located in Chittoor district with as many as 53 units which is almost over 80 percent of the total number of the units. The remaining 20 percent of units are shared by the Krishna, Guntur, Kadapa, Visakhapatnam and Nellore districts. At present, there are 67 units are manufacturing mango pulp in Andhra Pradesh

### **Fruit Processing Industry in Chittoor District**

Chittoor is the southernmost district of Andhra Pradesh, forming part of the Rayala Seema region of the State. Chittoor is bordered by the states of Tamil Nadu and Karnataka. The district abounds in the production of mangoes

and tomatoes. Moreover, with a good horticulture base, the district has easy access to the leading horticulture belts of Tamil Nadu, Karnataka and Andhra Pradesh. In tune with the inherent advantages, the district has the largest number of fruit processing units. Fruit processing units in the district are termed as "Fruit Processing Cluster". "A cluster is a group of enterprises, operating in the same industry, concentrated in a geographical area, possessing similar characteristics and facing common growth constraints. Mango is the major horticultural crop of Chittoor district with an average of 1,19,539 acres crop and providing 3,58,617 M.Tonnes per annum

Mango Pulp is prepared from selected varieties of Fresh Mango Fruit. Fully mature mangoes are harvested, quickly transported to the fruit processing plant, inspected and washed. Selected high quality fruits go through the controlled ripening chambers, fully ripened Mango fruits are then washed, balanced, pulped, deseeded, centrifuged, homogenized, concentrated when required, thermally processed and aseptically filled to maintain sterility. The preparation process includes cutting, de-stoning, refining and packing. In case of aseptic product the pulp is sterilized and packed in aseptic bags. The refined pulp is also packed in cans, hermetically sealed and retorted. Frozen pulp is pasteurized and deep-frozen in plate freezers. The process ensures that the natural flavor and aroma of the fruit is retained in the final product.

Mango pulp is perfectly suited for conversion to juices, nectars, drinks, jams, fruit cheese and various other kinds of beverages. It can also be used in puddings, bakery fillings, fruit meals for children and flavors for food industry and also to make the most delicious ice creams, yoghurt and confectionery.

**Varieties:**

Main varieties of Mango pulp are Alphonso Mango Pulp, Totapuri Mango Pulp, and Kesaer Mango Pulp.

**Area of Cultivation and Processing:**

Two main clusters of Mango Pulp are there in the country, which has around 75 processing units with a good backward linkage of Alphonso and Totapuri variety of mangoes, these clusters are Chittoor district of Andhra Pradesh and Krishnagiri district in Tamil Nadu. Some of the processing units are in the state of the processing units are in the state of Maharashtra and Gujarat. There are 53 processing units functioning at present in the Chittoor District, out of these 40 in Small-scale, 8 in medium scale and 5 in large-scale units in the district. 90% of the Mango Pulp produced in the district is being exported mainly to the Gulf countries like Kuwait, Saudi & Arabia, Dubai and also to the European Countries.

The fruit processing units in Chittoor district process largely mango. Other fruits processed, though in small quantities, are guava, papaya, and grapes as also tomato. In addition to catering to the domestic markets, these units contribute substantially to mango pulp and RTS (Ready-To-Serve) fruit juice exports from India. Due to the importance of the sector, the Central as well as various State governments have initiated various policy measures in the country to develop the industry on organized lines. As a result, the sector has developed on a phenomenal scale in the country.

**Opportunities of Fruit Processing Units:**

The Fruit processing units in Chittoor district have shown high opportunities due to favorable agro-climatic conditions to grow different types of fruits and the technology offer in this modern era, can surely compete with others particularly in this sub-sector. But due to a lack of adequate working capitals, lack of intelligence, lack of infrastructural facilities and the like have revealed a low strength in this sub-sector. In such situation, it will be apt to apply the economic strategy where resources and opportunities are matched in a proper way so that the internal strength can be improved.

