VALUE CHAIN MANAGEMENT OF COCONUT OIL- A Study in KERAFED, Naduvannur

By

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(2009-45-145)

PROJECT REPORT

Submitted in partial fulfilment of the

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COLLEGE OF CO-OPERATION, BANKING AND MANAGEMENT

VELLANIKKARA, THRISSUR- 680656

KERALA, INDIA

2013

Declaration

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DECLARATION

I hereby declare that this report entitled **"VALUE CHAIN MANAGEMENT OF COCONUT OIL; A STUDY IN KERAFED"** is a bonafide record of research work done by me during the course of experiential learning and that it has not previously formed the basis for award to me for any degree/diploma, associate ship, fellowship or other similar title of any other University or Society.

Vellanikkara

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CERTIFICATE

CERTIFICATE

Certified that this report entitled "**VALUE CHAIN MANAGEMENT OF COCONUT OIL; A STUDY IN KERAFED"** is a record of work done by **Miss. ASHIKA RAVEENDRAN K.K (2009-45-145)** under my guidance and supervision and that it has not previously formed the basis for the award of any degree, fellowship or associate ship to her.

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CERTIFICATE

I hereby declare that this work entitled **"VALUE CHAIN MANAGEMENT OF COCONUT OIL ; A STUDY IN KERAFED"** is a bonafide record of research work done by me during the course of work experience programme and that it has not previously formed the basis for the award to me for any degree/diploma, associate ship, fellowship or other similar title of any other University or Society.

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"Of all the friends I've ever met, you are the one I won't forget."

Needless to say I alone am responsible for any imperfection, which may remain

ASHIKA RAVEENDRAN .K .K

(2009-05-145)

"Dedicated to my chechi"

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CHAPTER-1

DESIGN OF THE STUDY

1. INTRODUCTION

Coconut production in Kerala plays an important role in the state economy and culture of Kerala in south western India. Kerala is actually named after the coconut tree " KERA" meaning coconut tree and means land. In Kerala, the coconut tree is called as "Kalpa Vriksham" which essentially means all parts of a Coconut tree is useful some way or other.Cocos-nucifera dominate the landscape in many parts, rising up to a height of 25m, and bearing over 50 fruits on average in a year The trees have many uses; their leaves are used to make sheds, baskets, and doormats, the husk for making coir, the shell for making ladles and spoons, and fruits used for making hair oil or for eating Coconut is a staple ingredient in many Kerala dishes and coconut oil is widely consumed and used to make coconut toddy and dishes. The coconut palm is one of the most useful plants in the world. The coconut is nature's gift to mankind, as it is a source of food ,beverage ,oilseed, fibres, timber, health products .coconut tree provides clothing utensils and dwellings, therefore is an important source of earning livelihood to the people of coconut growing states, especially in the coastal areas. The coconut tree therefore, is known as "kalpavruksha" or tree of life by the people. coconut is a popular plantation and is grown in more than 90 countries worldwide. Though it is quite difficult to establish a coconut plantation but once it is once, it proves to be quite beneficial as coconut is harvested throughout the year.

Coconut is a versatile product and has multiple uses.. Almost all the parts of a freshly grown coconut, eatable or otherwise, are used in some or the other manner. India is one of the leading coconut producers in the world, producing 13 billion nuts per annum. Coconut is mostly cultivated in the coastal regions of the country. The states that have abundant coconut growth are Andhra Pradesh, Assam, Goa, Karnataka, Kerala, Maharashtra, Orissa, Tamil Nadu, Tripura, West Bengal, Andaman and Nicobar Islands, Lakshadweep and Pondicherry. Coconut fruit is categorised into two basic varieties according to the type of palm tree bearing the fruit. Tall variety and dwarf variety.

The coconut palm being a small land holder's plantation crop grown mainly in the tropical belt of the country extending from Kerala, Karnataka, Tamil Nadu, Andhra Pradesh in south, Gujarat, Maharashtra in west, Orissa and West Bengal in the east, Assam and Tripura in the North Eastern region of India and is a means of living for millions of people inhabiting in the traditional and non traditional coconut growing states and union territories. The islands of Andaman and Nicobar and Lakshadweep are other traditional coconut areas. Since the coconut crop has a national acceptance due to country wide demand either for edible, non-edible or religious purpose, it has triggered keen interest among people of even the non-traditional states to try few saplings in their home stead gardens. The major socio-economic feature of this plantation crop is that it is predominantly cultivated in small and marginal holding and with medium resource to poor farm environment having less marketable surplus. It has been reported that the national average productivity of coconut in India is very low i.e. around 40 nuts per year. The low productivity of coconut crop in the country has been on account of several reasons, i.e. lack of adoption of scientific cultivation practices to enhance productivity, which helps in bringing down the cost of production. In most of the small coconut holdings, the soil nutrients and water are limiting factor in crop production. The unique nature of Indian coconut sector is the rain fed nature of crop cultivation coupled with practicing subsistence farming which often leads to low level returns from the holding. It can be seen in the foregoing paragraphs that there is distinct difference in the pattern of distribution of this crop in the country. Kerala, the southernmost state situated along the West coast is a major coconut growing state. Except in Kerala and a few small states and union territories, coconut is not grown contiguously but limited to only congenial belts accounting to an insignificant portion of the total arable agricultural area. Kerala, Karnataka, Tamil Nadu and Andhra Pradesh are therefore the four major coconut producing state, sharing 90.8 per cent of the total area, whereas the contribution of other states / union territories is only 9.2 per cent.

The Directorate of Marketing and Inspection made reverend effort by publishing first report on Marketing of Coconut and Coconut Products in India, in the year 1943, to ascertain the role of coconut and its products, played in the agricultural economy of the country. Since then the production and marketing of coconut in India witnessed a significant development with regard to domestic production, consumption and industrial utilization of coconut and coconut products. Subsequently, the first report was revised and updated in the year 1962 to make appraisal of

changes that had occurred in the plantation crop pattern, development of coconut trade and industries in the country. Subsequently, abundant research and development activities taken up by the Government and non-governmental agencies have not only resulted in increased production and productivity of coconut, but also made the beginning of development and diversification of coconut products and by-products for better marketability of coconut.

The coconut is a benevolent tree, a nature's gift to mankind, as it is a source of food, beverage, oilseed, fibres, timber, health products and also associated with mystery and omen in the life of people. The coconut tree provides clothing utensils and dwellings, therefore, is an important source of earning livelihood to the people of coconut growing states, especially in the coastal areas. The coconut tree therefore known as ***"Kalpavruksha"*** or tree of life by the people. The crop is grown in the coastal lowlands of continental South Asia and spread along the Indian and Pacific Ocean, the cultivation is mostly done by small and marginal farmers. The coconut oil ranks sixth among the eight major vegetable oils of the world. The coconut crop is grown in eighteen States and three Union Territories The major coconut crop acreage is concentrated on the West Coast region of the country comprising the states of Kerala, Karnataka and Maharashtra, followed by East Coast of Tamil Nadu, Andhra Pradesh, Orissa and Pondicherry. The coconut cultivation areas also traditionally located in the coastal region of Gujarat, Goa, West Bengal, Islands of Andaman & Nicobar and Lakshadweep. About 90 percent of the area of coconut cultivation and equally the same per cent of production of coconut are from the four Southern states, viz. Kerala, Karnataka, Tamil Nadu and Andhra Pradesh. Kerala is considered as the land of coconut and holds the key for the development of coconut production and marketing in the country.

In the present scenario the trend in processing of coconut products is slowly setting in the country, but the domestic market is not ready to lift the coconut in product form. Moreover, the coconut processing industries have to compete with the international market players in the world market. Consequent to the globalization of Indian economy, the domestic coconut market economy has also been pushed towards a situation of competition, where coconut oil had to compete with the other low price vegetable oil and fats in the international market.

The favourable market behaviour appeared to have been due to culmination of concerted efforts of the implementing agencies, developmental policy of the Government to provide minimum support price to copra and coconut oil and the future trade. Since, the production and marketing

scenario of coconut in the country has witnessed a phenomenal development, particularly in the field of production such as development of improved high yielding dwarf varieties of crossbred coconut palm, traditional, non traditional, commercial and industrial coconut product, it was decided to study the current status of developments that have taken place on production and marketing front of coconut and its products in the country. Therefore, a fresh survey on production and marketing of coconut and coconut product in India was undertaken. The finding of the study may benefit producers, traders, consumers and other developmental agencies involved in formulating better strategy for development and transformation into a meaningful and rational marketing system for coconut and coconut product in the country.

The coconut crop provides ample opportunities of income generation because of its multiple uses and consumption of its various products. Indonesia and Philippines are the first and second largest coconut producing country in the world. India is the third largest coconut producing country. Kerala which alone occupies 50 per cent of the arable land and accounts for 44 per cent of production. The largest coconut producing state occupies only the 9th place in terms of yield in the country. It is one third of the yield of 19,667 nuts per hectare recorded in Lakshadweep which is placed in a similar agro climatic condition. Coconut is widely cultivated in all the 14 districts of the states. The major coconut growing states in India are Kerala, Tamil Nadu, Karnataka, A.P, Assam, Orissa. In Kerala the concentrated areas of production are in the districts of Kozhikode, Thiruvananthapuram, Kannur, Malappuram, Trissur, Kollam, etc.. In Kozhikode the coconut from kuttyadi region is well famous for its quality. The role of farmers co-operative societies in primary processing and marketing, Government agencies such as KERAFED, State Trading Corporation, Kerala State Marketing Federation and CDB in Kerala plays a significant role.

1.2VALUE CHAIN MANAGEMENT OF COCONUT

Value chain is a chain of activities that a firm operating in a specific industry performs in order to deliver a valuable product or service for the market.

The concept of agricultural value chain includes the full range of activities and participants involved in moving agricultural products from input suppliers to farmers' fields, and ultimately, to consumers. Each stakeholder in the chain has a link to the next in order to form a viable chain. By understanding the complete production to consumption system of coconut it is possible to determine how the marketing and value addition activities take place and who shares how much benefit from such activities. It has been argued that linking of farmers to the markets through efficient value chains would reduce the use of intermediaries in the chain, and strengthen value added activities. This process can raise the income of coconut farmers and will provide incentive for improving their management practices towards higher farm productivity. The income of the farmers can be enhanced by increasing production, value addition, and better marketing options. The marketing factors are marketable surplus, marketing channels, numbers of players at each level, profit margin of respective players, and value addition by different channel players adding activities by better technology and inputs, upgraded infrastructure and processing and exports.

1.3INTERVENTIONS TO INCRESE INCOME OF COCONUT FARMERS

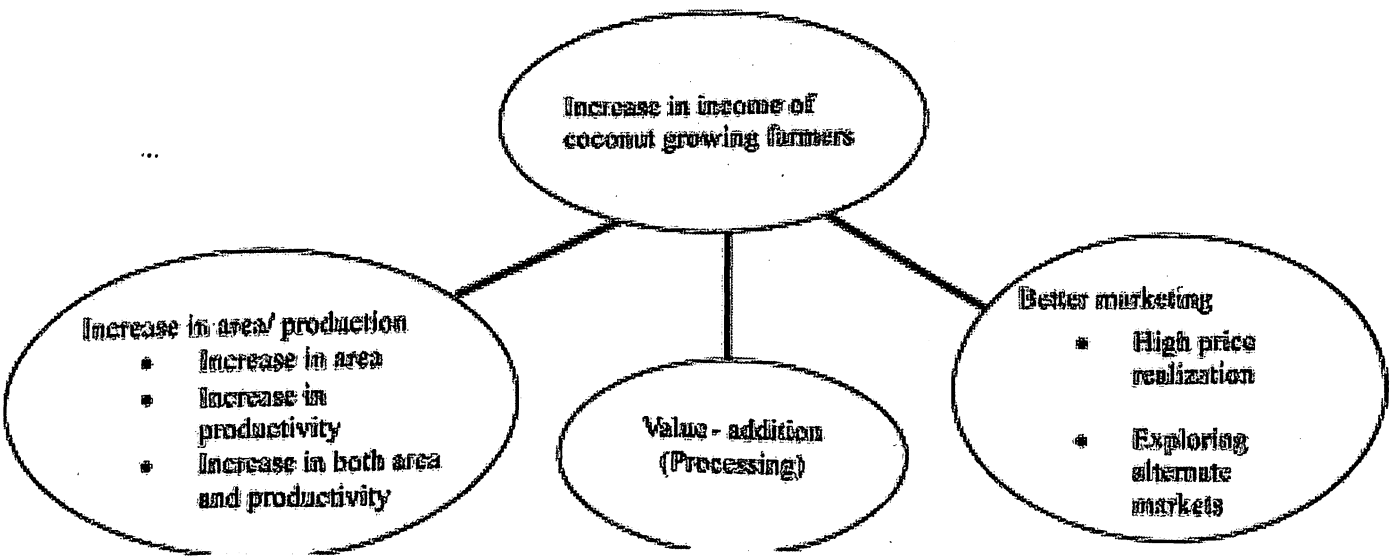

Table No:1.1 shows the trend in area ,production & productivity of coconut in India

Year	Area(m/h)	Prdn(m/nuts)	Productivity(nuts/h)
2005-06	1.95	148.11	7299
2006-07	1.94	158.40	8161
2007-08	1.91	147.48	5310
2008-09	1.90	147.48	5300
2009-10	1.90	157.30	5700

1.4 STATEMENT OF THE PROBLEM

We know that coconut farming is practiced traditionally in Kerala but farmers are facing problem in marketing, processing etc.

Processing and marketing of coconut have always been a serious problem to the farmers. Marketing of coconut lacks systematic organisational setup. This enables the private trader to become a dominant player in collecting coconut from the farmers. Like the case of fresh coconut, marketing of copra as well is almost mostly controlled by private traders.

Kerafed can solve their problems by integrating the activities of procurement, processing and marketing with the linkages with krishibhavan and it directly benefit the farmers. The world-wide trend in value addition, product development and diversification in several coconut producing countries for international trade lead to establishment of copra processing facilities. As a result, the availability of copra for export declined resulting in increasing share of coconut oil in export market. The coconut producing countries realized that copra processing alone would not be economical in their interest. Accordingly they embarked upon product diversification and by-product utilization through value addition. The countries which were processing coconut shell charcoal graduated to activated carbon. Philippines and Indonesia commenced coco chemicals. India is the third largest producer of coconut after these two countries. In India. Raw coconuts have low price. But if it is processed it is having value and price. KERAFED plays a major role in processing coconut. KERAFED have expeller oil extraction facility in Naduvannur, Kozhikode and caters to about five lakh (five hundred thousand) consumers in Kerala through

14,000 retail outlets. So here we study the procurement, processing, value added services, price support scheme, and marketing activities of KERAFED in Naduvannur.

1.5 OBJECTIVE OF THE STUDY

- To identify various components of value chain management model of coconut.
- To map the value chain activities.
- To analyse the procurement processing and marketing operation of KERAFED in Naduvannur.

1.6 METHODOLOGY

- Finding the different levels of Value chain
- Identifying the main actors involved and what they do
- Map the flow of product, knowledge and information through the value chain
- Main actors involved in the value chain
- Identify the problems and solutions

1.6.1OBSERVATIONS TO BE MADE

- Role of KERAFED and other supporting institutions.
- Problems of coconut farmers
- Their socio economic profile.
- Procurement processing and marketing activities.

1.6.2 SAMPLING METHODOLOGY

The data will be collected through following methods survey, questionnaire, discussion with farmers. For the survey based on the study framework, separate questionnaires will designed for all the channel players, viz. farmers, vendors, aggregators, processing industries, and the consumers. Statistical tools such as Means, percentage ,frequency etc. will be used to collect

information about production and marketing related information from coconut farmers, traders and processing industries. Discussions with farmers and processing industries will be undertaken to get additional insights on the marketing scenario of the coconut in the area.

1.6.3DATA COLLECTION TOOLS

Primary and secondary data is required for the study. The secondary data will be collected from magazines newspapers, library, websites etc. The primary data required for study will be collected from farmers, vendors, institution using questionnaire, survey, discussion etc.

1.7 SCOPE

The information from the case study will be useful for potential farmers of coconut and will help the producers and dealers to develop and expand their market.

1.8 LIMITATION OF THE STUDY

Time will be a main constraint during the study. The best output will depend on co-operation of farmers and other agencies involved.

1.9 CHAPTERISATION

1. Design of the study
2. Review of literature
3. Industry profile
4. Organisation profile
5. Value Chain Analysis
6. Summary of findings and conclusion
7. Bibliography

1.10 REVIEW OF LITERATURE

David (1977) states that the farmers who comprise three fourths of the population and who actually produce the coconuts/copra, receive only one fourth of the industry income, while the landowners and overseers, the traders and the exporters and millers who comprise one fourth of the industry population garner three fourths of the industry income. The landowners and overseers alone, who do not actually do farm work, receive 49.2 % of total industry income.

Tiglao (1981), on the other hand, specifies that local traders in the town level number about4,500 and 10,000 in the barrio level. These people are the ones the end-users deal withby means of the contract system. He also adds that these people are responsible for boarding the coconut and thus have the privilege of price speculation, at various points in time.

Tiglao (1981)concludes that the prime characteristic of the coconut industry is that: "while it provides income only at subsistence levels for the working classes in the industry, it generates substantial profits for landlord and capitalist classes as well as revenues for the state."

