A STUDY OF COIR INDUSTRY IN THANJAVUR DISTRICT

Thesis submitted to the
BHARATHIDASAN UNIVERSITY
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DOCTOR OF PHILOSOPHY
(COMMERCE)

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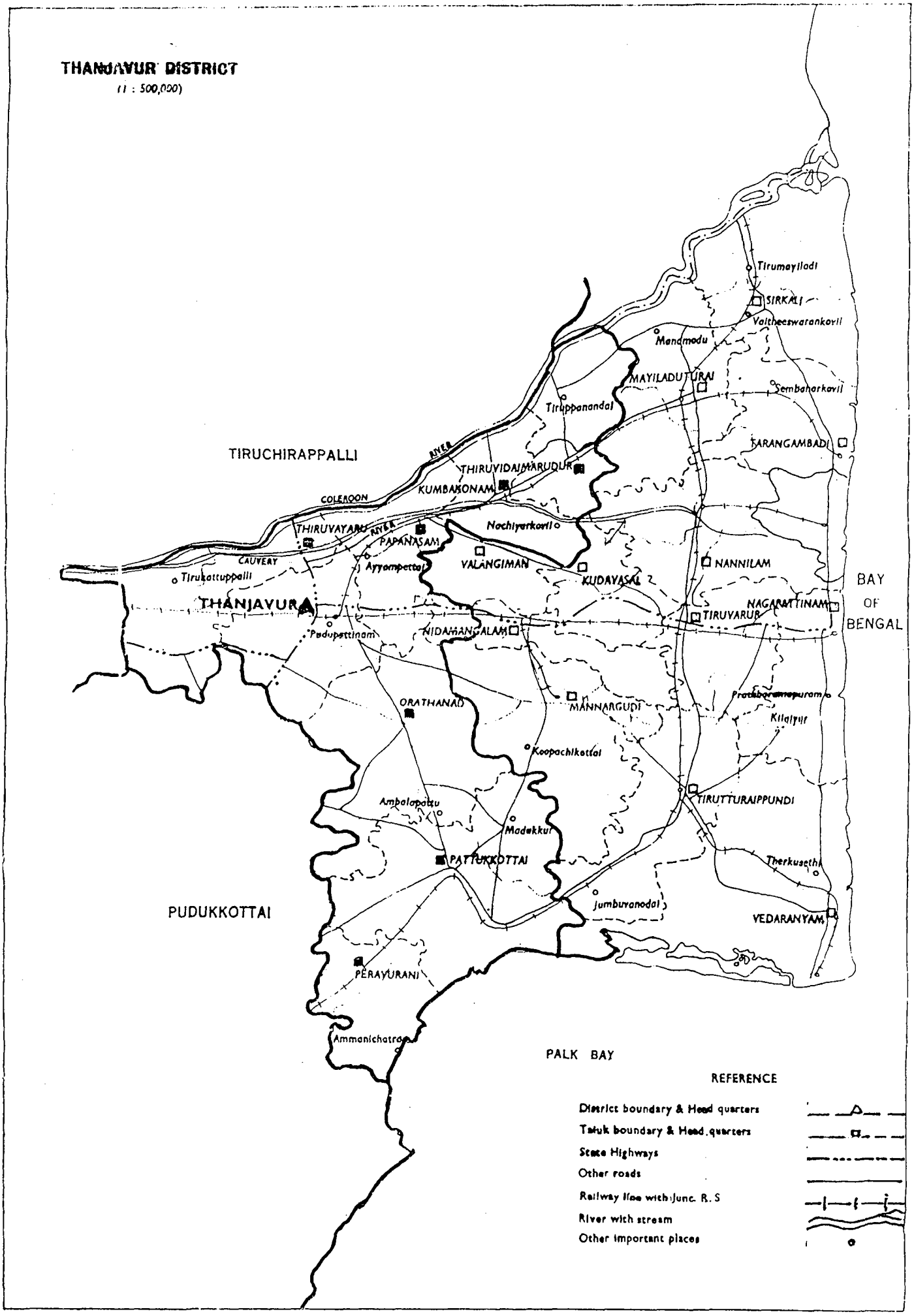
THANJAVUR DISTRICT
(1 : 500,000)
TIRUCHIRAPPALLI
PUDUKKOTTAI
PALK BAY
BAY OF BENGAL
CAUVERY
COLEROON
THANJAVUR
Tirukattuppalli
Padupattinam
PAPANASAM
Ayyampettai
THIRUVAYARU
KUMBAKONAM
THIRUVIDAIMARUDUR
Nochiyarkoil
VALANGIMAN
KUDAVASAL
NIDAMANGALAM
ORATHANAD
MANNARGUDI
Koopachikottai
Ambalapattu
Madukkur
PATTUKKOTTAI
Jumbuvanodai
PERAYURANI
Ammanichatram
NANNILAM
TIRUVARUR
NAGAPATTINAM
Pratabaramapuram
Kilaiyur
TIRUTTURAIPPUNDI
Therkuseth
VEDARANYAM
MAYILADUTURAI
Tiruppanandal
Mandapadu
Tirumayiladi
SIRKALI
Vaitheeswarankovil
Sembanarkovil
SARANGAMBADI
REFERENCE
District boundary & Head quarters
Taluk boundary & Head quarters
State Highways
Other roads
Railway line with Junc. R. S
River with stream
Other important places