Chittoor district in the State of Andhra Pradesh has a cluster of mango pulp exporting unit. To leverage the advantages of an Agri Export Zone and to use additional infrastructure facilities both for the purpose of mango processing as well as vegetables. All this will benefit the Agri Exports Zone which entails a total investment of around 53 crores of rupees out of which around Rs. 20 crores will flow from various Central Government agencies like APEDA, National Horticulture Board, Ministry of Food Processing Industries, etc. The State Government agencies will also contribute an amount of around Rs. 9.5 crores, with the remaining amount coming from the private sector. It is expected that this additional investment will lead to an incremental export of more than Rs. 250 crores in the next 5 years, apart from considerably enhancing domestic sales as well. More than 500 farmers will stand to benefit directly.

The agrarian base of India holds great promise with regard to the processing of fruits and this segment of the food processing industry is expected to grow fairly in the coming years. Fruits because of their high productivity and value offer much higher economic returns per hectare acreage compared to cereal crops. They also have a good export potential. The prominent items processed in the fruit processing sector are fruit pulps, fruit-based ready-to-serve beverages, canned fruits, jams, juices, squashes, pickles etc. The characteristics of the processing units of Chittoor district relevant for an identification of opportunities, threats, strengths and weaknesses are as follows:

### **Opportunities**

The following are the basic opportunities which the Fruit Processing Units in Chittoor district can avail themselves of:

1. Processed fruit products of the three regions of Tirupati, Chittoor and Madanapalli have a growing market demand specially in urban area of the region in particular and India in general.
2. Chittoor district bordering with the four countries of Middle East, Europe, Japan and Thailand and this offers a unique opportunity for export of processed fruits products to these countries.
3. This sub-sector requires lower investment, from the individual and the state compared with the capital intensive industrial sector.
4. The production of fresh fruits can be increased manifold if the farm practices of the district are improved specially in the field of pre and post harvest activities of fruits plantation.
5. India's relationship with the neighboring countries will provide a boost to the trade and industrial activity of the region.
6. Adoption of modern technology brings better opportunities to compete with the products of national market and international market.

### **Threats**

The following are the pertinent threats to the Fruit Processing units of Chittoor district:

1. Implementation of WTO Agreement threatens to wipe out the small and inferior manufacturer or processor from the export and domestic market.
2. Natural factors like the terrain and floods can disrupt the industry completely.
3. Continual Law and order situation of the insurgency prone region which is in a pathetic condition can easily cripple the industrial performance if it continues to do so.
4. With the adoption and application of developed horticultural techniques, Chittoor district may lag behind the other states in the country which become more competitive in production and quality, unless the district strives to catch up with them.

### **Strengths**

The internal strength of the fruit processing units of Chittoor district are as follows.

1. Chittoor district is extremely suitable for horticultural production, because of the agro-climatic conditions and the terrain.
2. Fruits of different varieties are available at low prices and in large quantities during the seasons.
3. The raw material supply situation is favorable since the location of the processing units is in fruit growing belt.

### **Weaknesses**

The internal weaknesses of the fruit processing units of Chittoor district are given below:

1. Infrastructure deficiencies, in terms of transport, communication, power and post harvest facilities, are high.
2. The active presence of many middlemen in the supply side of the chain, leads to on the one hand the reduce profit margins of the growers and on the other the fruit processor.
3. High cost of packaging and transportation can increase the cost of production per unit of processed fruits.
4. Brands are not well established and have a local presence only.

To conclude, the overall scenario emerging after the analysis is that the fruit processing sector in Chittoor district of Andhra Pradesh presents attractive opportunities for investment despite the poor performance of the existing units. There are, still a few units performing well in this sector and these units should further improve the quality of their product so that their products could be exported even to international markets. However, this must be preceded by proper planning and a focused approach towards the market requirements, especially for an export oriented unit in Chittoor district.

## Review of Literature:

The fruit processing industry, being at the lowest segment of the food processing industries, has not received adequate attention, particularly in Chittoor district of Andhra Pradesh. The Studies relating to food processing can broadly be classified in to two groups i.e., Technical and Non-technical. The present study is basically non-technical, in the sense; it concentrates on the various problems of the fruit processing industry. A brief review of past researches relevant to the present study is presented below.

**Raghava Reddy. P (1991)** In case study of the mango processing industry in Chittoor district, it is pointed out that during 1986, there were 21 fruit processing units in the district producing 7,248 tons of mango pulp by utilizing only 36.24 per cent of the installed capacity. If the existing units had been utilized to their full capacity, there still be possibility of increasing processing of fruits. The industry faced the problems of inadequate supply of working capital, paucity of packing material, middlemen, charging high prices for fruits. This is one of the few works among the reviewed study directly relevant to the present undertaking.