Porter (1985)in his book "Competitive Advantage: Creative and Sustaining Superior Performance" The value chain concept describes the activities an organization performs and links them to the organization's competitive position. A generic value chain model is used to demonstrate how a value chain can be constructed for a particular firm, reflecting the specific activities it performs. It shows how the activities of suppliers, dealers and customers are linked to one another. The generic chain consists of both primary and support activities. Primary activities are directly concerned with the creation or delivery of a product or service. They can be grouped into five main areas: inbound logistics, operations, outbound logistics, marketing and sales, and service. Each of these primary activities is linked to support activities which help to improve their effectiveness or efficiency.

Krishnankutty (1987)[2]in his article on 'new products from coconut' pointed out that a process has been developed for the production of partially defatted edible coconut gratings which can be used in many food preparations. Also the oil extracted in this process is of very good quality with very low free fatty acid content and a reasonably good shelf life.

SPAMCO-II(1994)has made the following recommendation that Coconut product growing area in the country while establishing units diversification has to be promoted to sustain the coconut economy. Coconut development board shall give maximum publicity to create awareness among public about new and non traditional products of coconut origin. It is necessary to pay due consideration to new coconut utilising modern technology.

Markose VT (1994)suggested that the problem associated with coconut processing sector are mainly related to transportation,storage,handling and preliminary processing of nuts.market promotional activities should be undertaken for creating consumer awareness and boosting the demand of products.

Veerappamoily M (1994) opinioned that prices of various coconut products are determined by ruling price of coconut oil which is subject to wide fluctuation depending on the supply and availability of other oils.so to strengthen the coconut industry in the country it is essential to promote product diversification and by-product utilisation which will benefit the coconut farmer and rural economy through value addition.

Dr. P.K. Das (1994) emphasised the urgent need to cure the industrial sickness and lack in product/process development. He stressed the necessity of promotional activities and marketing research to discharge the deficiencies in the marketing of coconut products.

Ramakrishna (1994)says that only cooperatives can curtain those unhealthy and unfair trade practices in the coconut marketing scenario. He is also of the opinion that the value addition activities through cooperatives can generate more employment and income to the state. However he agrees that, with the cooperative entities in the field limiting to Market fed ,Kerafed etc.

Martin& Donald (1995)is opinioned that marketing is the process of matching the resources with identified customer needs.

Tampan(1995)marketing and add to his opinion by stressing the need for cost effective and comprehensive strategies to be adopted for forming consumer education approaches

Kunjiraman(1995)says that only co-operativism can integrate the coconut industry so as to bring the producers ,Processors and consumers under one roof.

Yasodha (1996) established that the shortage in storage and processing facilities has contributed to marketing problems.

Dr.Haridas (1996) said that lack of finance and absence of market intelligence are other marketing issues.

Dr.Aravindakshan(1996) opined that cooperation formed for the benefits of coconut growers in certain states have diverted.their attention from their objective of understaking marketig and processing activities to non agricultural sector like banking.

Parameswaram(1997)claimed that kerafed has contributed formidably in providing the farmers with a better return their produce. They found that for any further improvement to be provided to the farmer member, the federation need to go for diversification. They also emphasised the importance of expanding the market of its branded oil.it is encouraging to see that the federation is also moving in these lines. A news report in DKNS(1997) revealed that the federation is enjoying a high profile position with its " kera" brand oil in the branded edible coconut oil segment in Kerala. the report also uncovers the federations plans to intensify its sales activities inside the state and to find markets in gulf

Charles (1998) proposed the idea that the value chain, the value network are three district generic value configuration models required to understand and analyse firm-level value creation logic across a broad range of industries and firms. Value chain analysis is a method for decomposing the firm into strategically important activities and understanding their impact on cost and value. While the long-linked technology delivers value by transforming inputs into products, the intensive technology delivers value by resolving unique customer problems, and the mediating technology delivers value by enabling direct and indirect exchanges between customers. With the identification of alternative value creation technologies, value chain analysis is both sharpened and generalized into what they proposed as a value configuration analysis approach to the diagnosis of competitive advantage. With the long-linked technology and the corresponding value chain configuration model as benchmark, the paper reviews the distinctive logic and develops models of the value shop and value network in terms of primary activity categories, drivers

of cost and value, and strategic positioning options In a study entitled 'Agriculture Value Chain Management: Prospects & Challenges', Saji Gopinath.

Eirik *et.al*(2000)[5] conducted a study to evolve an integrated logistics value chain. The objective of the study was to create an integrated logistics system to minimize the production costs and transaction costs within a value chain, and thereby obtain a lower price and better service for the customer. The study focused on cooperation, coordination and the process for closer relationship among the participants in the value chain which are the criteria for success.

Varmudi(2001)[6]in his article need for diversification pointed out that the coconut industry is facing severe crisis since 2000 in the form of a declining trend in the prices of coconut and its products. The main reason for this is attributed to the liberalized atmosphere and the import of palm oil. Apart from this, there were several other problems which include lack of attention towards product diversification and by-product utilization.

Marco , Jan and Astrid(2003)Value chain profiling: The Value Chain Management typically focuses on the integration of primary activities along with the strengthening of secondary functions through proper positive interventions from facilitators and stake holders. Once the farm-end user link is shortened and tightly coupled, the production will be synchronised to a large extent with the demand. This will ensure the effective migration of farmers to farm entrepreneurs and bring about the much needed corporate enterprise culture to the Agriculture. This supply chain collaboration will also mitigate the risks associated with the small farm holdings, while leveraging on its unique advantages of emotional involvement, opportunities for introducing intensity in farming, decentralised soil conservation composite farming and equitable distribution.

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Chandran.M(2003)[7] studied the value chain management in Wal-Mart. Wal-Mart leverages its information technology infrastructure based on a combination of point-of-sales systems and a data warehouse to help its suppliers manage their products on Wal-Mart's retail shelves. By providing suppliers with up-to-date information about which products are selling at certain locations, Wal-Mart helps them directly monitor and adjust inventory levels to reflect sales at a fine level of granularity. This, combined with Wal-Mart's huge size, enables it to demand massive discounts and rapid replenishment, which is the core of Wal-Mart's competitive advantage in its markets. The key to improve the velocity and efficiency of its value chain is to eliminate non-electronic processes such as paper reports, faxes, and telephone calls and implement online, Web-based access to value chain data for all authorized users in the process. This reduces time-to-decision barriers that are created by non-electronic media. It also externalizes a company's internal processes to value chain members. This empowers them to make decisions based on timely information and to bring down costs and inefficiency.

Kumar.S (2009)found out that in the process of value creation, many firms aim at identifying those points in the value chain that can provide higher value to the target instead of selling lower margin goods and services. This will help them to move away from the price wars .branding is one good differentiator that helps a product move away from the commodity image, many products starts as commodities before becoming brands. Sukesh Kumar suggested that to sustain the brand over the long period values the brand stands for should be understood by the employees so that brand building happens at all the stages of value creation.

Gopinath.S(2007)[8]in his study entitled 'Agriculture Value Chain Management: Prospects & Challenges' stressed the need for a proper value chain management system for addressing the issues in agriculture. The success of value chain depends upon leveraging capabilities of various chain members within a framework of collaboration. The study inferred that the increased production is not benefiting the farmers as the supply chains are still fragmented and inefficient. Thus the solution to the problems in agriculture should not only focus on adoption of technological means of developing value added products from the farm produce but also to integrate all activities extending from production to consumption.

Uma.*et.al* **(2007)**[9]described value chain analysis (VCA) as a method for accounting and presenting the value that is created in a product or service as it is transformed from raw inputs to a final product consumed by end users. VCA typically involves identifying and mapping the relationships of four types of features: (i) the activities performed during each stage of processing; (ii) the value of inputs, processing time, outputs and value added (iii) the spatial relationships, such as distance and logistics of the activities and (iv) the structure of economic agents, such as suppliers, the producer, and the wholesaler. Value chains can become complex when they reflect multi-stage production systems with multiple types of firms operating in different locations in one country or multiple countries around the world. The VCA framework centres around three major segments that describe each production link in the value chain: source, make and deliver.

UNIDO (2009)on the paper "Agro-Value Chain Analysis and Development "value chain analysis is the process of breaking a chain into its constituent parts in order to better understand its structure and functioning. The analysis consists of identifying chain actors at each stage and discerning their functions and relationships; determining the chain governance, or leadership, to facilitate chain formation and strengthening; and identifying value adding activities in the chain and assigning costs and added value to each of those activities. The flows of goods, information and finance through the various stages of the chain are evaluated in order to detect problems or identify opportunities to improve the contribution of specific actors and the overall performance of the chain. By going beyond the traditional narrow focus on production, value chain analysis scrutinizes interactions and synergies among actors and between them and the business and policy environment. Thus, it overcomes several important limitations of traditional sector assessments which tend to ignore the dynamic linkages with and among productive activities that occur outside the particular sector under assessment or involve informal operations. Value chain analysis also reveals the dynamic flow of economic, organizational and coercive activities involving actors within different sectors. It shows that power relations are crucial to understanding how entry barriers are created, and how gain and risks are distributed. It analyses competitiveness in a global perspective. By revealing strengths and weaknesses, value chain

analysis helps participating actors to develop a shared vision of how the chain should perform and to identify collaborative relationships which will allow them to keep improving chain performance. The latter outcome is especially relevant in the case of new manufacturers – including poor producers and poor countries – that are seeking to enter global markets in ways that can ensure sustainable income growth.

Kumar .A (2011) in a paper, "Value Chains of Agricultural Commodities and their Role in Food Security and Poverty Alleviation – A Synthesis" proposed the idea that Agri-food systems are undergoing rapid transformations and the emergence of integrated food supply chains is one of the most visible market phenomena in India. Increasing concentration on processing, trading, marketing and retailing is being observed in all the segments of supply chains. The traditional way of food production is being replaced by practices more akin to manufacturing processes, with greater co-ordination across farmers, processors, retailers and other stakeholders in the value chain. Further, with increase in income, the pattern of food consumption is changing. Demand for high-value commodities like fruits, vegetables, livestock products, fisheries and edible oils is growing and farmers are trying to diversify their production systems accordingly. On the other hand, consumers are becoming more demanding in terms of quality and safety of food commodities. In addition, demographic and income trends are inducing more enlightened consumers to demand convenience foods such as frozen, pre-cut, pre-cooked and ready-to-eat items, together with assurances of product quality and safety. Consequently, production, processing and distribution systems are adapting to such changes.

John H and Olga M conducted a study on " Global Value Chains in the Agri food sector which is about agriculture and poverty reduction in the context of globalization. Agricultural growth is central to poverty reduction in rural areas, and one opportunity for such growth lies in increasing exports of agricultural products from poor countries to global markets. Global agricultural markets have become increasingly complex because of concentration at all points in the value chain and the increasing scope and complexity of food standards, particularly those relating to food safety. Therefore, realizing the potential benefits of agricultural export growth for poverty reduction requires careful analysis of trends in global markets and the policies that will unlock the potential for growth and poverty reduction. The

value chain perspective has highlighted issues of codification of knowledge in value chains, supplier competence, strategies to reduce the costs of governance, power asymmetries, and concentration. These issues are decisively affected by the two major trends in agribusiness value chains, the increasing importance of standards and increasing concentration, subjects of this paper.

Adam & James. B report on "Moving Food Along the value chain" examines the aggregation, distribution, and marketing of eight diverse food value chains to glean practical lessons about how they operate, the challenges they face, and how they take advantage of emerging opportunities for marketing differentiated food products. A focus on the operational details of food value chains—business networks that rely on coordination between food producers, distributors, and sellers to achieve common financial and social goals—demonstrates how to facilitate moving differentiated products from regional food suppliers and buyers to customers.

Uma.(2007) described value chain analysis (VCA) as a method for accounting and presenting the value that is created in a product or service as it is transformed from raw inputs to a final product consumed by end users.VCA typically involves identifying and mapping the relationships of four types of features: (i) the activities performed during each stage of processing; (ii) the value of inputs, processing time, outputs and value added (iii) the spatial relationships, such as distance and logistics of the activities and, (iv) the structure of economic agents, such as suppliers, the producer and the wholesaler. Value chains can become complex when they reflect multi-stage production systems with multiple types of firms operating in different locations in one country or multiple around the world. The VCA framework centres around three major segments that describe each production link in the value chain: source, make, and deliver. He stressed the need for a proper value chain management system for addressing the issues in agriculture. The success of value chain depends upon leveraging capabilities of various chain members within a framework of collaboration. The study inferred that the increased production is not benefiting the farmers as the supply chains are still fragmented and inefficient. Thus the solution to the problems in agriculture should not only focus on adoption of technological means of developing value

added products from the farm produce but also to integrate all activities extending from production to consumption.

Jayashree .A(2013)[13]prepared an article on "Scope for coconut processing units in major coconut producing states". Her study reveals that opportunities in coconut industry can be realised by focusing attention on non-traditional and value added products from coconut. More priority has to be given for integrated processing for full utilization of coconut along with all other by products like husk, shell, leaf, midrib, timber etc. This will increase the overall income from coconut by farm level processing.The implementation of Technology Mission on Coconut (TMOC) programme by Coconut Development Board has helped to solve production constraints to a greater extent besides developing many technologies in coconut product diversification and by product utilization sector for their commercial adoption.

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CHAPTER- 2

COCONUT INDUSTRY- A PROFILE

2.1. INDUSTRY PROFILE

The coconut palm *Cocos nucifera* is widely distributed throughout Asia, Africa, Latin America and the Caribbean and the Pacific Region. Its center of origin is still under debate. However, its name was recorded in Sanskrit in early history. *Cocos* means "spectre goblin" or "grinning face "and *Nucifera* means "bearing nuts". The Coconut Palm serves a Multi Functional Role in the developing World where it is commonly grown, particularly in East Asia and the Caribbean. At Cottage Scale, products from the Coconut Palm make an important contribution to food security. At the industrial level, the Coconut Industry is an important source of employment and rural incomes. Although the status of the industry in the Caribbean has declined in recent years. The Industry is also noted for its Multifunctional role. Given their affinity for establishment along coastal areas, coconut groves along the coast serve to prevent coastal erosion while providing alluring landscapes that attract tourists and locals, alike. Beyond the coastline, the Coconut Palm is very popular in the Caribbean for landscaping and home beautification.

The coconut, having originated in South East Asia including Australasia appears to have dispersed eastwards towards the pacific and further in to America, towards the West, it moved to India and Madagascar over the calm tropical waters. Although, it was often considered as an ocean dispersed nut due to its sustenance viability in sea water for over 100 days, sea travellers were also responsible for worldwide introduction and propagation of Coconut plantation. This is significant from the fact that Spaniards introduced it into West Indies and Southern shores of the Caribbean sea, the Portuguese introduced it to Bahia and other parts of Brazil, Polynesians Sea-Farers further spread it to different Islands of pacific, the Arabs disseminated it on the African coasts and maritime Tamils together with the Mariners of the Bengal coast distributed it into the lands of the Indian Ocean.

Nearly 50 per cent of the World production of coconut is processed into copra, depending upon the consumption patterns the share of coconut processed into copra varies from country to country. In Philippines and some of the South Pacific countries, about 90% of their coconut production is converted into copra, and in India and Sri Lanka, it ranges between 25-30 per cent.

One of the major uses of coconut is for the production of seed oil, some of which is consumed as food while a significant amount goes into the chemical industry. The coconut kernel is used for other primary and intermediary products.

2.1.1. COCONUT PRODUCTION IN THE WORLD

Coconuts are produced in 92 countries worldwide on about 11.8 million hectares (29.5ac) land. World production has been estimated at 61.7 million tons (FAO, 2009) with an average yield of 5.2 tons / ha. The top ten producing countries are

Table 2.1: Top ten coconut producing countries in the world

Country	Production (tons) 2009	% of World Production	Acreage under Production (ha)	Yield/ha (tons)
Indonesia	21,565,700	34.9	3,231,710	6.67
Philippines	15,667,600	25.4	3,401,500	4.61
India	10,148,000	16.4	1,903,000	5.33
Sri Lanka	2,099,000	3.4	394,840	5.32
Brazil	1,973,370	3.2	284,058	6.95
Thailand	1,380,980	2.2	237,882	5.80
Vietnam	1,128,500	1.8	121,500	9.29
Mexico	1,004,710	1.6	155,713	6.45
Papua New Guinea	930,000	1.5	216,000	4.30
Malaysia	459,640	0.7	166,400	2.76
WORLD	**61,708,358**		**11,864,344**	**5.20**

Source: FAO Statistics 2 World Coconut Production – top ten producers

World production has been relatively stable over the period 2008 – 2009, having increased by only 0.4% from 61.4 million tons in 2008 (FAO Statistics, 2008). Production continued to be concentrated in Indonesia, Philippines and India. The Asian and Pacific countries, 17 of them produce 90% of the world's coconuts.

Forty- seven (47) of the seventy-seven ACP (African, Caribbean & Pacific) member countries produced 4.59 million tons of coconuts in 2009 on 1.7 million hectares. This represented 7.4% of world production. In 2008, 4.75 million tons were produced on 1.6 million hectares (7.7% of world production). The only ACP country in the top ten producers was Papua New Guinea. Average production in this group 2.6 tons /ha was way below the world average of 5.2 tons / ha. Output from the Caribbean region declined over the period from 504,877 tons in 2008 to 410,395 tons in 2009. This was as a result of storm damage as well as the wave of lethal yellowing and Red Palm mite infestation.