CERTIFICATE

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Date : 11\10\2002

CERTIFICATE

Certified that the thesis titled ***"A Study of Coir Industry in Thanjavur District"***, is a bonafied record of work done by ***Mr. S. Rajkumar, M.Com., M. Phil., B.Ed.,*** under my guidance and supervision during the period January 1999 - December 2001.

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I hereby state that this thesis entitled ***"A Study of Coir Industry in Thanjavur District"***, is my original work and that it has not previously formed the basis for the award of any degree, diploma, fellowship or other similar title. This work was done under the guidance of ***Dr. S. Sekar***, ***M.Com., M.B.A., M.Phil., Ph.D.***, Research Advisor, Reader and Head, ad, Department of Commerce, Urumu Dhanalakshmi College, Bharathidhasan University, Tiruchirappalli - 620 024.

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ACKNOWLEDGEMENT

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(S. RAJKUMAR)

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INTRODUCTION

The coconut is considered to be the most important and useful of the tropical palms that have been cultivated in India from time immemorial.

Each and every part of the coconut is used in India in one way or other and classics of India have rightly visualised it as ***Kalpavrisha*** (the all giving tree) owing to the multifarious uses of various palm parts and products in our daily life. Even though the coconut is known both as food and oilseed crop, it has also assumed significance as beverage and fibre crop in our country and the days are not far away when the coconut will be the main source of timber for various constructions in coconut growing areas.

The importance of the coconut palm can be guaged from the fact that it is grown in more than 80 countries of the world and in 17 States and 3 Union territories in India. Coconut is considered auspicious and it finds place in most of the religious ceremonies in all the States irrespective of whether the palm is grown locally or not. This itself is a testimony to the

importance of the coconut palm in Indian culture. Though coconut cultivation was originally confined to the coastal and deltaic tracts, It is now grown even in the interior areas in many states.[1]

Coconut tree in botanical term is known as ***'Cocosnucifera'***.[2] Each and every part of the coconut tree is useful for us in some manner or other. For instance, raw nut and edible copra are important items of food and indispensable items for divine ablution. Oil extracted from copra is used in cooking, manufacturing of soap and other toilet items. The tender coconut water is one of the refreshing drinks and considered to be the unadulterated drink. The husk is used in the manufacture of coir products. The coconut shell is burnt and after words converted into charcoal. Coconut shells and husks are also used in the manufacture of handicrafts articles in our cottage industry. On account of these utilisation and desirable feature, the coconut tree is aptly called as ***"Kalpavrisha"*** tree of heaven.