**Jogindersing, et al., (1995)** and others in their study “Fruits and Vegetable Processing Units: An Economic Analysis” indicate that fixed cost and labour expenses are predominant in the total cost of goods sold and such higher costs have reduced the operating profits of the units. The cost of raw material, i.e., fruits, vegetables, sugar and packing as percentage to total cost has declined over the time due to the minimization of wastage and adoption of up-to-date technology. The analysis reveals that the percentage of profit to total cost was 9.65 per cent, 18.19 per cent and 26.83 per cent for the study period 1990-91, 1991-92 and 1992-93 respectively.

The study does not identify the specific reasons for the variation in percentage of profit to total cost. It is also not specific as to which line of activity the government should pay more attention to so that the performance of F&V processing units could be improved.

**Sunandini, G P (2003)** the study focuses on the constraints of the fruit processing industry in Andhra Pradesh. Andhra Pradesh ranks second in the area and production of horticultural crops in India. Among these crops, fruits occupy 43 per cent of the area and contribute to 53 per cent of production. About 30 per cent of the horticulture produce is wasted every year due to post-harvest losses, lack of appropriate storage and transportation facilities and infrastructure. The processing of fruits not only adds value to this perishable produce but in turn generates employment and improves income levels. This is one of the few studies reviewed here immediately relevant to the present investigation.

**A.S. Yarso (2005)** In his book lengths study, he critically examines and evaluates the present status, constraints and future strategies and plan of action of the fruit processing industry of the North Eastern Region, keeping in view the production and marketing potential for the development of the industry of the Region in general and Manipur and Assam in particular. The study is based on 14 fruit processing industries of the region, 8 units from Manipur, 3 units from Assam, 2 units from Meghalaya and 1 unit from Mizoram.

The study concludes that it would be of immense help to the government if it formulates appropriate policies and makes allocation of funds for the development of the fruit processing industry in India and also help the managements to ensure fruitful results i.e. production, marketing and financial performance of the units. But the study does not explain even briefly the overall performance of the fruit processing industry in India at international level.

**Shukla and Archana (2008)** the authors examine the problems and prospects of the Fruits and Vegetable processing Industry in India. Though our country is the second largest producer of fruits and vegetables in the world, only 1.78 per cent of its total production is commercially processed, which is below the level of many developed and developing countries such as Malaysia, Philippines, Brazil and U.S.A. The low level of processing in India is mainly due to inadequate post-harvest technology, lack of transport and marketing facilities, absence of linkage between the processing industry and buyers.

**MSME (2009)** Reports that, the major issues related to Fruit Processing Industries in Chittoor district are- inadequate product quality and standards, limited facilities for testing and research, poor effort with regard to value addition, inadequate technical knowledge, weak information channels and poor linkages with development

institutions. The fruit processing industries required more assistance from Government and other financial institutions.

**Mahendra Dev S. Chandrasekhar Rao N (2010)** in their research stated that, the value addition of food fortification is only seven percent in the country compared with as much as 23 percent in China, 45 percent in the Philippines and 188 percent in the U.K. But only 2 percent of the fruits and vegetables are processed in India. This is against a processing of 30 percent in Thailand, 70 percent in Brazil, 78 percent in the Philippines and 80 percent in Malaysia. The Government of India targets to bring it to 10 percent in 2015 and 25 percent by 2020. However, the study was found to be not specific about the financial performance and problems of fruit processing industries in Andhra Pradesh.

**Ravat D.S. (2013)** Reported that, Andhra Pradesh loses Rs. 5,600 crores for not having required facilities for fruits and vegetable processing. He pointed out that facilities like cleaning, grading, cold storage and packaging are very essential for reducing the wastage of fruits and vegetable produce.

**Govardhan Bobby (2013)** stated that, a gradual decrease in production and processing is being registered by mango processing industries in Chittoor district. The fall is being attributed to demand for newer forms of packaging and increase in automation of process. Most buying companies want aseptic packaging. Demand for canned packaging has come down drastically. According to him, aseptic packaging is particularly favored by the multinationals and big buyers as this type of packaging is good for huge quantities.