World coconut oil production has been increasing over the past decade. It is now estimated at 3.5 million tons per annum. This accounts for 2.5% of world vegetable oil production. Over 70% of global coconut oil production comes from the Philippines and Indonesia (Table 2 refers). The only ACP countries in the top ten coconut oil producers were Papua New Guinea and Côte d' Ivoire. Some of the former large oil producing countries have significantly reduced production because of the higher price being obtained for the fresh nuts (Vietnam). Some are actually importing fresh nuts to satisfy their demand (Thailand, Sri Lanka) while it has become uneconomical for others to produce (Sri-Lanka, Thailand, Malaysia, Mexico). Others still like Malaysia and Thailand have moved towards producing coconut milk and other food products.

Table 2.2. World Coconut oil production

Country	Production (,000 MT)
Philippines	1,690
Indonesia	968
India	447
Vietnam	153
Mexico	145
Papua New Guinea	63
Thailand ...	46
Sri Lanka ...	38
Malaysia	32
Cote D'Ivoire	28
WORLD	**3.59**

The three most important forms of consumption for coconuts are fresh (including drinking), coconut oil and desiccated coconut.

Global consumption of fresh nuts is growing at a remarkable pace for coconut water and milk (some 30% of coconut consumption). Coconut water is growing in popularity worldwide as a healthy beverage and the milk is used in a number of food products. The issues of preservation and packaging to extend the shelf life of both coconut water and milk have been addressed with the use of aseptic packaging using Tetra Pak paper. Although this is a very expensive technology, it is the future for these products. The demand for nuts to satisfy this growing market is putting pressure on supplies. With the purchase of two Brazilian coconut water manufacturing Companies, one by Pepsi Cola and one by Coca Cola, coconut water entered the mainstream soft drink market. Also nearly every supermarket in Europe and Australia carries more than two brands of coconut milk.

Coconut oil remains the most important form of consumption of coconuts. The European Union Group of 27 countries is the largest consumer of coconut oil in the world, currently utilizing some 743,000 metric tonnes per annum. Most of the 3.5 million tonnes of oil produced annually is utilized. The oil is unique for fatty acid extraction and is used in production of margarine and soaps. Coconut oil accounts for under 2% of global edible oil consumption and this contribution is declining as the consumption of the other edible oils is increasing.

There is increasing attention being given to use of coconut oil for energy generation, either mixed with diesel or as a substitute for diesel. Various incentives and subsidies have led to bio-fuels becoming increasing popular in the USA and Europe and this is now being encouraged in other countries like Malaysia. Once price differences between petroleum and edible oils widen it usually becomes more attractive to use edible oils for fuel.

Coconut economy in the World is often susceptible to the pressure from cheaper oil seed and increased availability of cheap oil sources like palm oil, soybean oil and sunflower oil. Coconut oil being the source of lauric acid and myristic acid, which are considered as important item for industrial applications and always enjoy a premiumprice. However, substitutes from petro-chemicals have restricted the growth of industrial demand for coconut oil. The growth of edible oils viz. soybean oil, palm oil and mustard/rape seed oil industries have kept supply of vegetable oils more than adequate for domestic consumption and therefore, restricted the growth of coconut oil industries.

2.1.2. COOCNUT INDUSTRY IN INDIA

Historically, in the medieval period the coconut was known as Nux indica, the Indian nut, during the same period it was referred as Nargil tree, "the tree of life". palm trees, coconut palm hardly needs any emphasis on its multi-utility significance. One of the leading producers of coconuts in the world producing 15 billion nuts per annum .Coconut area distributed in 18 states and three Union Territories under different agro-climatic conditions 3000 years' tradition in coconut cultivation. India accounts for 15.60 % of area and 25.63 % of total production.

The coconut is not only significant in socio cultural needs of our society, but also has gained considerable importance in the national economy as a potential source of rural employment and income generation among the plantation crops. The countrywide demand for coconuts both for edible and non-edible purpose, the adaptability of coconut palm to grow under varying soil and climatic conditions has generated keen interest among the people of even non-traditional zones in the country to plant a few saplings in their homestead gardens.

India is the Premier coir manufacturing country in the world Producer and the of best grade milling copra in the world yielding high grade coconut oil known for its aroma and flavour .

Large number of farmers. co-operative societies in primary processing and marketing and Government agencies such as Kerafed, State Trading Corporation, Kerala State Marketing Federation and Karnataka State Marketing Federation in manufacturing and marketing. Hundreds of reputed and established private firms in manufacturing and marketing of various coconut products including branded coconut oil in small packs Availability of research support by reputed research organizations such as CSIR, ICAR and DRDO also plays a major role in Kerala. Good number of cultivars / varieties having specific nut characteristics India ranks third on world.

Even though India is among the largest producer of coconut with a distinction of having the highest productivity of 7779 nuts per hectare as against 3630 nuts per hectare in Indonesia and 3859 nuts per hectare in Philippines, the per capita annual availability of coconut estimated to have been 10 nuts only which is quite low compared to 222 of Philippines, 145 of Sri Lanka and 55 nuts of Indonesia.

The food processing sector has not paid due attention to diversification and value addition to coconut, coconut products and by products. The coconut processing therefore traditionally remained confined to copra production, oil extraction, manufacturer of desiccated coconut, coir and coir products.

Even though, India is the third largest coconut growing country in the world, its contribution to international market remains insignificant. Inspite of the slow growth in Production and Marketing of Coconut in India. coconut industry, all round efforts made for integrated development of coconut sector in the areas of production, processing and marketing after establishment of a statutory body, the Coconut Development Board, by the Government of India in the year 1981, are appreciable. During past two decades the coconut plantation crop has received ample research and development attention in the country and the result of these consorted efforts are well exhibited in terms of increased in area, production and productivity of coconut in the country.

In India the main states which produce coconut are;

Andhra Pradesh : Coconut is an important plantation crop in Andhra Pradesh grown along the coastal belt and adjoining districts. The major coconut growing districts are East Godavari, West Godavari, Sri-Kakulam, Vishakhapattanam, Vijyanagaram, Prakasm, Guntur, Chittore, Krishna Khamman, Nellore, Ananthapuram, Kurnool, Guddapah, Ranga Reddy and Medak. Andhra Pradesh is one of the major coconut growing state which accounts for 5.5per cent in area and 9.5 per cent in production of coconut in the country. It is grown in an area of 1.053 lakh hectares with annual production of 1158 million nuts and productivity of 11003 nuts per hectare, which is significantly high when compared with other major coconut producing states in the country. East Godavari, West Godavari and Srikakulam alone contribute for 80 per cent of coconut production in the state. In Andhra Pradesh, coconut is grown mainly under irrigated conditions, and Godavari water is the main source for irrigation. Since the major areas under coconut production are irrigated lands, the productivity is on the higher side and higher productivity is mainly attributed to high density planting especially in coastal districts. The East Coast Tall (ECT) variety commercially called as *"Desavali"* is extensively grown in Andhra Pradesh. The other varieties which are grown are Ganga bound an which is a dwarf variety, Godavari Ganga (ECT x Ganga bound an) a semi dwarf variety,. In Andhra Pradesh, coconut palms are infested by many pests and diseases. As a result, considerable reduction in yield was found, evidently by the attach of black headed caterpillar, Rhinoceros beetle, Red palm weevil, Eriophyid mite and diseases such as leaf-rot, stem-rot, stem bleeding, bud rot and Boron deficiency. Coconuts in Andhra Pradesh are marketed throughout the year as matured coconuts, which are used mainly for domestic consumption and religious purpose.

However, about 20 to 25 per cent of production is consumed as tender coconuts and only5–10 per cent of produce is converted to copra manufacturing. Even though Andhra Pradesh is one of the major producers of coconut, it is lagging behind in respect to production of various value added products. The milling units of coconut oil are small and unorganized in nature. There are no units producing packed tender coconut water, vinegar, milk powder and other value added products in the state. Some of the existing desiccated coconut powder manufacturing units are also non-functional, only few units are established for the coir manufacturing.

Andaman And Nicobar Islands : The Union Territory of Andaman and Nicobar Islands have longest history of coconut cultivation possibly next to the Kerala state in the country. The total area in Andaman and Nicobar Islands is about 24746 hectares with production of 86.56 million nuts. Though the major area under coconut is in Nicobar district, but it is mostly grown as self propagating crop rather than planned plantation. The climatic conditions in Andaman and Nicobar islands are congenial for cultivation of coconut but the production and productivity of the crop in these islands is very low. The productivity of coconut is about 3500 nuts per hectare, against 7821nuts/per hectare, of the national average. Productivity of the crop has remained more or less stagnant since last three decades. The average productivity of 23 nuts per palm in the Union Territory is reported to be very low. It has been observed that factors responsible for the low yield in the coconut plantation in Andaman and Nicobar islands are due to unproductive and senile palms, inferior genetic base, poor soil conditions, rainfed nature of crop, high palm density, poor management and inadequate disease control measure.

The local varieties of cultivars like Andaman Tall and Katchal Tall yield about 30to 31 nuts per palm..per year. The coconut crop has been grown in variety of soils in Andaman and Nicobar islands from costal sandy loams to black fertile soil. The coconut cultivation system observed in Andaman and Nicobar islands was individual holding having 0.37 hectare to 5 hectare land on which coconut is grown along with other horticultural crops. Cooperative societies have undertaken coconut cultivation on 475 to500 hectares land and government coconut plantations have been leased out to tribal agencies on long term basis and mostly are located in Andaman district. The Nicobar district has coconut plantation owned by tribal head of the community known as chief or captain. Number of intercrops and mixed plantation are grown in coconut gardens. The common intercrops grown are vegetables like cowpea, snake gourd, radish, okra, brinjal etc., sweet potato, yam, ginger, turmeric and chillies are cultivated as cash crops. Pepper, pineapple and banana are also planted as mixed

crops. Post harvest processing of coconut in Andaman and Nicobar islands is confined to primary processing of coconuts into copra and manufacture of coconut oil by using traditional techniques. Copra is manufactured mainly in the unorganized way on home scale using sun drying process and local drying arrangements during rainy season. It has been reported that there could be nearly 500 small copra making units manufacturing about 7500 metric tones of copra annually. The quality of copra produced is very poor and does not fetch remunerative price. However, kiln types of copra units do manufacture a small quantity of quality copra. There were 17 coconut oil extraction units as per the record of the Directorate of Industries of which 4 units used expeller for oil extraction. The others were using rotary units or locally known as *'ghani'*. All units put together produced only 500 to 700 metric tons of coconut oil which is ¼th of the total capacity of these oil producing units. The reasons attributed for low production of oil are the non-availability of quality copra, at reasonable price, price fluctuation in the market, low yield of oil on rotary type of units, lack of technical skill and inability to stock the raw material throughout the year.

Bihar: Even though coconut palm is adaptable to wide range of soil and climatic conditions, Bihar was not considered favourable for coconut growing. Coconut is also grown in Patna, Gaya, Bhagalpur and Dhumka districts in South Bihar. It has been reported that the coconut is grown in 10,595 hectares producing 33 million nuts in the state. In Jharkhand state, the erstwhile South East Bihar, coconut is mainly grown in Chaibashanear Ranchi. According to Coconut Development Boards estimate nearly 50,000 hectares of potential area in Bihar is available for coconut cultivation, mainly in North Bihar and Ranchi areas of Jharkhand under irrigated condition. However, it has been observed that coconut cultivation on commercial scale is not advisable. Since the minimum temperature prevailing during winter season is not congenial for coconut plantation as it causes injury to inflorescence and leaves of coconut. However, considering the local demand for the nuts for religious and culinary purposes, coconut can be grown as homestead crop under proper care, as the coconut palms in many districts in Bihar and Jharkhand states have the potential to yield about 100 nuts per annum.

Goa : Goa is the smallest state situated in the Western Coast of Indian Peninsula having Terekhol river on the North-Western Ghat, Arabian Sea on the west. The humid warm climate with little variation in temperature (21-320 C) is favourable for the growth of coconut. The state is divided into North and South Goa. The main crop grown is coconut covering an area of 25068 hectare with annual nut production of 122 million nuts. The productivity of coconut in the state has been estimated at 4868 nuts per hectare and the state average per palm per year is about 30 nuts. The popular coconut cultivars of Goa are

Benaulim, Calangut and Nadora. The Benaulim also known as Banawali is mostly cultivated in the southern part of Goa. The colours of fruit varies from yellow, green to red and therefore are known as Benaulim green round, Benaulimred round, Benaulim green long and Benaulim yellow long. The yield varies from 82 to190 nuts with a mean of 151 nuts per year. The copra content is 143 gms. per nut, and the oil content of copra is about 65 percent. The Nadora cultivar has derived its name from Nadora, the village from where it has been originated. The palm is taller than Banaulim and reaches upto the height of about 9 to 10 meters, average yield is 104 nuts per palm with a range of 50 to 152 nuts per palm. The fruits are bigger than that of Banaulim. The copra content is 174 gm. per nut and oil content of copra is 64.5 per cent.

The Kallingut, like Nadora is grown mainly in Northern part of Goa. The fruits are oblong and green, with annual yield varying from 60 to 120 nuts per palm. The copra content is smaller than that Nadora but higher than that of Benaulim with 148.5 gm. Per nut and the oil content in copra is 68 per cent.

Gujarat : Though Gujarat is traditional coconut growing state, its contribution in area, production and productivity of coconut has been insignificant compared to other major coconut producing states in the country. It contributes only 0.67 per cent area and0.80 per cent in production at all India level. According to an estimate, Gujarat state has369.8 thousand hectare land under coconut cultivation with total production of 2.4million nuts and productivity of 2667 nuts per hectare was reported in the year 2002-03.Junagad, Valsad, Bhavnagar are the major coconuts producing districts in Sourashtra region. Jungagad also contributes 38.13 per cent in area and 37.90 per cent in total production of coconut, followed by Valsad 27.40 per cent in area and 27.09 per cent in production, Bhavnagar district 20.40 and 20.17 per cent, other major districts such as Porbander, Kutch, Surat, Navsari, Jamnagar, Amerely and Baroda also have coconut cultivation and contribute 13.8 per cent area under coconut cultivation and 14.62 percent in coconut production. Important varieties of coconut grown in Gujarat state are West coast Tall, Pratap, Kamandala, Andaman Tall, Rangoon Khubhasi, etc. Manila, Panaora Tall, yields bigsize nuts. Cylone Tall, Harmania produces medium size nuts and varieties such as African Tall, schychellius Tall are also grown which produce small fruits. The average yield of coconut has been reported to be 60 to 70 nuts per tree for tall varieties, 100to125 nuts in hybrid dwarf varieties. Coconuts after harvesting are brought to the APMC/Markets for sale either through cultivators or co-operatives societies. In some areas of Gujarat such as Navasari, Surat, etc., the cultivators do not bring their fruits to the markets. They directly sale the nuts outside the APMC yards. Producers who bring

their coconuts for sale in the market yard dispose them through open auction system. There are no big units manufacturing coconut products in Gujarat. The units producing coconut products are very small in terms of production and sale of coconut by products.

Karnataka : Karnataka accounts for 15 per cent of area under coconut cultivation and 10 per cent of total production of coconut in the country. Coconut is the second largest and important horticultural crop of the Karnataka state, occupying 31 per cent of the total area under horticultural crop. The crop is grown in all the districts of the state. The total area under coconut in the state is around 3.33 lakh hectares and the annual production of coconut is 1754 million nuts. The productivity of coconut in the state is considered as lowest when compared to other neighbouring states. The varieties which are grown are chowghat orange dwarf, chowghat green dwarf, Malayan green dwarf, Malayan orange dwarf, malayan yellow dwarf and Gangabondam. The dwarf variety is grown mainly for tender coconut purpose. The Tall varieties which are grown are West Coast Tall, Coconino, Laccadive ordinary, Laccadive micro, Tiptur Tall, Kappadam, Karradam, etc. Nearly 60 per cent of the coconut produced in the state is utilized as raw nuts fordomestic culinary purposes, social cultural and religious purposes. About 25 per cent of the nuts are converted into edible ball copra, desiccated coconut powder and the remaining 15 per cent is utilized as tender coconut for drinking purpose. Prominently,60–70 per cent of the arrival of coconut is exported to other states i.e. Uttar Pradesh, Punjab, Maharashtra, Rajasthan, Madhya Pradesh, Jammu & Kashmir, etc., about 60 percent of coconut production in Karnataka is used in domestic items and remaining is dried as copra, most of the copra arriving to the markets is dispatched to other state, where the Karnataka copra is in great demand. The coconut utilized for commercial product preparation is only to the extent of 35-40 per cent, while 55-60 per cent is consumed for food and beverage purposes. Milling copra continues to be the major coconut product in Mangalore market. Whereas Arisikere and Tiptur markets cater to the ball copra which is exported to North India. Maddur market is mainly trading the tender coconuts which are sent to other states for consumption of tender coconut water. The trade in tender coconut in the state is very popular, as tender coconuts have fairly good demand in most of the cities apart from the demand from the upcountry buyers. It has been observed that along the busy state highways and national highways like Bangalore – Mysore, Bangalore – Pune, etc, temporary retail sales outlets for tender coconut have been established at different points to meet the demand of tourist and other travellers. A large number of cycle hawkers are also involved in the retail selling of tender coconuts. Tender coconuts of Tiptur Tall variety is normally used for this purpose. The coir industry is an important cottage industry in the rural

areas of the state, providing gainful employment to many villagers. There are 330 units registered with coir board manufacturing coir products in Karnataka which are located in Tuymken, Chitoradnya, Bangalore, Hassan, Mandya. Out of these 330 units, 50 units are fibre extraction units, 30 units make curved ropes and 30 units make yarn, remaining units are manufacturing coir products.