CONTRIBUTION OF COCONUT G.D.P

Coconut occupies a unique position in the Socio-economic structure of the country and it is intimately

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1. Report on sample survey for Estimation of Area of Coconut Department of Economics and statistics-Chennai.1999 p.2

2. Annual Report, Coir Board, Cochin 1999. p.1

related to the prosperity of a vast multitude of small and marginal growers especially along the coastal states. With an area of 1912 million hectare and production of 14115 million nuts, coconut contributes over Rs. 7,000 crores annually to the G.D.P of the country. Copra, the dried kernel of coconut is the richest source of edible oil and the contribution of the crop to the total edible pool in India is 6%. The raw material for coir industry is derived from coconut husk and the country earns foreign exchange to the tune of Rs. 239 crores by way of export of coir and coir products.

About 10 million people in the country are engaged in coconut cultivation, processing, marketing and trade related activities. In the coastal tracks most of the people depend on coconut for their food and to many people coconut provides the sole income.[3]

IMPORTANCE OF COCONUT PRODUCTION:

As a result of diversification in the utilisation of coconut through the development of new products such as coconut cream, dried coconut milk powder, preserved and packed tender coconut water and coconut water based vinegar are produced. Coconut has become important as an agro-based raw material

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3. Coir Bulletin published by coir board, Cochin - 1999. p-29.

for many industries. Besides, coconut shell, a by-product of coconut processing industry, is a raw material of commercial importance which is used for the manufacture of shell charcoal, activated, carbon, Ice Cream Cups, Shell powder and handicrafts. Today tapping is one of the industries connected with coconut palm in Kerala and Goa. Fermented toddy is an intoxicant drink which is popular in the west coast of India. Vinegar and Jaggery are made from coconut today in many coconut growing areas in the country especially in Lakshadweep. Coconut tree is used for various purposes in the construction of homes and for making furniture. It is also used to manufacture various handicrafts of aesthetic value.

Although coconut is grown in more than 80 countries in the world, the main four countries are Phillipines, India, Indonesia, and Srilanka accounts for 78% of the area and production. In 2000, India has become the largest producer of coconut with the production of 14115 million nuts from an area of 1,912 million hectare, which accounts for 26.6 percent share in production while, its share in area is only 15.51 percent. In area, Indonesia is the leading country with 3.75 million hectares under coconut while its share in production is 25.36% with estimated production of 13.595 million nuts. Phillippines ranks second in area under coconut and third in production with 3.09 million hectares and 11935 million nuts respectively. Productivity is

highest in India having 7779 nuts/hectare as against 3630 nuts/hectare in Indonesia and 3859 nuts/hectare in Phillippines. Productivity in copra equivalent copra weight is highest in Thailand (i.e) 300g. per nut.

Globally, nearly 50% of total coconut production is converted to copra and this percentage varies from country to country based upon the consumption pattern in each country. In Phillippines about 93% of coconut is converted to copra while in Indonesia it is 50% and in India only about 30% to copra. coconut oil accounts for 5% of total vegetable oils, 40% of which comes from Phillippines and 22% from Indonesia while India's share is only 10% percent. Phillippines also accounts for more than50% of desiccated coconut production followed by Srilanka with its contribution to the tune of one third of total desiccated coconut production.

In the country, coconut is grown under varying soil and climatic conditions in 17 States and 3 Union territories. It is versatile in its adaptability to a wide range of soil conditions. From the west coast of India it has now spread to interior areas in Tamil Nadu and even to Baster in Madhyapradesh, Coastal region in Bihar and North Eastern States, viz. Tripura, Manipur and Nagaland. The coconut production in India, a decade back (1989-90) was 5807.9 million nuts from an area of 1.16 million hectares. The All India Coconut estimates clearly indicates that 91% of the

total area and production of coconut in the country is concentrated in the four southern states viz. Kerala, Tamil Nadu, Karnataka and Andhra Pradesh. Among the four southern states, Kerala accounts for largest area and production sharing 54.7% of total area and 42.3% of the total production followed by Tamil Nadu having 16.6% area and 31.1% production.[4]

In the normal years of production 50% of total copra produced in the world enters the export market, either in the form of copra or coconut oil. However, there has been downward trend in the trade of copra or oil and priorities have been shifted towards export of diversified products. Major producers of coconut oil for export are Phillipines(63%) followed by Indonesia, Malaysia and Srilanka. In recent years, export of oil cake (copra meal) has shown a rising trend. Germany and Netherlands are major importers and consumers of oil cake in the world. India is exporting a negligible quantitiy of de oiled cake and coconut cake based cattle food. India has also imported coconut oil cake for its solvent extraction units in recent years.