**Krishna V.V.M (2014)** reported that by converting a basket of raw materials into value-added products, their gross value could be increased by five times compared to the current levels of processing. It would do a great deal of good to the nascent food processing industries by giving special incentives and tax holidays to help the producers in moving up the value chain. It is therefore imperative that due focus should be laid on enhancing skills and also capacity- building without which scalability cannot be achieved.

The above review of the work done in the field of fruit processing industry shows that though there is no unanimous opinion among the researchers with regard to the extent of area and volume of production of horticultural crops, all of them unanimously maintain that the horticultural yield in India is low and the processing industry is utilizing only a meager quantity of the total production, that the industry is operating with obsolete technology and suffering from high tax rates and packing costs. Virtually all suggest that subsidy should be provided for the establishment of new units, supply of inputs at reasonable prices and tax concessions for the progress of the industry.

The few researchers who have studied the fruit processing industry have focused attention on the size, structure and the growth of the industry rather than on a critical examination of the various problems of the industry. There does not seem to be so far a comprehensive study of the financial performance of the fruit processing industry at the district, state and national level.

### **Objective of the Study:-**

The objective of the present study is to diagnose the various problems faced by the selected fruit processing units in Chittoor district of Andhra Pradesh. In order to achieve this broad objective, the following workable objectives have been set:

1. To Study the status of the Fruit Processing Industry in Andhra Pradesh and Chittoor District.
2. To Probe into the various problems encountered by the Fruit Processing Units and measures to improve the overall working of the Selected Fruit Processing Units in the district.

### **Research Methodology:-**

In view of the specific objectives of the present study, it uses both primary and secondary data. It contemplates a two pronged approach. It focuses attention first on the sample of 14 fruit processing units in the district and next on various institutions and departments engaged in this sector, to obtain factual data. Further the study makes use of the published reports of APEDA, WTO, Ministry of Food Processing Industry, DIC and the like.

### Data Collection

The study makes use of both primary and secondary data for analysis, drawing inferences and arriving at conclusions. The present work is mainly based on the primary data collected by way of field study, apart from the collection of data from the official records of the fruit processing units in Chittoor District. Schedules to be specially designed for the purpose are filled in through personal interviews.

### Sample Design

There are 53 fruit processing units in operation in Chittoor district. These units have been classified as per investment criteria of MSMEs Act, 2006. According to this criterion, there exist 40 units in Small Scale, 08 in Medium Scale and 05 in Large Scale. As these units are having mixed results in terms of profitability and viability, 07 units in Small Scale, 03 units in Medium Scale and 04 units in Large Scale were selected purposefully for in-depth study. Thus, the sample size for the present study is 14 units in all categories as detailed in the following table

**Table 1:-** Showing the Sampling details of the Units.

S. No	Scale of Operation	Total Units	Sampling Units
1	Small scale	40	07
2	Medium scale	08	03
3	Large scale	05	04
	<b>Total</b>	<b>53</b>	<b>14</b>

**Source:** - Research's Compilation

Greater care has been taken, while selecting the units by eliminating the units which are not doing well in business, preparation of accounts, profitability etc., After a personal survey of study area and the fruit processing units in it, 14 feasible and viable units identified and selected for the present study.

### Tools of Analysis

The data to be collected (Both primary and secondary data) was classified, calculated, tabulated and has been analyzed using appropriate analytical tools such as ratios, percentages,  $\chi^2$  test are to be used to identify and draw meaningful conclusions on relationships between the different variables.

### Data Analysis

To study the efficiency of the sample units a structured questionnaire was prepared dealing with financial management, marketing, production and general issues relating to the fruit processing units in Chittoor district. The questionnaire was pre-tested in fourteen units in Chittoor district. It was finally administered to the 53 fruit processing units located in Chittoor region, Tirupati region and Madanapalli region. The units are being run under sole proprietorship, partnership and joint stock companies. The data was collected on the basis of first hand survey carried out in the fruit processing units of the district. Effort was made to cover the entire fruit processing units in the three regions of the district. Despite of the fervent effort made by the researcher, out of the total 53 units to whom the questionnaire was administered, only 14 units could respond to the researcher's request. They are 10 units from Chittoor region, 3 units from Tirupati region, 1 unit from Madhanapalli region. On the basis of their responses an in-depth analysis marketing management, production, finance and other general factors in the developing fruit processing industry, success or failure has been carried out.