The production and productivity oriented developmental projects implemented during 2nd Five Year Plan were expanded and continued during the 3rd Five Year Plan(1961-66). There was steady increase in area and production during this plan period i.e.883.7 thousand hectares and 5035 million nuts respectively. The 3rd Five Year Plan period was followed by a plan break for three consecutive years up to 1968-69 in which programme were continued as annual plans, as result, coconut production touched the level 5546 million nuts and the area under coconut increased to 990 thousand hectares in1968-69.

During the Fourth Plan (1969-70 to 1973-74) various short term and long term programme were envisaged to achieve an additional production of 1000 million nuts by the end of plan period. The short term measures included laying out demonstration plots, expansion of irrigation facilities and plant protection, the long term measures covered production and distribution of hybrid planting material in states of Kerala, Karnataka, Tamil Nadu and Andhra Pradesh, establishment of elite seed farm for Tall X Tall (TxT) progenies in Karnataka and subsidized supply of quality planting material in Gujarat. By the end of this plan period, the area under coconut increased to 1102thousand hectares with production of 5851 million nuts. The production and productivity improvements programme were continued during Fifth (1974-76 to 1979-80) and Sixth Five Year Plan (1980-81 to 1984-85). More emphasis was laid on hybrid planting material production and rejuvenation of the diseased coconut holdings affected due to root wilt disease.

The formation of Coconut Development Board in 1981, coincided with commencement of Sixth Plan during 1980-81. The developmental programmes of coconut were given wider dimensions, by identifying thrust areas for development. A decade prior to the formation of Coconut Board, witnessed either declining trend in production and productivity with area under coconut cultivation remained almost stagnant. However, by the end of Sixth Plan period the area under coconut cultivation increased to 1.83 million hectares and the production to 6913 million nuts. Expansion of area under coconut cultivation to increase the future production potential, by extending coconut cultivation in the traditional and non traditional states, technical guidance and liberal financial assistance were some of the measures adopted by the Coconut Development Board to achieve the goal after 1980.

The development programme further expanded during the Seventh Five Year Plan (1985-86 to 1989-90) by starting technology development centre for coconut, laying more emphasis on development of new products like coconut cream, packed coconut water, coir pith briquette, timber utilization etc. With the concerted efforts made by all agencies, the area under coconut reached to the level of 1.47 million hectares and production to 9359 million nuts as per the target. During this Plan period, an apex body in cooperative sector ***"KERAFED"*** came into existence in 1987, to implement an integrated coconut production, procurement, processing and marketing projects. Initially about 900 Primary Agricultural Credit Societies were brought under the purview of kerafed with financial assistance from National Cooperative Development Corporation.

The major functions earmarked for the Coconut Development Board were adopting measures for the development of coconut industry, recommending measures for improving marketing of coconut and its products, imparting technical advice to those engaged in coconut cultivation and industry, providing financial and other assistance for expansion of area under coconut, encouraging adoption of modern technologies for processing coconut and its products, recommending measures for regulating imports and exports of coconut and its products, fixing grades, specifications and standards for coconut and its products, financing suitable schemes to increase the production of coconut, assisting, encouraging, promoting and financing agricultural, technological, industrial or economic research on coconut and its products, collecting statistics on coconut and its products and publishing, undertaking publicity activities and publishing books and periodicals on coconut and its products. Further, the Development Programme implemented by the Board are (i) Integrated Development of Coconut Industry in India and (ii) Technology Mission on Coconut which covers the following component programme: a) Development, demonstration and adoption of technologies for management of insect pest and disease affecting the coconut gardens. b) Development and adoption of technologies for processing and product diversification. c) Market research and promotion and d) Technical support, external evaluation and emergent.

The Coconut Development Board(CDB) is a statutory body established under the Ministry of Agriculture, government of India for the integrated development of coconut cultivation and industry in the country, with focus on increasing productivity and product diversification. The following schemes have been launched by the board for this purpose.

Schemes of Coconut Development Board

1. Production and distribution of planting material

2. Expansion of area under coconut

3. Integrated farming for productivity improvement

4. Technology demonstration

5. Market promotion & statistics

6. Information and information technology

7. Human resources development

"KERAFED" came into existence in 1987, to implement an integrated coconut production, procurement, processing and marketing projects. Initially about 900 Primary Agricultural Credit Societies were brought under the purview of kerafed with financial assistance from National Cooperative Development Corporation. of 79.29 crores, for implementing several production and productivity oriented programme. During this plan period, about 46,000 hectares was brought under the Area.

In the Eighth Five Year Plan (1992-93 to 1996-97), the development programme for coconut received further boost with enhanced financial budget allocation to the tuneof 79.29 crores, for implementing several production and productivity oriented programme. During this plan period, about 46,000 hectares was brought under the Area Expansion Programme.

The development programme along with area expansion and Integrated Diseases Control Programme were continued in the Ninth Five Year Plan (1997-98 to 2001 2002). The production at national level touched 14925 million nuts from an area of1.91 million hectares by the year 1999-2000, due to harmonious efforts made by the institutional research and development work. Priority was given to bring additional area in traditional coconut growing belts and introduction of the crop in non-traditional areas. The productivity improvement programme in coconut producing areas by introduction of disease eradication, weeding out unproductive diseased palms and replanting with quality seedlings, development of irrigation sources and micro-irrigation system, integrated farming in coconut holdings etc. resulted in increased productivity in coconut belts. The impact was seen from the improvement in area, production and productivity by 1999-2000. The increase in area over the period of last 20

years was 0.82 million hectare i.e. from 1.08 million hectare in 1980-81 to 1.91 million hectare in 1998-99. The increase in production during this period was 8983 million nuts with a growth rate of 5.25 per cent raised the production to 14925 million nuts in 1998-99 from the base level of 5942 million nuts in 1980-81.

Table 2.3.All India Final Estimates of area and production of Coconut

	2010-11 (Final)					
States /Union Territories	AREA ('000 Hectares)	% share in area	Production(000 metric ton)*	% share in production	Production (Million nuts)*	Productivity (Nuts/ha)
Andaman &Islands	21.70	1.1	65.40	0.6	102.22	4711
Andhra Pradesh	104.00	5.5	667.00	6.2	1042.52	10024
Assam	18.80	1.0	101.00	0.9	157.86	8397
Chhattisgarh	0.70	0.0	6.30	0.1	9.85	14067
Goa	25.60	1.4	88.00	0.8	137.54	5373
Gujarat #	16.00	0.8	108.00	1.0	168.80	10550
Karnataka #	419.00	22.1	1497.00	13.8	2339.81	5584
Kerala	788.00	41.6	3992.00	36.8	6239.50	7918
Lakshadweep	2.70	0.1	40.00	0.4	62.52	23156
Maharashtra	21.00	1.1	120.00	1.1	187.56	8931
Nagaland	0.90	0.0	0.30	0.0	0.47	521
Orissa	51.00	2.7	190.00	1.8	296.97	5823
Puducherry	2.10	0.1	20.00	0.2	31.26	14886
Tamil Nadu	390.00	20.6	3692.00	34.1	5770.60	14796
Tripura	5.80	0.3	8.00	0.1	12.50	2156
West Bengal	28.60	1.5	245.00	2.3	382.94	13389
All India	1895.90	100.00	10840.00	100.00	16942.92	8937

Source: Advisor, Horticulture Division, Ministry of Agriculture, Govt. of India.

Coconut Estimate for 2009-10

* 1563 nuts - 1 metric ton

TABLE 2.4 PRODUCTIVITY AND PRODUCTION OF COCONUT IN INDIA2007-2013

(2007-2008 to 2012-2013)

(Area : 000 Hectare.; Prod. : 000 MT; Productivity in Kg. per Hectare)

s/Uts	2007-2008		2008-2009		2009-2010		2010-2011		2011-2012*			2012-2013 @	
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Productivity	Area	Production
man and ar ds	21.6	55	21.6	55.5	21.7	56	21.7	65.4	21.8	72.25	3.31	21.8	72.25
ra sh	101.3	770	101.3	770.3	104	667	104	667	142.03	1270	8.94	147.71	1270
n	19	94	19	93.6	18.8	101	18.8	101	20.78	194.81	9.37	21.1	198.66
	-	-	-	-	-	-	-	-	15.24	97.54	6.4	15.3	98.69
ttisgarh	-	-	-	-	-	-	0.7	6.3	0.79	6.32	8	0.87	7.54
	25.5	88	25.5	87.8	25.6	88	25.6	88	25.73	88.95	3.46	25.73	88.95
rat	16.4	95	16.4	95.2	16	108	16	108	20.93	217.89	10.41	20.93	217.89
ataka	405	1126	405	1125.9	419	1497	419	1497	511	3784.6	7.41	531.4	3936
la	818.8	3882	818.8	3882.3	788	3992	788	3992	766	3973.87	5.19	766	3973.87
hadweep	2.7	36	2.7	36.5	2.7	40	2.7	40	2.57	48.74	18.98	2.57	48.8
arashtra	21	121	21	120.5	21	120	21	120	21	120	5.71	21	120
ram	-	-	-	-	-	-	-	-	0.02	0.06	3	0.02	0.06
aland	0.9	0	0.9	0.1	0.9	0.3	0.9	0.3	0.9	0.3	0.33	0.9	0.3
ha	51	190	51	189.8	51	190	51	190	53.94	258.04	4.78	54.29	260.79
cherry	2.2	18	2.2	18.3	2.1	20	2.1	20	2.1	20	9.52	2.1	20
il Nadu	383.4	3419	383.4	3419.3	390	3692	390	3692	430.66	4515.56	10.49	465.11	4760.67
ura	5.8	8	5.8	7.8	5.8	8	5.8	8	6.21	18.06	2.91	6.22	18.07
t Bengal	28.6	245	28.6	245.4	28.6	245	28.6	245	29.13	252.88	8.68	29.2	254.17
a	1903	10148	1903	10148.3	1895	10824.3	1896	10840	2070.82	14939.87	7.21	2132.24	15346.71

Source: Directorate of Economics & Statistics, Ministry of Agriculture, Govt. of India.

Table No 2. 5 Industrial production of coconut oil in India

Month-wise Industrial Production of Coconut Oil in India

(April 1998 to December 2011)

(Tonne)

Year	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1998-99	400	438	509	600	537	413	595	642	579	537	489	651
1999-00	604	580	757	620	518	447	512	358	614	330	449	652
2000-01	444	468	655	588	721	982	1504	477	1132	1773	672	696
2001-02	534	693	1312	976	1166	891	1213	553	796	1069	936	902
2002-03	1095	891	940	1054	1091	1133	1154	1093	993	1350	1359	1492
2003-04	1585	1304	1200	1320	1274	1271	1355	1469	1406	1363	1395	1461
2004-05	1841	1815	1671	1695	1619	1439	1668	1434	1613	1465	1419	1465
2005-06	1751	2131	2000	550	1377	890	2205	1410	1447	2118	1721	1715
2006-07	1097	1203	1173	646	1533	1476	1485	1473	1042	1540	1135	1638
2007-08	730	1664	1363	1157	1359	1718	1316	1501	1661	1945	1784	909
2008-09	1272	914	1229	1135	1363	1892	1733	1458	1379	1416	1150	1492
2009-10	1367	1608	1107	1860	1394	1471	1419	1819	1181	1235	1319	1497
2010-11	953	1567	1735	1907	1382	1086	1301	4697	1792	1460	496	758
2011-12	965	1643	4743	478	1460	1714	1291	1467	3340			

2.1.3. COCONUT INDUSTRY IN KERALA.

Kerala, literally meaning the land of coconut which alone occupies 50 per cent of the arable land and accounts for 44 per cent of production. Over a long period, there has been continuous expansion in area under coconut cultivation.

The largest coconut producing state occupies only the 9th place in terms of yield in the country. It is one third of the yield of 19667 nuts per hectare recorded in Lakshadweep which is placed in a similar agro climatic condition. Coconut is widely cultivated in all the 14 districts of the states. The concentration areas of production are the districts of Kozhikode, Trivandrum, Kannur, Malappuram, Trissur, Kollam, etc. During the year 2005-2006, the total area under coconut in the state was 900 thousand hectar with total production of 5895 million nuts per hectare and productivity was 40 nuts per palm per year.

The most popular varieties of coconut cultivated in Kerala are West Coast Tall(WCT), TxD and DxT.

Mixed farming practice is very common in Kerala. Inter cultivation practice, with Tapioca, sweet potato, yam, colocasia, ginger, turmeric, pulses, banana, pineapple, pepper, spices etc., is followed. Normally, farmers sell coconut immediately after harvest but few farmers store them for 2 to 3 months. It has been reported that the loss in storage is about 1 to 2 per cent due to sprouting and quality deterioration.

In Kerala, tender coconut harvesting is very less. It is estimated that less than 2 per cent of the total nuts produced are marketed as tender nuts. Major portion of tender coconut marketed in towns, cities, tourist and pilgrimage centres comes from Tamil Nadu and Karnataka, where special varieties suitable for tender nuts are cultivated commercially, which is not the practice in Kerala, and therefore, harvesting of tender coconut in Kerala is negligible. Harvesting of matured coconut is a traditional practice in Kerala. Since, copra making, oil extraction and coir making are principal activities of industrial importance. About 70 per cent of matured nuts are converted into copra and out of the total copra produced; about 85 per cent is milling copra and 15 per cent in the form of edible ball copra. About 30 per cent of the nuts are utilized for culinary and other purposes, including dispatches to other States. About 80 per cent of the milling copra is converted into oil and the rest along with the ball copra is dispatched to other States. Production and Marketing of Coconut in India.

The distribution of area under coconut cultivation shows that the major portion of coconut production in the country rests with the Western plain sand Ghat regions comprising the states of Kerala, Karnataka and Maharashtra followed by Eastern coast plain and hilly regions comprising Andhra Pradesh, Orissa, Tamil Nadu and Pondicherry. Andaman & Nicobar, Lakshadweep Island and states of Gujarat are the other traditional coconut growing areas. Certain tracts of Tamil Nadu, Karnataka and the states of Assam, Tripura, West Bengal, Bihar and Madhya Pradesh are the non-traditional areas where coconut cultivation has made inroads rapidly. In the North Eastern belts, state like Mizoram, Manipur, Nagaland and Arunachal Pradesh are also experimenting coconut cultivation successfully. However, the triennium average for the year showed that Kerala's contribution to total area under coconut was 48.79 per cent, followed by Karnataka 18.90 per cent, Tamil Nadu 17.70 per cent and Andhra Pradesh 5.50 percent, which together accounted for 91 per cent of the total area in the country.

The average size of coconut holding in Kerala is only 0.25 hectare. Mono cropping models practiced do not support the livelihood security of the dependent families. It has been observed that Kerala has not achieved noticeable progress in the utilization of the multiple

products of coconut palm for value addition both at the farm-household and community levels.

In Kerala many rural artisans are engaged in handicrafts for their livelihood. Although manufacture of coconut based handicraft has been in existence as a traditional activity in the State, its development into a viable and flourishing enterprise has been inhibited because of the absence of facilities for design, training and organized marketing. The coconut products which show potential, for organized production in the State are desiccated coconut, partially defatted coconut flour and coconut water and milk based products. Sweet toddy or `neera' can be harvested / tapped as a health drink, the product is capable of fetching great monitory gain for the state. It has been reported by a local researcher that, even if just 1 per cent of the palms are subjected to tapping, it would give toddy worth Rs 10,000 crore. Introduction of canned fresh toddy for domestic and export marketing will prove to be a viable activity. Technologies for the canning of fresh toddy are available which are only to be pilot tested for adopting the most appropriate one under local situations. The farmers' co-operatives, which organize toddy tapping and sugar production or even individual entrepreneurs, may be permitted to undertake the activity under proper control. In Kerala, income from coconut holdings will register a sharp increase with the direct involvement of registered farmers' organizations in toddy tapping and the subsequent processing of sweet toddy. Apart from the production and marketing of different forms of sugar, these organizations could Production and Marketing of Coconut in India also serve as the supply source of toddy to the local toddy parlours. Coconut cheese is another product made from skim milk in combination with non-fat dry dairy milk powder. This has already evoked consumer interest in the international markets and the opportunity could be exploited profitably by Kerala. Coconut oil has great economic importance for the state of Kerala but there is a declining trend of coconut oil production in the state from 1998–99 to 2002–2003. During 1998-99, the production of edible coconut oil was 34,000 thousand tonnes. During 2002-2003, it has declined to 28,900 thousand tonnes. Though copra is made out of coconuts and coconut oil from copra, the price of coconut is fixed on the basis of prices of coconut oil in the market and as such, the economy of coconut based farming in Kerala till date is mainly dependent on a single coconut product i.e. coconut oil.

Traditional industries manufacturing items as coir, handlooms, and handicrafts which employ around one million people. Around 1.8 lakh small-scale industries provide employment to

909,859 Keralites, while some 511 medium-and-large-scale manufacturing firms are located in Kerala.

Table 2.6 Trends in productivity of coconut in India and Kerala.