In the world of coconut production different countries contribute their share towards coconut production and allied products. Among the contributions, India stands first having 26.06% of the total production of coconuts. Next to India,

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4. Annual Report, Coir Board, Cochin 2000. p-5,6

Indonesia takes the credit of producing coconuts in large scale. Other countries also contribute to a reasonable extent.

Coir is an important agrobased cottage industry of great significance in India. It is a highly labour intensive covering wide range of activities including collection of husk, netting fibre extraction, spinning and manufacture of coir and coir products. Coir industry in India supports around half a million people belonging to economically weaker section of the rural population.

Kerala is the most popular state for the coir products. This state only gives a white fibre, whereas Tamil Nadu gives a brown fibre. In 1967 white fibre was introduced at Thenkasi and machines came from London.

Coir mats, mattings, rugs, coir rope, coir foam and geo-textiles are some of the main coir products manufactured in the country. The brown coir fibre has extended into the market in a big way. The annual production of coir fibre in the country is estimated as 2,50,300 tonnes out of which 1,27,000 tonnes is white fibre and the rest 1,23,300 tonnes is brown fibre.[5]

About 15 to 20 lakhs of people are getting employment directly and indirectly in the Coir Industry.

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5. Coir News. January 15, 2001. p-14

The labourers who are dealing with this cottage industry have got a better life.

Mostly coir products intended for export and domestic market are produced by small-scale manufacturers. There are about 5000 small-scale units engaged in the manufacture of coir products. They produce coir fibres, yarn, chemicals etc.

Coir is the natural fibre extracted from the protective outer covering of coconut cottages in the coastal belt of Kerala and of the Kanyakumari District of Tamil Nadu are wedded to the coir industry for ages. Only one type of fibre was produced earlier. "White fibre" by availing the natural netting facilities and other process in the traditional way about a quarter of a century before started production of another type of fibre known as "Brown fibre" by adopting mechanical process in the states other than Kerala, particularly Tamil Nadu, Karnataka, Andhra Pradhesh, Orissa etc. Lakhs of village folk depend on the coir industry for their livelihood.

White fibre extraction is a long process extending for about 6 to 10 months, the traditional way, as we call, the green husk separated from the coconut are put to submerge in water for months together until it disintegrates properly. The related husk is then beated by hand or by beater and golden coir fibre separated.

Brown fibre production which attained momentum in the recent past, is carried out with the aid of mechanical device from green husks or dry husk inundated in the water for a few days. There are two types in practice defibring process and decorification process for extraction of brown fibre.

Coir fibre from coconut husks is extracted with the said of different kinds of machinery, fibre extraction units in organised sector passes, machinery required for the production of bristle, mattress and decorticated fibre crushing machine, defibering drums disintegrator, burstor, decorticator, beater, shifter etc. are used in fibre production willowing machine, silvering machine and automatic spinning machines are used in the manufacture of curled rope. Spinning wheels are used for spinning coir yarn and rope making machine for manufacture of coir mats, frames and looms are used. Coir mattings are produced with the aid of looms.[6]

In the private sector, there were 5498 coir factories in Tamil Nadu. Out of these units, 674 were engaged in production of fibre, 4 in production of rubberised coir products, 35 in production of curled coir, 3 in the production of mat, mattings, 2284 units are manufacturing ropes and 2493 units manufacturing coir yarn on the production by the organised sector for the subsequent period 1998-1999 and 1999-2000.

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6. History and home of Coconut, Coconut Bulletin, Published by the Indian Coconut Committee, Cochine Sep-2000. p-98.

There were 71 industrial co-operative societies in the state (including 6 in the Thanjavur district) engaged in the production of coir fibre, yarn and other products, the highest concentration of co-operatives is Thanjavur district. Industrial co-operative societies are functioning in production of fibre yarn.

The unorganised sector consists of 4443 household units. There were 20046 artisans engaged in different processing activities such as rope making, netting, extraction of fibre, spinning of yarn etc.