### Form of organization

Table-2 given below shows the form of organization of the selected 14 fruit processing units. Of them 7 units, which accounted for more than 50 per cent of the sample fruit processing units, are under Partnership.

**Table 2:-** Form of Organization-wise profile of Fruit Processing Units.

Organization	No. of units	Percentage
Sole proprietorship	3	21.43
Partnership	7	50.00
Joint Stock Companies	4	28.57
Total	14	100.00
	$\chi^2$	3.11

**Source:** Compiled on the basis of Questionnaire Administered to Fruit Processing Units.

$\chi^2$  represents Chi Square (see Appendix).

3 units are under Sole proprietorship and 4 units Joint stock companies, which account for 21.43 per cent and 28.57 per cent of the sample units respectively. The  $\chi^2$  was 3.11 which show an insignificant variation between sole proprietorship, partnership and Joint stock companies.

### Using quality Control Technologies

Quality assurance is the key to every successful business enterprise even to Food Industries; Quality control is the essence of a successful entrepreneur. In order to know whether quality control technologies were adopted in full measure by all the sample fruit processing units, they were asked a question about it. Their responses were disturbing. For 28.57 per cent of them did not respond to the question and the 7.14 per cent outright said 'No'. Only 64.29 per cent of the respondents said that they were adopting quality control technology to improve the quality of their products. The value  $\chi^2$  was 2.72 which shows a significant variation between the users and non users of quality control technology in the region.

**Table 3:-** Using Quality Control Technologies.

Do you adopt Quality control technology to improve the quality of the product	No. of response	Percentage
Yes	9	64.29
No	1	7.14
No response	4	28.57
Total	14	100.00
	$\chi^2$	2.72

**Source:** Compiled on the basis of Questionnaire Administered to Fruit Processing Units.  
 $\chi^2$  represents Chi Square.

### Management of By-Product

Proper management of by-product will reduce the overall cost of production of manufacturing units. It will definitely decrease the fixed cost of the manufacturing concern and hence the profit margin will increase. To know whether any by-products were manufactured by the sample fruit processing, they were asked a question about it.

**Table 4:-** Management of By-Product.

Do you manufacture any by-product in your unit	No. of response	Percentage
Yes	2	14.29
No	12	85.71
No response	0	0
Total	14	100.00
	$\chi^2$	12.87

**Source:** Compiled on the basis of Questionnaire Administered to Fruit Processing Units.  
 $\chi^2$  represents Chi Square.

It was found that only 14.29 per cent of the sample respondents produced by-products from the waste materials after producing squash, jam and jelly and the remaining 85.71 per cent did not. The value of  $\chi^2$  was 12.87 which shows a significant difference in this regard.

### Conducting Market Surveys

Conducting Market Surveys is very important for a manufacturing unit as it depends upon the customer for its survival and success. Customers choices with regard to quality, quantity, size, etc. are various products are known in advance through market surveys. Therefore, the sample units were asked in the questionnaire whether market surveys were conducted by them before producing their product. It was found that only 28.57 per cent of respondents had a positive reply, where as the response of 35.71 per cent was negative and 35.7 per cent of the sample did not respond to the question. The  $\chi^2$  value was just which shows an insignificant difference in this regard.

**Table 5:-** Conducting Market Surveys.

Have you ever conducted any market survey	No. of response	Percentage
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Yes	4	28.58
No	5	35.71
No response	5	35.71
Total	14	100.00
	$\chi^2$	1.63

**Source:** Compiled on the basis of Questionnaire Administered to Fruit Processing Units.  
 $\chi^2$  represents Chi Square.

### Channels of Distribution

Marketing function can be more effective with the adoption of appropriate channels of distribution. Therefore, the sample units were asked what channels of distribution they had adopted for their products. The following table presents the different channels adopted by the sample units.