Year	Productivity(Nuts/Ha)		Growth rate (%)	
	India	Kerala	India	Kerala
1991-92	6593.00	5377.00		
1992-93	7310.00	5843.00	10.87	8.66
1993-94	7324.00	5885.00	0.19	0.71
1994-95	7760.00	5858.00	5.95	-0.45
1995-96	7066.00	5638.00	-8.94	-3.75
1996-97	6908.00	5849.00	-2.23	3.74
1997-98	6902.00	5891.00	-0.08	0.71
1998-99	7145.00	5817.00	3.52	-1.25
1999-00	6860.00	6140.00	-3.98	5.55
2000-01	6847.00	5980.00	-0.19	-2.60
2001-02	6776.00	6049.00	-1.03	1.15
2002-03	6523.00	6349.00	-3.73	4.95
2003-04	6289.00	6540.00	-3.44	3.00
2004-05	6632.00	6673.00	5.30	2.03
2005-06	7608.00	7046.00	14.71	5.59
2006-07	8165.00	6935.00	7.32	-1.57
2007-08	8165.00	6935.00	0	0
2008-09	7749.00	7384.00	-5.09	6.47
2009-10	8300.00	7278.00	7.11	-1.43
2010-11	6862.00	5718.00	-31.11	-5.71
2011-12	6869.00	7237.00	20.12	5.46

Source: Government of India, 2012.

2.2 PROFILE OF KOZHIKODE

Kozhikode District is a district of Kerala state, situated on the southwest coast of India. The city of Kozhikode formerly known as *Calicut* is the district headquarters. The district is 38.25% urbanised.

Calicut is the anglicised form of Kalikut. The Arabic for the Malayalam , Kozhikode. It is also called the Cock Fort. According to the historian, K.V Krishnan Iyer, the term means koyil (Palace) Kodu (Fortified). Anyhow, it is a historical town with a hoary past. From time immemorial, the city attracted travellers, with its charming physical features and prosperity. Even today , the glory that was Calicut has not faded. The political history of Kozhikode is a story of treacherous and ill conceived conspiracies hatched by the Western powers. Vasco De Gama landed at Kappad in May 1498, as the leaders of a trade mission from Portugal and was received by the Zamorin himself.

The history of Kozhikode district as an administrative unit begins from January 1957. When the states of the Indian Union were reorganised on linguistic basis on 1st November, 1956, the erstwhile Malabar district was separated from Madras state (Tamil Nadu) and added to the new unilingual state of Kerala. But Malabar district was found to be too uniwieldy for administrative purposes. Consequently the state government ordered the formation of three districts with certain changes in the boundaries of some of the taluks. The Kozhikode district thus came into existence on 1st January 1957,orginally consisting of five taluks, Viz, Vadakara, Koyilandy, Kozhikode, Ernad & Tirur. With the formation of Malappuram district on 1st June 1969 & Wayanad on 1st November 1980, Kozhikode district now consist of one revenue division , three taluks, twelve blocks, 78 panchayat and 117 villages.

Kozhikode is one of the main commercial cities of Kerala. The economy is mainly business oriented. The city currently is the major trade hub of North Kerala with good connectivity through road, rail and air. It also has large timber yards along the banks of the kallai river. Kozhikode District with 8% of the state population makes 12% contribution to the state's income. Kozhikode has witnessed a building boom in recent years. This is particularly evident in the number of malls and buildings built in recent years. Kozhikode is also going to be the first city in Kerala to have a mono rail transporting system.The KSRTC bus terminal which is under construction is the biggest bus terminal in Kerala.

The District has an intermediate port at Kozhikode and a minor port at vadakara. In coast line of the Kozhikode port extends from Elathur cape to the south bank of Kadalundi river and treads roughly in straight line. This port has two Piers, but this cannot be used due to the dilapidate condition. Traffic is mainly dealt at Beypore port. Kozhikode Port has a Light House and a Signal Station. The godown at South Pier is used as transit sheds.

Two IT "cyber parks" are under construction in Kozhikode. One is the UL Cyber Park (constructed and operated by ULCCSC, a Kozhikode-based company). UL Cyber Park began operation in 2012 and will complete its first phase in 2013. The other park is run by the government, and will complete its first construction phase in 2014. Cyber park, is a Government of Kerala organisation planned to build, operate and manage IT parks for the promotion and development of investment in IT and ITES industries in Malabar region of Kerala and will be the third IT hub in the state of kerala. The two IT park will create a total 100,000(100000) direct job opportunities. It is in the process of setting up IT parks at Kozhikode, at the SEZs approved at Kannur and Kasargod. Its first project is the development of Cyber park hub in Kozhikode with its spokes at Kannur and Kazargode IT parks. Other planned projects include the Birla IT park (at Mavoor) and Malaysian satellite city (at Kinaloor) where KINFRA has plans to set up a 400-acre (1.6 industrial park.

The municipality of Kozhikode has an average literacy rate of 96.8%(national average is 74.85%). The male literacy rate is 97.93% and female literacy rate is 95.78%. is the most spoken language. English, Tamil and Hindi are widely understood.

Kozhikode has been a multi-ethnic and multi-religious town since the early medieval period. Hindus form the largest religious group, followed by Muslims and Christians.

Many famous diplomats and politicians are also belongs to this district. Among them are V.K. Krishna Menon, C. H. Muhammed Koya, K. Kelappan, K.P. Kesava Menon, P.P. Ummer Koya, M. K. Muneer, and K. Muraleedharan.

Dr. Verghese Kurein was the person who played an outstanding role in the development of Amul. He was known as the 'Father of the white revolution' in India. He is also called as the Milkman of India.

Dr. Varghese was the architect behind the success for the largest dairy development programme in the world., christened as 'Operation Flood'.

P. T. Usha is one of the greatest athletes India has ever produced. She has won 101 international medals in her sparkling career. In Kozhikode mainly crops cultivated are coconut,banana,tapioca,pepper,paddy etc.

Kozhiode is the largest producer of coconut in kerala Kozhikode, especially perambra is known for its best variety of coconut" perambra coconut". In the world the 2nd best ball copra is from perambra coconut.

2.3 VALUE ADDITION IN COCONUT

Fluctuation in price of the product is mainly due to the over dependency on coconut oil and it is high time to reorient our strategies so as to avoid this situation. Opportunities in coconut industry can be realised by focusing attention on non-traditional and value added products from coconut. Research undertaken and recent technological developments brought out viable technologies in the processing sector and thereby preference for processed and convenience oriented products opened the global market for promoting such value added coconut products. Since the price of coconut and it's by products have attained high demand recently, the scope for establishment of units for coconut products have increased considerably. More priority has to be given for integrated processing for full utilization of coconut along with all other by products like husk, shell, leaf, midrib, timber etc. This will increase the overall income from coconut by farm level processing. Under Technology Mission on Coconut (TMOC), component adoption of technologies, Coconut Development Board is providing assistance for setting up of coconut based industry other than husk. The programme is being implemented by the Board since 2001-02 as a part of the ongoing programmes for integrated development of coconut industry in India to address the serious problems faced by the coconut industry in a strategic manner. The implementation of Technology Mission on Coconut (TMOC) programme by Coconut Development Board has helped to solve production constraints to a greater extent besides developing many technologies in coconut product diversification and by product utilization sector for their commercial adoption.

2.4. KERAFED

The Kerala Kerakarshaka Sahakarna Federation Ltd., registered under The Co-operative Societies Act, was formed as an apex body of the co-operative societies involving the coconut farmers of kerala.

For effectively and efficient carrying out the administrative and operational practices on a day to day basis, the state is divided into three regions. The southern region consist of revenue districts-Thiruvananthapuram, Kollam, Pathanamthitta and Alappuzha. The northern region consist of Malappuram, Kozhikode, Wayanad, Kannur, and Kasargode districts. Each region has around 300 Primary Agriculture Credit Cooperative Societies functioning and these societies are organizing farmers to take up production, procurement and marketing

initiatives. For processing and product diversification, the federation has a processing plant with processing capacity of 200 tonnes of copra per day. The federation has initiated steps for establishment of an oil mill with 30TPD capacity and its auxiliary unit in KERAFED coconut oil complex at Naduvannur in Calicut district.

"KERAFED" came into existence in 1987, to implement an integrated coconut production, procurement, processing and marketing projects. Initially about 900 Primary Agricultural Credit Societies were brought under the purview of kerafed with financial assistance from National Cooperative Development Corporation. For effectively carrying out the administrative and operational practices on a day by day basis. Kerafed sees its state of abode as three northern, central and southern regions. Each region has around 300 primary agricultural credit cooperative societies functioning, organising farmers to take up production procurement and marketing initiatives. Kerafed has its all aggressive marketing strategy. Energetic sales team with an insight in to future. Kera brand of coconut oil is produced by kerafed from copra of the finest quality directly procured from the coconut farmers in Kerala. most modern technology is used for production. Kerafed coconut complex Naduvannur is headed by the plant manager. Their main products are kera coconut oil, kera kesh hair oil, coconut squash, oilcakes etc. kera is currently part of the biggest retail network CSD, ministry of defence oil seed cooperatives like Karnataka oil federation, Tamil Nadu cooperative oil growers federation and oil federation of Madhya Pradesh.

KERAFED's first product was KERA brand coconut oil. The federation started commercial production in 1993.The KERA brand coconut oil is produced from copra of the finest quality, directly produced from coconut growers through Primary Agricultural Credit societies affiliated with KERAFED. In the selection and processing of copra, KERAFED employs strict quality control measures to ensure product superiority and purity. KERA is produced by using a unique two stage filtering process to retain the original aroma and flavour of coconut oil for a long period .KERA has an excellent shelf life and is quite reasonably priced.

In the modern marketing situation, market segmentation plays an important role in the success of the product. Households were the major consumers of kera and the next major consumer were bakers. Core need of the consumers met kera coconut oil is cooking.

Kerafed is the single largest producer of copra in Kerala undertaking a massive effort at the doorsteps of the farmers and involving agricultural credit spread all over the state. This direct interaction eliminates middleman resulting in the entire benefits being accrued to the farmers directly. coconut plant in Naduvannur coupled with a sophisticated two stage plate filter unit followed by micro filtering, the aroma flavour and charity of the coconut oil is retained intact and safe. KERA is the branded oil from kerafed is the most popular brand of coconut oil in the state ,truly the colour of gold .

"KERA" Brand of coconut oil is produced by kerafed from copra of the finest quality, directly procured from coconut growers in Kerala - the land of coconuts. The copra thus procured is processed using the most modern technology. In the selection and processing of copra, KERAFED employs strict quality control measures to ensure product superiority and purity. A unique two stage filtering process is employed by KERAFED to retain the original aroma and flavour of coconut oil for a long period.

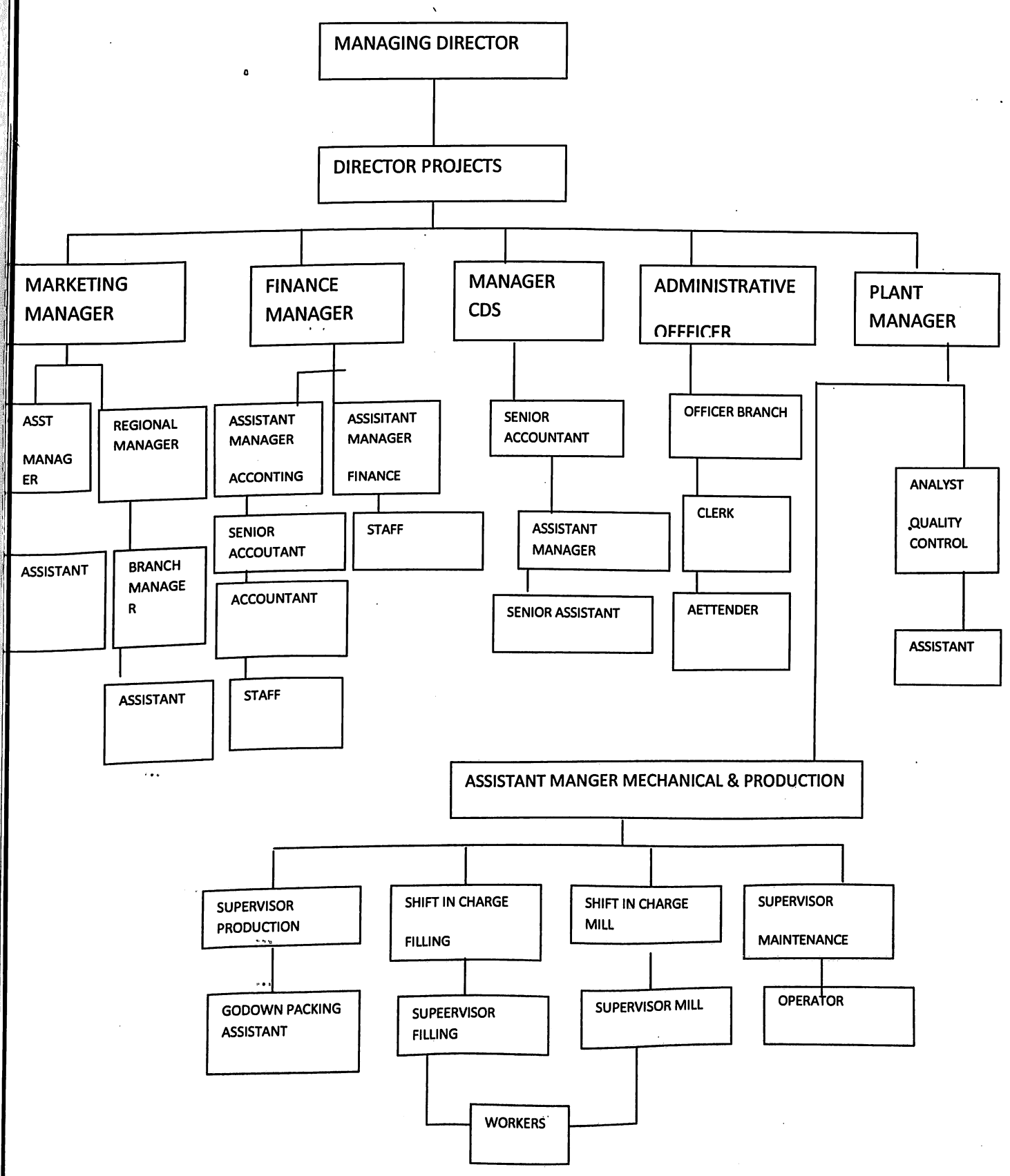
KERA 'Brand of coconut oil is known for its quality, purity ,longer shelf life and reasonable price. Its quality specification laid down by the Bureau of Indian Standards IS:542-1968. Certification of Authorisation to grade KERA coconut oil under Agmark has also been obtained .KERA the branded oil from KERAFED ,apart from being delivered in packages of 1liter bottle ,half liter bottles, 1 liter pouch and half liter pouch .The raw materials used for these packing are of food grade approved by CFTRI, Mysore or government approved agencies. Secondary packing is done using ply corrugated cartons, as per specifications

Apart from meeting the marketing needs in Kerala, Tamil Nadu, Karnataka and Andhra Pradesh etc, the programme to popularize the brand in cities like New Delhi, Bangalore, Mumbai and Kolkata is already on the roll. Kera has gone globally with export to middle east countries .KERAFED had tie up with a leading retail chain in Dubai and Abu Dhabi for cooking oil Kera. Kera is proud to be patronized by millions as the tastiest of all cooking mediums .Truly the natural colour and smell ,KERA enjoys an undisputed plurality of the market share in Kerala- a feat achieved by ultimate customer satisfaction and having a permanent place in the hearts of housewives, chefs and every food loving Keralites

"KERA" Brand of coconut oil is known for its quality, purity, longer shelf life and reasonable price. Its quality is conformity with the grade specifications laid down by the Bureau of Indian Standards vide IS:542-1968. Certificate of Authorisation to grade "KERA" coconut oil under AGMARK has also been obtained. "KERA" is available in HDPE bottles of 100 ml, 200 ml and 500 ml; PET bottles of 1000 ml and polythene pouches of 500 ml and 1000 ml. The raw materials used for these packing are of virgin / food grade, approved by CFTRI, Mysore / other Government approved agencies. Secondary packing is done using 3/5 ply corrugated cartons, as per specifications.

Table 2.7. organisation chart of Kerafed

GANISATION CHART



2.4.1FUNCTIONS

- To reduce edible oil imports.
- To provide an impulse effect on internal production of coconut.
- To develop the agricultural potential of Kerala State.
- To strengthen the co-operative movement.
- To secure the marketing of coconut and its by-products, thereby assuring economic prices to the Growers.
- Thus to increase the income of 29 lakh farmers' families and create employment opportunities. Strengthening 900 Primary Agricultural Cooperative Societies (PACS) with 3, 000 members each on average (27 lakh members).
- Extension activities and supply of inputs.
- Strengthening the coconut seed production programme.
- Training of PACS staff.
- Supply of testing and weighing equipment.
- Establishing requisite copra drying and storage facilities at PACS level;
- Identifying product diversification possibilities viz. desiccated coconut, activated carbon, coconut milk / cream, etc. and formulating programme having potential.