**Table 6:-** Channels of Distribution.

Sl. No	Channels of Distribution	No. of Response	Percentage
A.	Producer – Consumer	0	0
B.	Producer-retailer-Consumer	3	21.43
C.	Producer –Wholesaler-Retailer-Consumer	8	57.14
D.	All of the above	2	14.29
E.	Only A and B	1	7.14
	Total	14	100.00
		$\chi^2$	4.06

**Source:** Compiled on the basis of Questionnaire Administered to Fruit Processing Units.  
 $\chi^2$  represents Chi Square

It was found out that 57.14 per cent, the majority, of the respondents adopted the longest channel i.e., producer-wholesaler-retailer-consumer. Only 7.14 per cent of the respondents were using suggestible combined channels of producer-consumer and producer-retailer-consumer. The 14.29 per cent of the respondents were adopting the given three channels together viz. producer-consumer, producer-retailer-consumer and producer-wholesaler retailer-consumer and the remaining 21.43 per cent of the respondents were adopting distribution channel of producer-retailer-consumer respectively. The value of  $\chi^2$  was 4.06 which shows a significant difference in this regard.

### Selling Techniques adopted by the Fruit Processing Industry

Selling techniques are indispensable for successful marketing of all consumer products. Hence the sample units were asked about the selling techniques adopted by them. For their response to the question it was found that 50 per cent of the respondents were adopting together the following techniques personal, advertising through different media and sales promotion, and the remaining either only one of them or combination of two techniques.

**Table 7:-** Selling Techniques adopted by the Fruit Processing Units.

Sl. No	Selling Techniques	No. of Response	Percentage
A.	Personal	3	21.43
B.	Advertising through different media	0	0
C.	Sales promotion	1	7.14
D.	All of the above	7	50.00
E.	Only A and B	2	14.29
F.	Only A and C	1	7.14
	Total	14	100.00
		$\chi^2$	8.79

**Source:** Compiled on the basis of Questionnaire Administered to Fruit Processing Units.  
 $\chi^2$  represents Chi Square

As the above table shows, 21.43 per cent of the respondents were adopting personal contact selling techniques. The 14.29 per cent of the respondents combined techniques of personal contact and advertising through different Media and among the remaining one set of 7.14 per cent was adopting sales promotion, and another 7.14 per cent a

combination of personal selling and sales promotion techniques. The  $\chi^2$  value was 8.79 show an insignificant difference in adopting selling techniques among the fruit processing units.

#### Packaging Strategy Adopted by the Fruit Processing Industry

Packaging has become of late one of the important components of successful marketing. To know the packaging strategy adopted by the sample units, they were asked about it. It was found from their response to the question that 35.71 per cent of the respondents were still following the traditional technique of tin plates;

**Table 8:-** Packaging Strategy adopted by the Fruit Processing Unit.

SI. No	Packaging Strategy	No. of Response	Percentage
A.	Plastic bottle	3	21.43
B.	Tin Plates	5	35.71
C.	Can	0	0
D.	All of the above	3	21.43
E.	Only B and C	3	21.43
	Total	14	100.00
		$\chi^2$	1.84

**Source:** Compiled on the basis of Questionnaire Administered to Fruit Processing Units.

$\chi^2$  represents Chi Square.

21.43 per cent of the respondents were adopting plastic bottle only, another 21.43 per cent a combination of plastic bottles, tinplates and cans, and yet another 21.43 per cent a combination of glass bottle and can. None of the units were adopting the more modern packaging strategy of exceptive packaging. The  $\chi^2$  value was 1.84 which shows an insignificant variation in this regard.

#### Sources of Finance

Finance is the life and blood of all business and industry. To know about their sources of finance the sample fruit processing units were asked in the questionnaire about them. Sources of finance for the industry can be classified into three groups; the first group consists of the Government Agencies like Ministry of Food Processing Industries, Govt. of India, Agricultural Export Development Authority (APEDA) and National Cooperative Development Corporation (NCDC) and other state agencies. The second group includes Banking and financial institutions like State Bank of India (SBI), Bank of India, Small Industrial Development Bank of India (SIDBI), State Financial Corporation (SFC). One's family and personal resources form the third. As the Table 15 shows, for one set of respondents forming 28.57 per cent their family and their own personal resources were the source of finance. For another set of respondents also forms 28.57 per cent, a combination of banking institutions and government agencies formed the source of finance. 21.43 per cent of the respondent's bank and financial institutions were the sources. 14.29 per cent of the respondents were financed by the Government and Agencies. And the remaining 7.14 per cent were together financed from all these sources. The  $\chi^2$  value was 4.75 which shows an insignificant difference in financing of this particular sector of business.

**Table 9:-** Sources of Financing.

SI. No	Sources of Financing	No. of Response	Percentage
A.	Bank and Financial Institutions	3	21.43
B.	Government and Agencies	2	14.29
C.	Family and personal resources	4	28.57
D.	All of the above	1	7.14
E.	Only A and B	4	28.57
	Total	14	100.00
		$\chi^2$	4.75

**Source:** Compiled on the basis of Questionnaire Administered to Fruit Processing Unit.

To sum up, the form of organization of the fruit processing units in Chittoor district indicates that majority of the units are individual and partnership firms on small-scale bases. Proximity to the market centre, availability of raw materials, Concessional rates of bank loans and advances and availability of infrastructural facilities are important factors in determining the site of fruit processing industry. The overall data analysis indicates that the fruit processing units of three regions in the Chittoor district face three problems such as financial management,

production and marketing. The survey also reveals that a majority of the fruit processing units in Chittoor district do not conduct market survey to know the need and demand of the customer.

### **Suggestions:-**

This review highlighted various suggestions to overcome the varied problems faced by the fruit processing industries in Chittoor District of Andhra Pradesh.

- 1) Finance is the life blood to any industry. Financial institutions are advancing fixed capital to Fruit Processing Industry in the district. But capital, rapid technological changes are necessitating the replacement of obsolete machinery by up to date high cost sophisticated machinery. The financial Institutions are not enthusiastic to provide these loans for modernization and are charging high rates of interest. There is need for liberalized provision of replacement loans at cheaper rates of interest.
- 2) Commercial banks are responsible for advancing working capital requirements of Fruit Processing Units in the district. Processing units have to hypothecate their inventories to get working capital loans. 65 per cent of the value of hypothecated inventories is taken as the limit for providing working capital advancement, which is not sufficient. Being a Seasonal Industry, the Industry works for 60 days only in a year and the rest of the year, it is kept idle. For working capital each bank is charging 12% to 15% as rate of interest which amounts to lakhs of rupees and which is more than the profit margin earned. Many units have become sick due to lack of required Working Capital and support of Financial Institutions. Unless the Government comes in a big way to help the industry, the industry may not survive collapse. So the Government should come to help in a big way.
- 3) With the present 70 per cent operational capacity utilization, the total pulp production from the existing units would be of the order of 7,000 M. Tones using 10,000 M. Tones of mango fruits. The surplus fruits available in the district are locally consumed and exported to other districts, states and countries. The export of mangoes to other states and countries is facing serious competition from increasing production of mangoes throughout India. Further, due to drought conditions, more and more new orchards are coming up in the district with an enormous scope for more supply of fruits in future. Therefore, it is necessary for the development of production capacity of Existing units in the district by providing fixed and working capital requirements sufficiently.
- 4) It is not the scarcity of mangoes but the gradually increasing prices of mangoes, which is affecting the cost structure of the processing units. The price increase to a certain extent is due to the operation of middlemen between producers of mangoes and proprietors of processing units. If processing units form a consortium or a purchasing organization and purchase fruits directly from the farmers, then there will be possibility of reducing the cost.
- 5) Citric acid is the main chemical used in pulp production which is in short supply. There is prevalence of black marketing. Scarcity and high price is resulting in improper use of citric acid affecting the quality of pulp. Therefore, government should ensure adequate supply of citric acid at reasonable prices. Further proper supervision and control should be exercised in maintaining the quality of pulp. Any defect in the quality of pulp production shall be dealt with severely.
- 6) Sugar is purchased in the open market at high price leading to inadequate use of sugar in pulp production. This results in low levels of sucrose content. To avoid this defect, it is better to supply sugar at controlled rates.
- 7) High cost of tin plates results in hike of packaging expenses. There is an urgent need to reduce the packaging and marketing expenses in order to reduce the price of pulp to make it available within the reach of common man.
- 8) Further it is advised to improve the economic conditions of the units, there is need for improving the operational efficiency of the units by increasing the utilization of installed capacity from 70 per cent to 100 per cent.
- 9) At present the units are working for 90 days only from May to July during Mango season. And no other fruits are available to process further because the district is continuously under famine conditions. The processing units are providing huge employment for thousands of skilled and unskilled workers. But by proper utilization of fruits in the district and importing from neighboring district, the units can prolong their production season to 120 days. This will reduce the production costs, increase employment opportunities to labourers and improve profitability of the units.
- 10) The capacity utilization and prolongation of the period of operation depend upon the size of the market. At present, production is linked to the purchase orders especially from foreign exporters. Therefore, market expansion, both internal and external is imperative for improving the profitability of the units.
- 11) Processing units being small cannot undertake by themselves, the expensive advertisement activities. Therefore, a marketing organization financed by processing units should be created for the purpose.