2.4.3 OBJECTIVES

- To encourage coconut growers through a regular system of extension, education and training to adopt modern form of practices to increase production ,productivity and income from these holding and to take up primary processing and marketing on cooperative lines.
- Provide financial, technical and managerial assistance to members societies for linking of credit with marketing
- Undertake research and development activities on production ,processing and marketing with emphasis on productivity, value addition and product diversification of coconut and by-product of coconut and coconut tree
- Undertake sales promotion activities for coconut and by products and allied products of coconut and coconut trade fares exhibitions etc within and outside the country

CHAPTER 3-

VALUE CHAIN MANAGEMENT

3.1. VALUE CHAIN ANALYSIS

Value chain involves the determination of the value added generated for each conversion process for all the products. Value added refers to the additional value of a commodity over the cost of commodities used to produce it from the previous stage of production. Value addition translates to profit maximization generated out of a specific product form or industry. This could be achieved through product conversion or processing. The more processes a product undergoes, the higher value addition accumulates to it. The value added generated for each conversion process for all the product forms is shared among the different stakeholders who provide the services and factors of production (capital, labour, also human capital). Thus, the costs of these services are determined for each product form. The selling prices of each product form serve as the input price for the production of other product forms. Copra is dried coconut meat from which coconut oil is obtained.

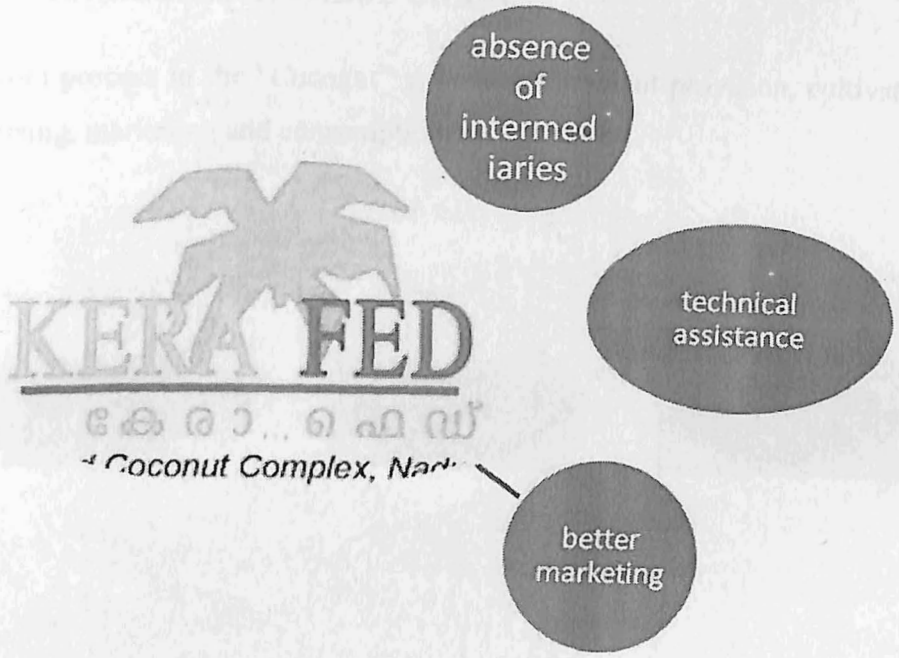
The coconut crop provides ample opportunities of income generation because of its multiple uses and consumption of its various products. Kerala is one of the major coconut-producing states of the country, where about 5 lakh hectares of land is under coconut cultivation with overall production of 427 million nuts.

The state ranks 5th in coconut production in the country. However, the productivity of coconut in Orissa (8379nuts/ha) is on the lower side when compared with the highest productivity in the country (Lakshadweep:

19630 nuts/ha). In Orissa, coconut forms an important constituent of food basket and meets the economic needs of people dependent on its business.

Keralas share in area under coconut cultivation in the country has fallen sharply from 57%in the early 1990s to 43%in 2008.

Involvement of KERAFED



3.1.1. Value chain mapping of coconut oil in kerafed

Step 1: Mapping the core processes in the value chain

Step 2: Mapping the main actors involved in the processes

Step 3: Mapping specific activities undertaken by actors in the value chain

Step 4: Mapping flows of product, information and knowledge in the value chain

Step 5: Mapping the geographical flow of the product

Step 6: Mapping the value at different levels of the value chain

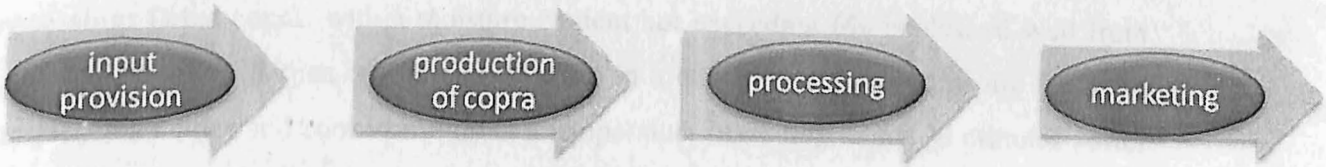
Step 7: Mapping relationships and linkages between value chain actors

Step 8: Mapping constraints at different levels of value chain

KERAFED procures coconut from farmers through krishibhavan. In each panchayath coconut cluster is formed. Each cluster comprises of 100 farmers. These cluster give their coconut to krishibhavan.

3.2 CORE PROCESS IN VALUE CHAIN

The core process in the "Coconut" value chain is input provision, cultivation, procurement, processing, marketing and consumption.



a) **Input provision:** The input is raw coconut. It is procured directly from the farmers of Kozhikode district. By various krishibhavan. Input provision: Value chain mapping of coconut starts with the mapping of core processes in the chain. This includes input provision, cultivation, Procurement, Processing, marketing, and consumption. The main inputs needed for the cultivation of coconut is seedlings, fertilizers, pesticides, credit etc. The major fertilizers are magnesium sulphate, lime, NPK mixture, neem cake, cowdung etc. Farmers are financially supported by co-operative banks, nationalised banks etc. Krishi Bhavan, KVK, CPCRI (Central Plantation Crop Research Institute), VFPCK, seed farm etc supported by farmers through providing seedlings, fertilizers, financial assistance, training etc.

b) **Cultivation**: Coconut requires an equatorial climate with high humidity. The ideal mean annual temperature is 27 degree Celsius with 5-7 degree diurnal variation. The palm does not withstand prolonged spells of extreme variations. A well distributed rainfall of 1300-2300mm per annum is preferred. Coconut is grown in different soil types such as laterite, coastal sandy, alluvial, and also in reclaimed soils of the marshy lowlands.. First step of cultivation is selection of seedlings. This step is very important for the farmers. Remove seed nuts, which do not germinate within 6 months after sowing as well as those with dead sprouts. Select only good quality seedlings (9-12 months old) by a rigorous selection.

c) **Procurement**: Procurement is the collection of coconut from the farmers. It is done by krishibhavan. They are procuring coconut in the form of raw nuts. krishibhavan directly give this to cooperatives for processing.

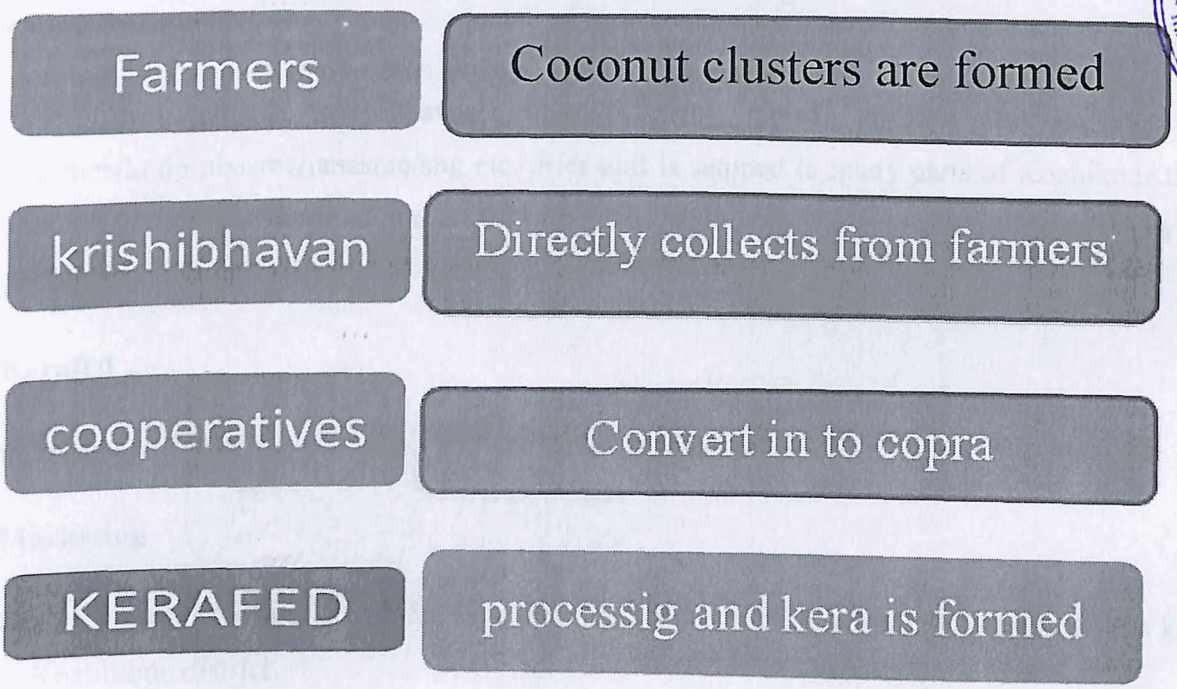
d) Production centre: From krishibhavan it is given to cooperative society (janasree, kudumbasree, CDB cluster) for drying coconut. coconut is converted in to copra, it is the dried raw kernel which is the chief commercial product from coconut, mainly used for oil extraction. Copra normally has an oil content from 62-65%. coconut is converted in to copra using .the drier unit situated in various parts of Kozhikode district. finally copra is transported to kerafed plant.

e)Processing: Dried copra with a moisture content not exceeding 6% is cleaned well from any foreign matter. It is then cut into small chips in a copra cutter. The chips are fed in to steam jacketed kettles and cooked mildly at a temperature of 70 degree for 30 minutes . after proper cooking, the cooked material is fed in to expeller continuously and pressed twice. the combined oil from the first and second pressed twice. the combined oil from the first and second pressing is collected in a tank provided separately. this oil is filtered by means of a filter press and stored in MS tanks. Bulk packaging is done in tin containers. the oil cake obtained as a by-product will find a ready market as a cattle feed and in the manufacture of mixed cattle feeds or as a raw material for the extraction of remaining oil by solvent extraction method. Oil generation is enhanced and the original aroma is ensured through an unique pre-processing coupled with a sophisticated two stage plate filter pre-processing coupled with sophisticated two stage plate filter unit followed by micro filtering and the aroma flavour and clarity of KERA is intact and safe.

f) Marketing: From kerafed the oil is directly given to consumerfed, triveni, supplyco and to super stockist KRS

3.3.ACTORS INVOLVED IN THE PROCESS

After mapping the core processes it is possible to move on to the actors- the people who are involved in the value chain are farmers, coconut clusters, krishibhavan, cooperatives.



3.4.ACTORS INVOLVED IN THE CHAIN

Farmers

The coconut farmers in each panchayath is formed as coconut clusters. One cluster comprises of 100 farmers. Each farmer will be given one card.red card will be with krishibhavan and blue card is with farmer. Which comprises of the name of farmer, total area under cultivation, average yield and his bank account number. Krishibhavan directly transfers the amount of coconut in to farmers bank account.

Krishibhavan

Krishi bhavan is the main institution which procures coconut from farmers through clusters. We know that each panchayath will have one krishibhavan and in 100 farmers comprise to form one cluster. According the number of farmers the number of clusters may increase or

decrese. The price for this procured coconut is given directly to the farmers through their RTGS bank account.

Cooperatives

After procurement krishibhavan directly gives these coconut to cooperative societies/kudumbasree/janasree/shg etc. drier unit is setuped in many parts of Kozhikode.the coconut is cut and sun dried and in drier unit. The well dried coconut in the form of copra is packed in sacks and transported to kerafed unit.

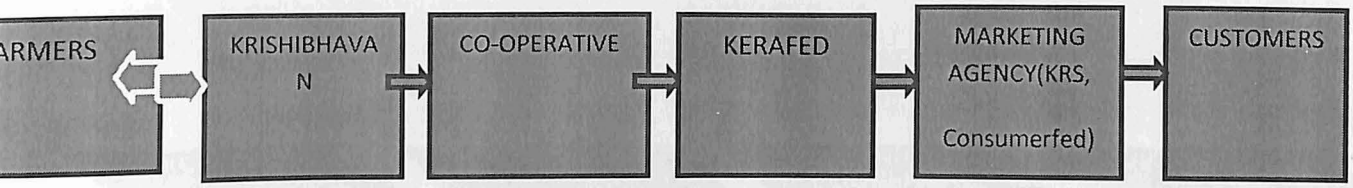
Kerafed

In the kerafed unit it is processed and converted in to keraoil.

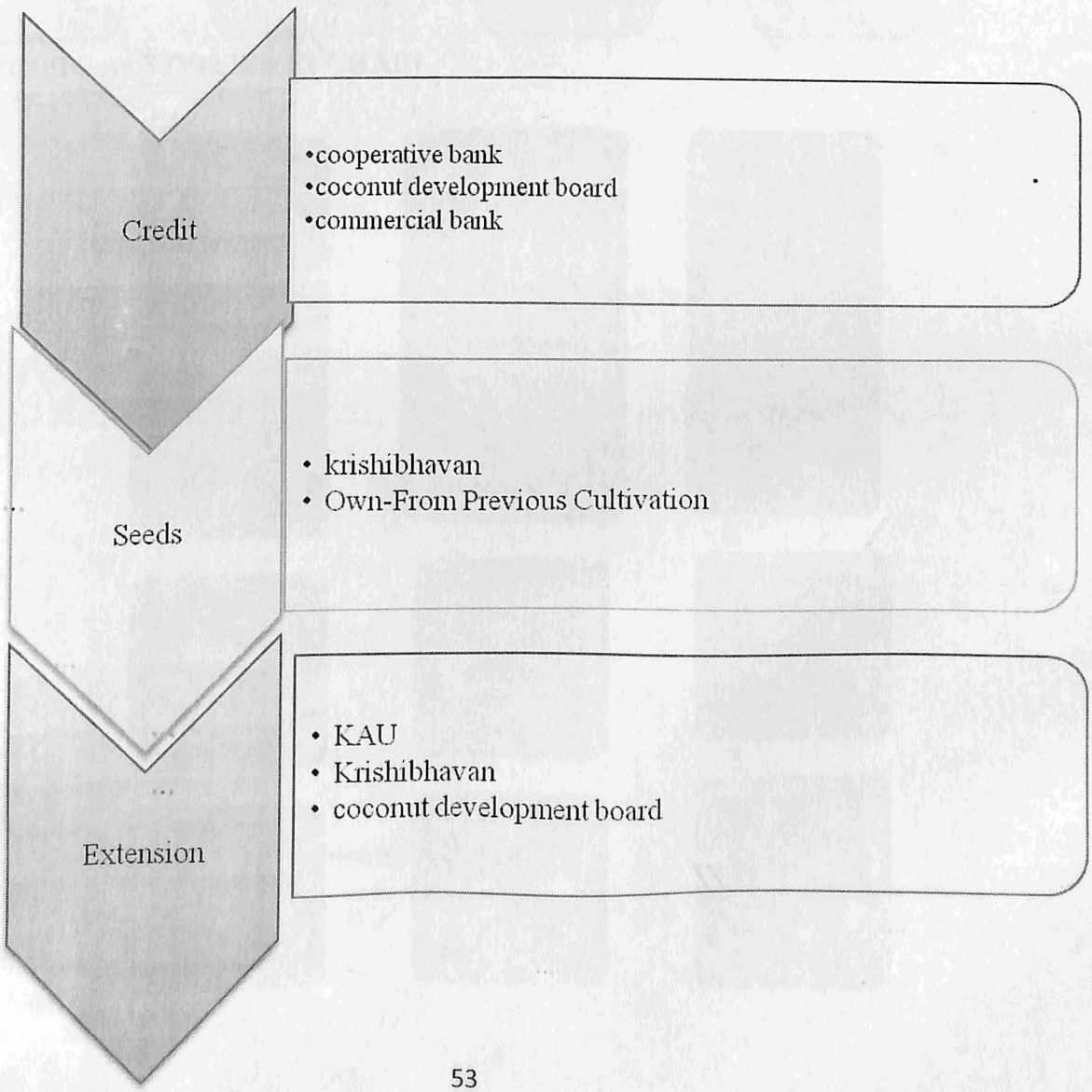
Marketing

Kera coconut oil is marketed directly to supplyco, consumerfed, triveni and super stockist krs . in Kozhikode district.