- 12) Pulp is a food product and its utility depends upon purity and quality. Therefore, meticulous care should be taken for ensuring scientific production, packing, boiling and cooling. In order to minimize costs, it is reported that some processing units are not observing scientific methods of packing and cooling. The durability of the pulp is greatly reduced and soon gets spoiled and become poisonous. The processing units shall be forced to observe stipulated methods of production, packaging and boiling and cooling as per international standard.
- 13) The mango processing units produce large quantities of mango kernels, which largely remain unutilized. There is potential for setting up units for extraction of oil from mango kernel, which can be used in the manufactures of varnishes, soaps etc. Similarly, mango peelings can be dried and converted into protein additive for cattle feed. This is an innovative process not in use in the district, as it does not have the appropriate technology for it at present.
- 14) Seriou's efforts should be made to expand external market as processing industry is rapidly increasing throughout the country. This task of expansion of foreign market should be undertaken by State Trading Corporation, Ministry of Food Processing Industry, APEDA and other organizations specially created for the purpose.

### Conclusion:-

Fruit processing industry in Chittoor District of Andhra Pradesh is a seasonal industry. The industry works for 60 days only in a year and the rest of the year, it is kept idle. Fruit processors' efforts to run the industry throughout the year with other fruit processing is not successful due to lack of market facilities and requirement of huge capital and the interest burden on the industry is heavy. For working capital -each bank is charging 12% to 15% as rate of interest which amounts to lakhs of rupees and which is more than the profit margin earned. Sometimes many units have become sick due to lack of working capital and support from financial institutions. The heavy burdens of interest accumulated month after month have become a big liability. The entrepreneurs need financial assistance by way of subsidized loans from the Government, subsidized power, modernized packing system to export fruit pulp and serious efforts should be made to expand external market as processing industry is rapidly increasing throughout the country. This task of expansion of foreign market should be undertaken by the Central Government, the State Government of Andhra Pradesh, Ministry of Food Processing Industry, APEDA and other organizations specially created for the purpose. To exploit the niche market available at domestic as well as the global level, further improvements like attracting more investment, development of infrastructural facilities, upgradation of technology available with the Indian manufacturers by taking assistance through foreign collaborations in case of design know-how back-up etc., are required.

Horticulture is an important occupation in Rayalaseema, that is made up of the districts of Anantapur, Kurnool, Chittoor and Kadapa. It comprises 14 per cent and 20 per cent of the total area under cultivation in Chittoor and Kadapa. Farmers grow banana, sweet lime, water melon, musk melon and mango, which is an important horticulture crop. It comprises 48 per cent and 27 per cent of Chittoor and Anantapur's total area under horticulture cultivation. About 80 per cent of the fruit, especially the totapuri variety, goes into making pulp.

However, the lockdown has added to the woes of mango farmers in the area. For instance, in Chittoor district, farmers have been suffering for the past two years with a glut in mangoes and the consequent fall in rates in 2018 and a drastic fall in crop in 2019.

The local pulp industry in Chittoor is also facing a problem of labour shortage. There are 53 units in the district. Eight or nine of them are closed. Most of the rest will run to their minimum capacity at least. In the absence of labour from outside, they say the plants cannot run to their capacity. Currently, the pulp units have been included under the agriculture ministry and not under other industries. All the new pulp units were established with a capital cost of more than Rs 15 crore, taking them out of the norms for MSMEs. The government should design some health insurance scheme for the development of mango pulp processing units in Chittoor district of Andhra Pradesh.

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