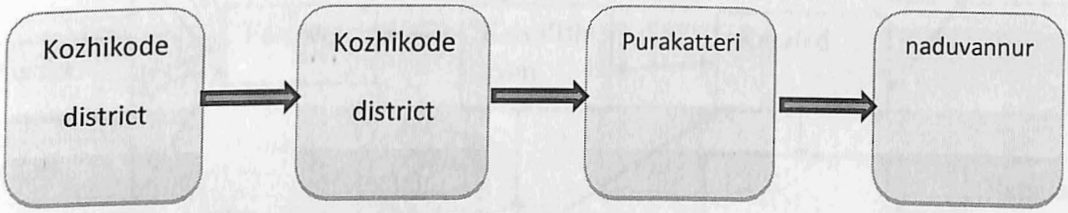
3.5 .ACTORS INVOLVED IN THE CHAIN



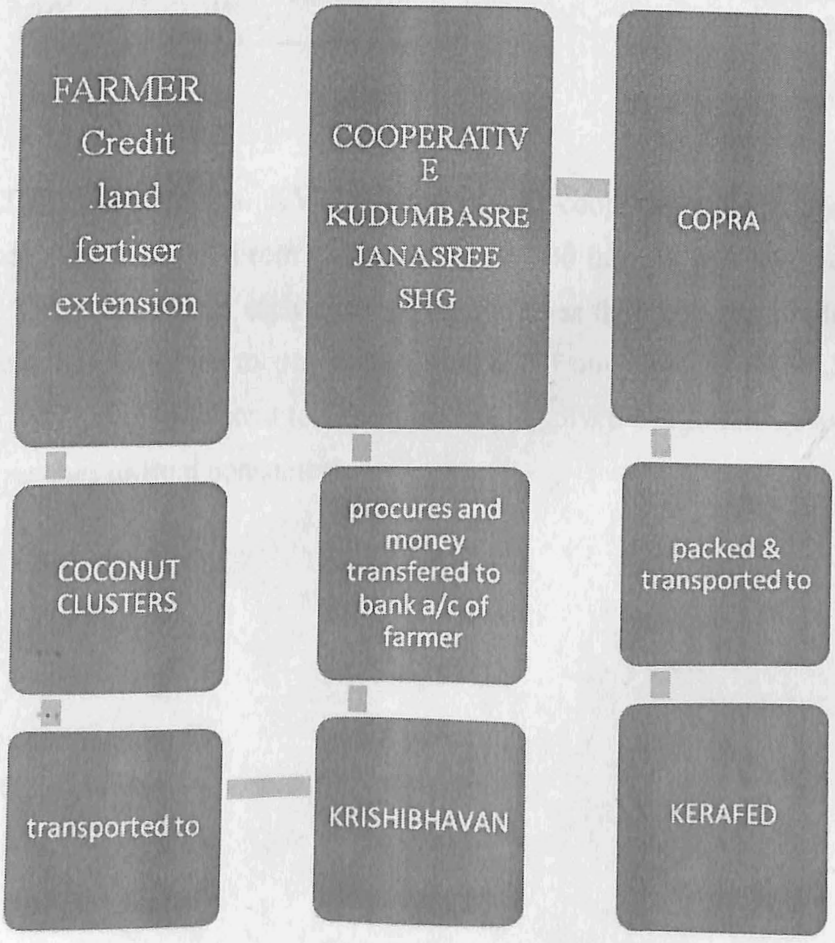
3.6 .FLOW OF INPUTS AND INFORMATION

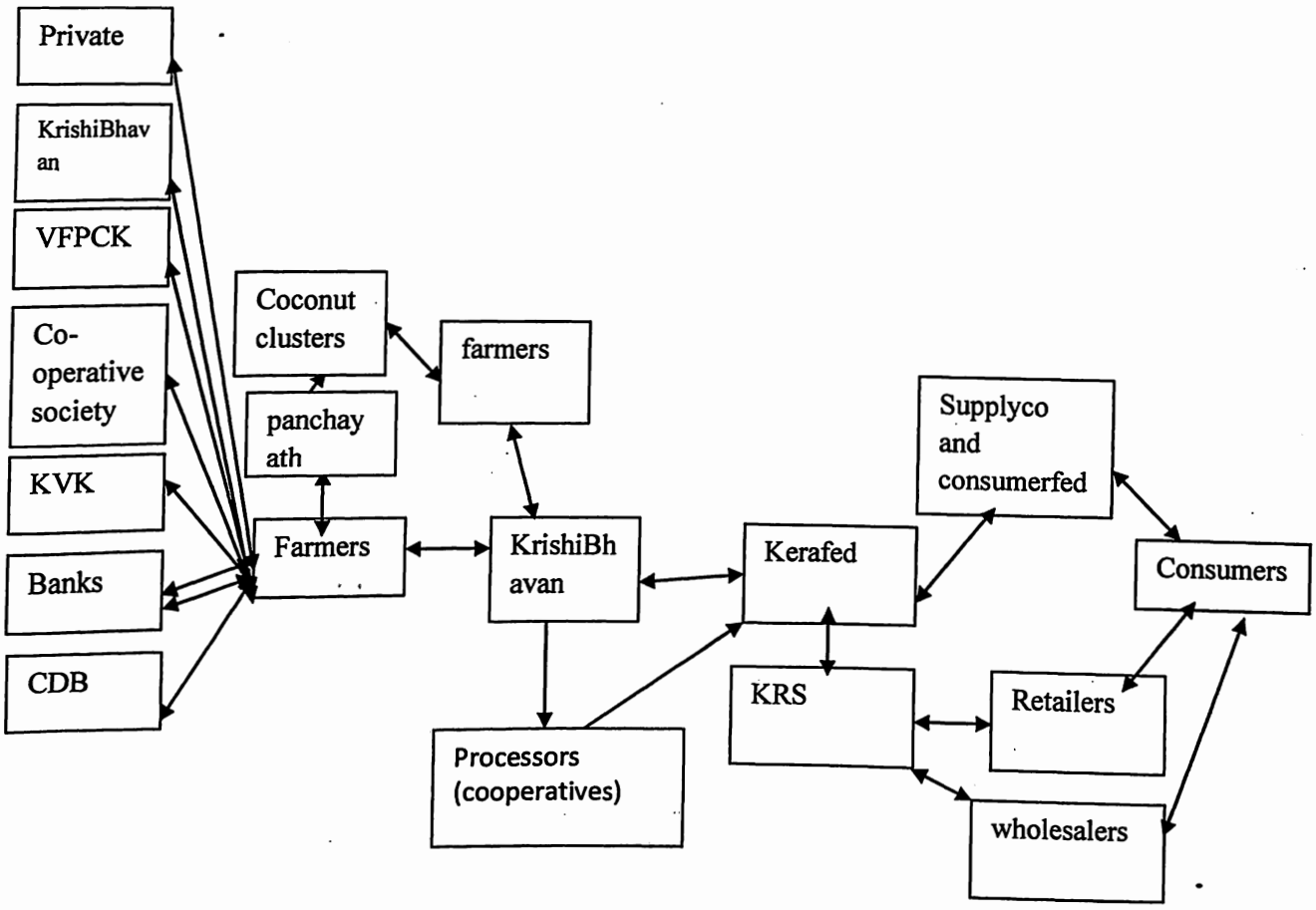


3.7. GEOGRAPHICAL FLOW OF PRODUCT



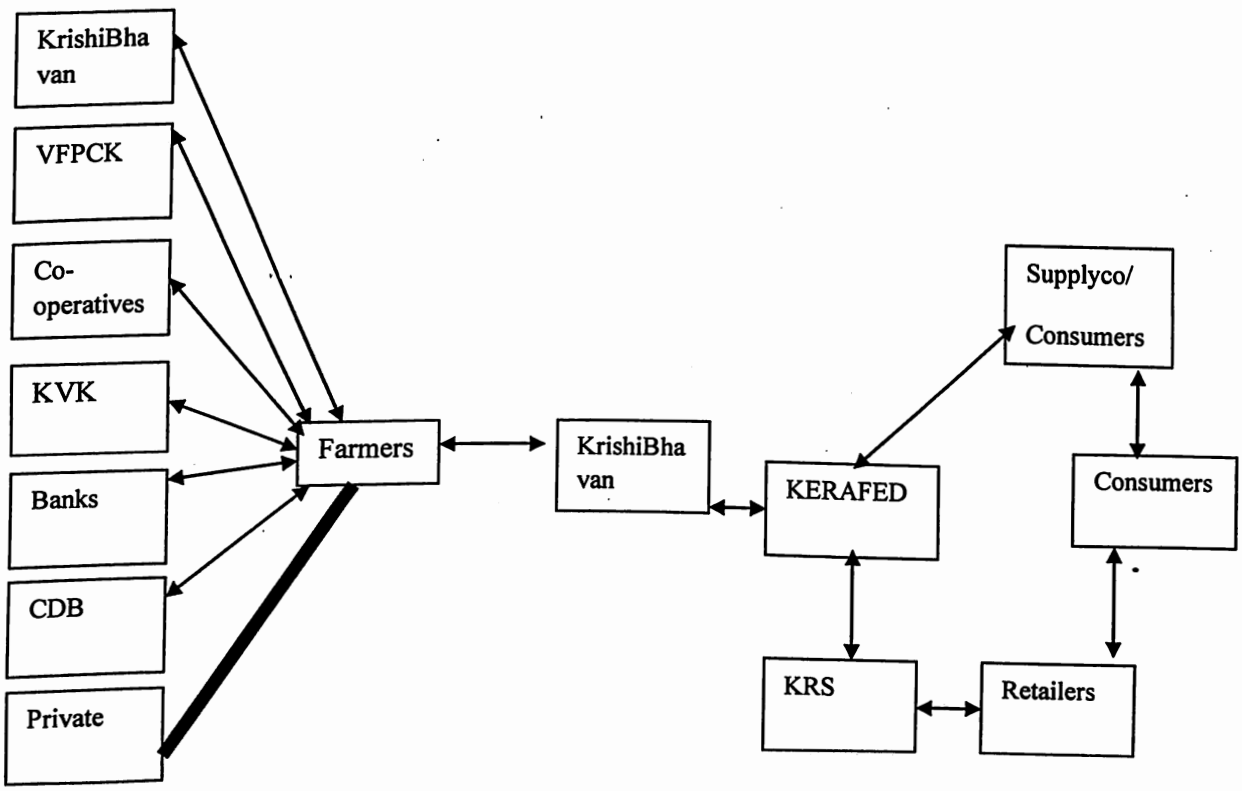
3.8.SPECIFIC ACTIVITIES IN CHAIN.





Krishibhavan, CDB, Cooperatives, KVK, Commercial& cooperative bank are providing assistance to the coconut farmers. From each panchayath 100 farmers join together and form coconut clusters. These farmers in each coconut cluster gives their coconut produce to their krishibhavan. From krishibhavan to processing unit and from there to KERAFED. They process it to kera coconut oil and send to Consumerfed, supplyco and to KRS(super stockist) and from there it reaches to final consumers.

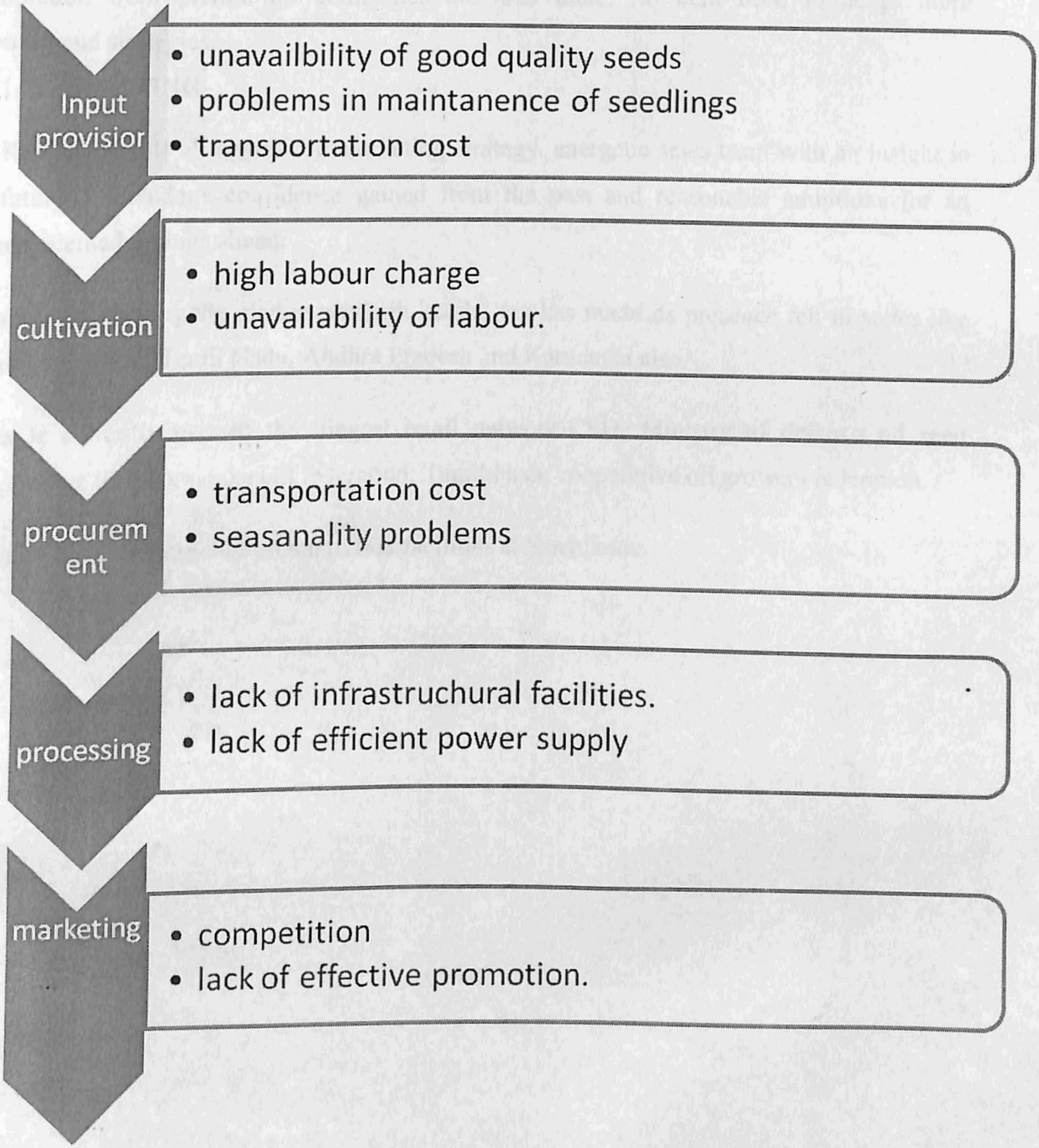
3.9. RELATIONSHIP AND LINKAGES BETWEEN VALUE CHAIN ACTORS.



Persistent network relations

Spot market relations.

3.10.CONSTRAINTS AT DIFFERENT LEVELS OF VALUE CHAIN



There are a number of problems faced at different levels of value chain. At the time of input provision they are facing the problems of unavailability of good quality of seeds, problems in maintenance of good quality seeds, problems in maintenance of cost, transportation cost.

High labour charge unavailability of skilled labour are the problems faced by farmers during cultivation. While procuring coconut by krishibhavan the problems faced by farmers are transportation cost, seasonality problems etc .processors are facing the problems of

infrastructural facilities in rainy season they cannot sun dry the copra. Comparing to other brands of coconut oil kera is costly so people are reluctant to buy kera coconut oil. And completion from private oil companies are also there. So kera need to adopt more promotional strategies.

3.11. MARKETING

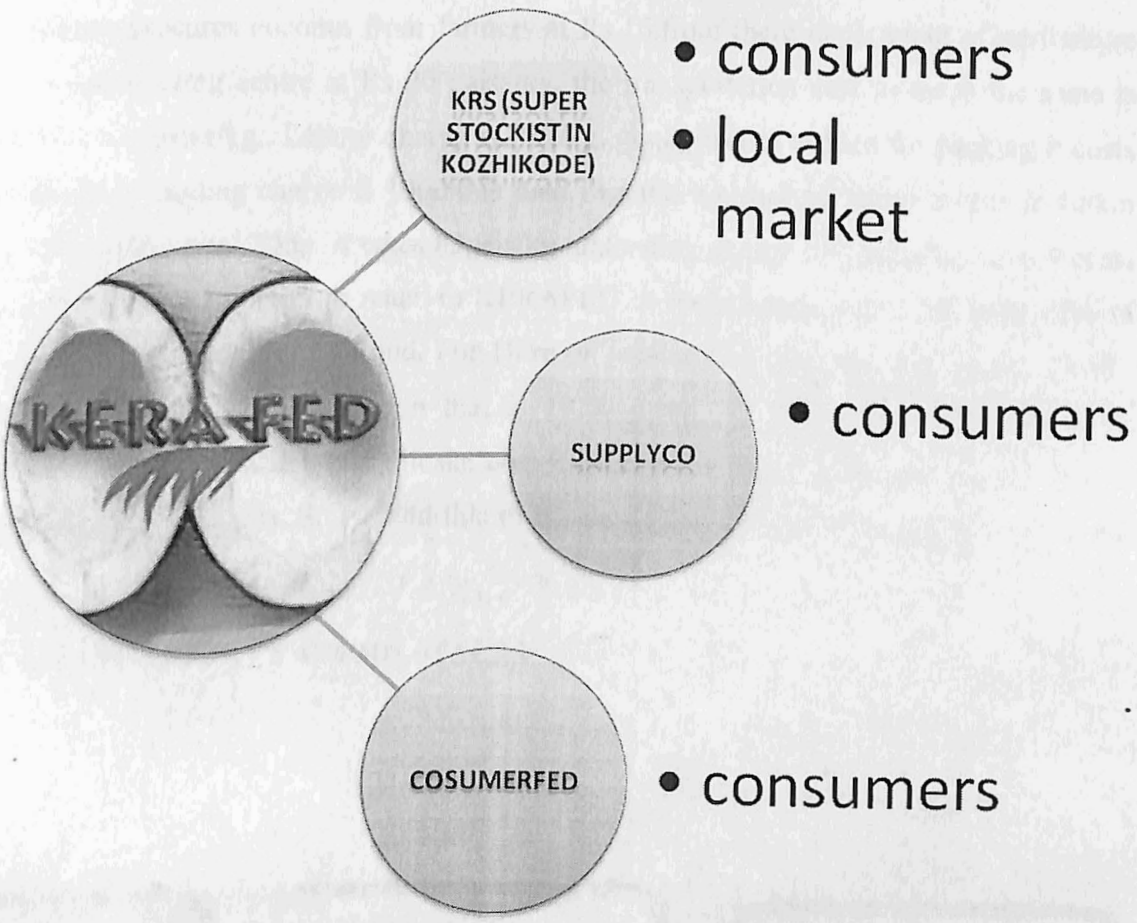
KERAFED has its all aggressive marketing strategy. energetic sales team with an insight in to future ,tremendous confidence gained from the past and reasonable ambitions for an unprecedented innings ahead.

Apart from meeting the market needs in kerala, era has made its presence felt in states like Madhya Pradesh, Tamil Nadu, Andhra Pradesh and Karnataka also.

Kera is currently part of the biggest retail network-CSD, Ministry of defence oil seed cooperative like Karnataka Oil federation, Tamil Nadu cooperative oil growers federation.

Kerafed have two expeller oil extraction facilities at Kozhikode.

3.12.MARKETING OF KERA



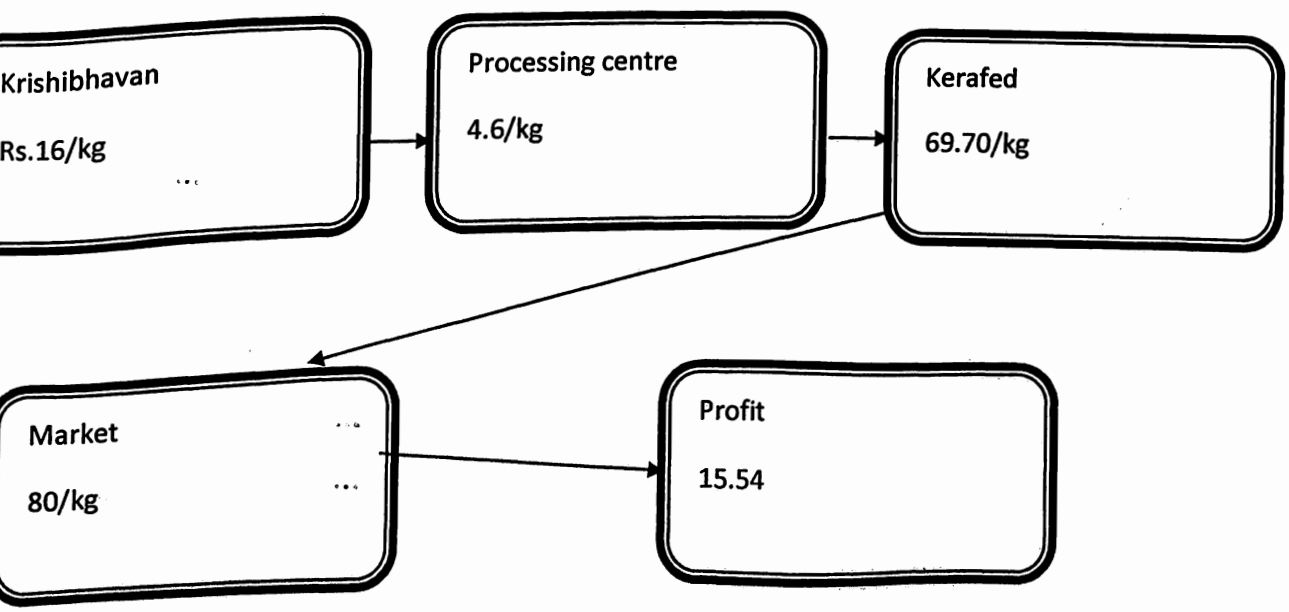
3.12. VARIOUS PROCESSES INVOLVED IN "KERA"

The market rate of coconut is 14 rupees. Krishibhavan procures it at the rate of 16/kg. a farmer can sell his coconut to krishibhavan 8 times in a year. Department of agriculture takes this from krishibhavan and send to processing centre. from processing centre it is converted to copra. Then again this copra is transported to kerafed. From kerafed it is processed as coconut oil and "KERA" is formed.

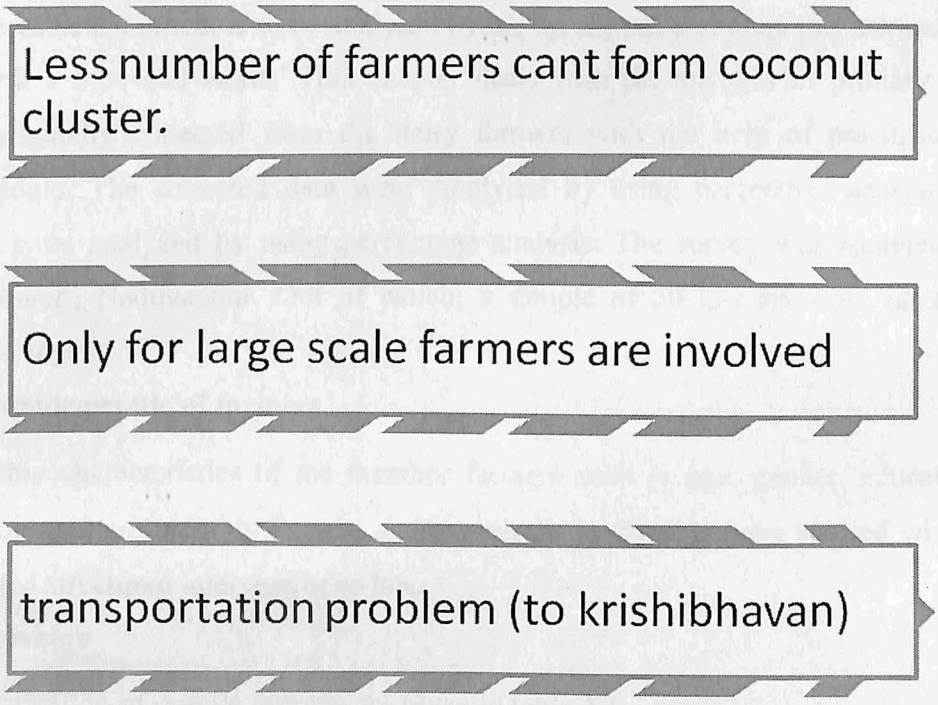
3.13. CALCULATION OF COST

Krishibhavan procures coconut from farmers at Rs.16.from there department of agriculture takes it to processing centre at Rs 20 paisa/kg. the transportation cost to reach the same is 3000/load so 30paisa/kg.. Labour charge is Rs2/kg. gunny bag is needed for packing it costs Rs.60 paisa/kg. loading charge is 1300/one load.13 paisa/kg. transportation charge is 40/km that is 40paisa/kg. total 3 km it takes.83pais/kg. unloading charge is 4 paisa/kg. total it costs 20.46 paisa for 1kg of copra to reach to KERAFED in Naduvannur. For 1 kg. only 64% of copra will be converted in to oil and. For 1litre oil selling price isRs.88. cost is Rs. 69.70 . Out of this 12% go as commission that is 10.56 paisa. So rest 77.44.So 7.74 paisa is profit.36% will be oil cake 1 kilo oilcake cost Rs20.60paisa. From 1 kilo we get 350 gm of oil cake .that is 7.21 paisa. So we add this to the profit and altogether it cost Rs15.54 is the profit.

3.11.COST INCURED AT VARIOUS STAGES



3.12. CONSTRAINTS AT FARMERS LEVEL



CHAPTER 4

SOCIO-ECONOMIC SURVEY ANALYSIS

A value chain is a chain of activities in which a product gains some value at each activity. To understand the value chain that is to be analysed by tables, figures and diagrams are used: 'A picture is worth a thousand words'.This chapter deals with the analysis of primary data, which were originally collected from the dairy farmers with the help of pre-structured interview schedule .The collected data were Analyzed by using percentage analysis.The collected data were analyzed by using percentage analysis. The survey was conducted in purakatteri, vengeri, Naduvannur. Out of which, a sample of 20 farmers were randomly selected and surveyed.

4.1 Socio-economic profile of farmers

The demographic characteristics of the member farmers such as age, gender, educational qualification, occupation, monthly income and experience in farming were studied with the help of pre-tested structured interview schedule.

4.1.1 Age of farmers

Age wise classification of sample farmers are given in table 4.1

Table 4.1 Age wise classification of farmers

Sl.no.	Age class	No. of farmers	Percentage to total
1	20-30	0	0
2	30-40	0	0
3	40-50	3	15
4	50-60	10	50
5	60-70	6	30
6	70-80	1	5
	Total	20	100

Source: primary data

It is clear from the above table that the predominant age group of the respondents, i.e. 50 per cent, in the total sample ranges between 50 and 60. Nobody below the age of 40 are engaged in coconut cultivation, this shows that young generation is not interested in agriculture.

4.1.2 Gender wise classification of farmers

The table 4.2 analyses the percentage of male to female in the farming sector.

Table 4.2 Gender wise classification of farmers

Sl.no	Sex	No. of farmers	Percentage to total
1	Male	20	100
2	Female	0	0
	Total	20	100

Source: Primary data

As per table 4.2, out of 20 farmers surveyed twenty respondents are male and. From this it is clear that males are dominated in the field of coconut cultivation.

4.1.3 Educational qualifications

The educational qualifications of respondents are given in table 4.3

Table 4.3 Educational qualifications of farmers

Sl. No	Education level	No. of farmers	Percentage to total
1	Below SSLC	5	25
2	SSLC	10	50
3	Plus two	3	15
4	Graduation	1	5
5	PG	0	0
6	Illiterate	1	5
	Total	20	100

Source: primary data

Educational qualification of the respondents as per table 4.3 reveals that50 per cent of the respondents have SSLC as their qualification, 25 per cent are below SSLC and 15 per cent are having plus two qualification. One graduate and one of the respondent were illiterate.

4.1.4 Occupation

The table 4.4 shows the main occupation of respondents. Table 4.4 occupation wise classification of respondents.

Sl. no.	Occupation	No .of farmers	Percentage to total
1	Agriculture	18	90
2	Business	0	0
3	Government	2	10
4	Others	0	0
	Total	20	100

Source: primary data.

Almost 90 per cent of the total population is engaged in agriculture .Only ten per cent of the respondents are having agriculture as the secondary source of income.

4.1.5 Area of land under coconut cultivation

The table 4.5 shows the area of land under coconut cultivation for the respondents.

Table 4.5 Area of land under coconut cultivation

Sl. No	Area	No. of farmers	Percentage to total
1	Below 1 acre	0	0
2	1-2 acre	0	0
3	2-3 acre	5	25
4	3-4 acre	4	20
5	4-5 acre	5	25
6	More than 5 acre	6	30
	Total	20	100

Source: primary data

From table 4.5 it is seen that no body is having land below2 acres. Majority of the respondents i.e.30 per cent who are members of the belong to the category of owners with more than 5acres of coconut. Only 25 per cent are having a plantation of 2-3 acres and 20 per cent under the categories three to four and four to five acres. Thus from this we can analyze that all the respondents are large scale farmers.

4.1.6 Years of experience

Table 4.6 shows the number of years for which the respondents are engaged in coconut cultivation.

Table 4.6 number of years under coconut cultivation

Sl. No	No. of years	No. of farmers	Percentage to total
1	Less than 10 years	0	0
2	10-20 years	7	35
3	20-30 years	10	50
4	30-40 years	0	0
5	40-50 years	3	15
6	More than 50 years	0	0
	Total	20	100

Source: primary data

From table 4.6 we can see that majority of the farmers i.e.50 per cent of the respondents are having 20 to 30 years of experience in coconut cultivation. About 35 per cent of respondents are engaged in coconut cultivation for the last10 to 20 years and 15 per cent are having the

experience of 40 to 50 years in coconut cultivation. From this table it can be observed that all the respondents are having years of experience in coconut cultivation and also it can be understood that the new generation is not coming forward to this sector.

Table 4.2. Socio economic profile of the consumers.

Sl no	Criteria	No. of respondents
1	**Age:**	
	Below 25 years	0
	25 - 35 years	3(30)
	35 - 45 years	2(20)
	Above 45 years	5(50)
	Total	**20(100)**
2	**Gender:**	
	Male	5(50)
	Female	5(50)
	Total	**10(100)**
3	**Educational qualification:**	
	Illiterate	0(0)
	Secondary	0(0)
	Graduate	5(50)
	Professional	2(20)
	Technically qualified	3(30)
	Total	**10(100)**
4	**Occupation**	
	Private sector	4(40)
	Government	2(20)
	Quasi government	0(0)
	Agriculture	0(0)
	Self employed	3(30)
	Others	1(10)
	Total	**10(100)**
5	**Nature of family**	
	Joint	0(0)
	Nuclear	10(100)
	Total	**10(100)**
6	**Family income**	
	>10000	0(0)
	10000-20000	0(0)
	20000-50000	0(0)
	50000-100000	5(50)
	1000000 and above	5(50)
	Total	**10(100)**

Source: Compiled from survey.

Note: Figures in bracket indicates percentage to total.

Age wise classification shows that 50 percent of the consumers were in the age of above 45 and 20 percent of consumers were in the age between 35 and 45.The share of consumers in

the age group 25-35 was 30 percent. Sex wise classification show that, 50 percent were male and 50 percent were female. It was obvious from the table that majority (50 percent) of the consumers were graduates. Technically qualified accounted only 30 percent of sample. The remaining 70 percent consumers had professional education. Here none of the respondents were illiterate and professionals. Regarding the occupation, majority of the consumers (40 percent) employed in private sector.20 percent of consumers were working in Government sector. Among the sample, 30 percent constitute self employed. Others include house wife.10 percent of the consumers were house wife. All the consumers had nuclear family.50 percent of the consumers had the monthly income of Rs.50000-100000.The share of consumers in the monthly income of Rs.-1000000and above were also 50 percent.

4.2.1 Awareness of customers towards KERA product.

Brand name	Number of respondents
Kera coconut oil	10(100)
KLF nirmal coconut oil	10(100)
Supreme coconut oil	7(70)
Lakshmi coconut oil	6(60)
Parishudham coconut oil	8(80)
parachute	10(100)

It is observed from the table that all the consumers had good knowledge of kera oil brand and other brands . All the consumers were well aware about kera coconut oil. Because they were using it daily for culinary purpose and others. The consumers were aware about parishudham, KLF nirmal, parachute etc respectively. All the consumers were well aware about the famous brands such as kera, KLF nirmal, parachute .80percent of the people are aware about parishudham.60percentage are aware about Lakshmi coconut oil, and 70 percentage are aware about supreme coconut oil brand.

Table 4.2.2 Customer view towards the price and quality.

Serial no	Criteria	Number of respondents.
	Getting kera at reasonable price:	
	Y	6(60)
	N	4(40)
	Total	10(100)
	Getting kera at good quality:	
	Y	8(80)
	N	2(20)
	Total	10(100)

Source: Compiled from survey

Note: Figures in bracket indicates percentage to total.

From the survey we could understand that 60 percent of the respondents are of the opinion that Kera is not available at reasonable price. They have opinion that kera brand is costly. 80 percent are satisfied with the quality of the products.

4.1. FINDINGS AND SUGGESTIONS.

In Malabar area majority of the people use dalda, Palmolive etc. so the consumption of coconut oil is comparatively low compared to other districts. The study revealed that the farmers were able to make profit through all their marketing channels. Secondly, whatever quantity farmers produced, they were able to sell it with profit. On an average, farmers were getting the margin of more than Rs 4 per nut(land cost and personal labour cost were not included in calculating the cost of production). Most of the farmers who had planted coconut in their fields did not make any additional expenditure on annual basis, so even at a lower price, they did not make any loss. Also, since many channels were available to farmers throughout the year, they could select the most profitable channel for selling their produce. Inspite of there being a high ratio.

The CDB should undertake extensive campaign to increase awareness among the common consumers about the various products of coconut and product development should take care of customers 'preferences. It is suggested that coconut-based industries should be jointly promoted by state industry department, state agriculture department and Coconut

Development Board. Broadening the stakeholders base will help in undertaking concerted efforts by all the major institutional players for promoting agri-based industries.

Mainly the high income community prefer kera coconut oil. house hold consumers of Kerala are price conscious. kera should take new pricing strategies to attract the household.

- ✓ KAU/other organisation should develop a high yielding, disease resistant Ginger variety which also suitable for Value Addition.
- ✓ Difficulty in getting the services of trained climbers to plant protection measures in time and high cost of labour is also unaffordable
- ✓ Arrangements should be made to procure coconut from farmers that arefrom farmers to krishibhavan.
- ✓ Kera coconut oil is not readly available in market.
- ✓ Initiatives taken by the Coconut Development Board in conducting massive training programme "Friends of Coconut tree "is found successful to meet the demand of skilled labourers to a certain extent in Kozhikode district.
- ✓ Government should establish coconut nurseries in each panchayath so that the farmers get seedlings at proximal distance and also minimising the transportation costs.
- ✓ More importance should be given to promotional measures of kera coconut oil.
- ✓ Supply of Inputs through Co-operatives at low cost and at low interest rate.
- ✓ KERAFED should have tie-up with large business units.

The objective of mapping the value chain is to map & study the core activities of coconut oil value chain in KERAFED Kozhikode. The main problems faced by farmers are to give this directly to krishibhavan coconut clusters have to be formed. Many of farmers are reluctant to join in this cluster. Other problem is that only large scale farmers are involved in this process. Next is the transportation problem faced by farmers to reach krishibhavan.

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