Coir and coir products are consumed in Tamil Nadu. Efforts were made in the survey to ascertain the quantum of coir fibre, yarn and products consumed in Tamil Nadu.

Coir workers in the state are mainly engaged in defibering of husk, netting, beating, yarn spinning, rope making, weaving and curling. The spinning sector accounts for 4156 of the workers. Fibre production sector for 19288 workers, rope making sector 1659 workers and rubberised coir 266 workers. 4426 of the coir workers and concentrated in Thanjavur district.[7]

Coir industry in the state provides employment to people in the economically backward classes of the rural areas. Of the total number of coir workers, about 6330 belong to

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7. Annual Report, coir board, Thanjavur - 2000 p-12.

scheduled caste, and 191 scheduled tribes, remaining 27032 workers belong to general category.[8]

The small-scale industry continues to play a major role even in the advancement in the technology of production and the craze for mechanisation, automation and mass scale production. In the Indian context a case for small scale unit has always strongly advocated a sound base for its development.

The underdeveloped countries, like that of ours, with their scanty resources for industrialisation, will have to face the danger of inflation. To avert it, both the small scale industrial sector and large-scale industrial sector have to work hand-in-hand as complementary sectors.

Small-scale units can secure large units as ancilliary units. Recognising the advantages of mutual dependance steps are taken in many countries towards the promotion of ancilliary units.

The bulk of the coir fibre in the world is produced in India, particularly in the state of Tamil Nadu. With her favourable ecological setting, abundant supply of coconuts and cheap labour. India has provided the necessary conditions for the growth and development of the world's largest coir Industry.

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8. Annual Report, coir board, Cochin - 2000. p-212

The industry has evolved as the second most important source of labour absorption in the state. Production in these units is predominantly carried out on the basis of traditional technologies. Apart from a low level of skill, the workers earnings are very low, causing most of them to live under conditions of poverty and malnutrition. The situation has further aggravated in recent years due to a number of factors, like the decline in the world demand for coir and coir products, reduction in the availability of raw materials and rapid growth of competing mechanism brown fibre processing in the states of Kerala, and Karnataka. An in-depth analysis of the above factors may provide valuable insights into formulating policy option for the revival of the industry in Tamil Nadu.

Man has been largely dependent upon nature to satiate both the appetite of inner quests and the inevitable physical hunger. Down the ages the agro-based products have saved the precious lives of human-beings. One such nature's gift is the coconut tree. It has been used for various purposes. New usages of the coconut tree and its other parts are being found every now and then by the people of various time, place and culture. The coconut tree has become the basis of one of the pioneer industries in the world namely the coir industry.

Basically, the coir is a traditional, rural industry. Nowadays this industry has gained importance due to the high

demand for its export worldwide and also due to its capability to provide employment opportunities to the rural poor. Not only individuals are interested in the promotion of this industry, but almost all governments show keen interest in promoting this industry. It is all because the industry is directly linked to the socio-economic development of the country concerned.

The emergence of the coir industry in India dates back to the 19th century. The first coir weaving factory was started by Mrs. James Darragh in Alleppey.[9] The foundation of the coir industry is the hard fibre obtained from the coconut husk. The coconut husk, generally, forms 35% of the weight of the coconut, which gives 90 grams of coir fibre and 180 grams of coir pith.[10] In India the industrial utilisation of the husk is about 25 percent and the rest is used as fuel. India is regarded as the largest producer of coir fibre in the world. The coconut is cultivated in almost all parts of India, however the bulk production is mainly in the four states of Kerala, Karnataka, Tamil Nadu and Andhra Pradhesh.

In Tamil Nadu, coconut is produced in large quantities in the districts of coimbatore, Thanjavur and Kanyakumari.

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9. History and Home of Coconut Bulletin published by the Indian coconut committee, Cochin, Sep. - 1954. p-203.

10. Coir Industry in Tamil Nadu-1999. p-3.

Particularly, in Thanjavur district the coir industry thrives better. The Government of India has started the Regional coir training and development centre in Thanjavur. There are lots of fibre extraction units and yarn spinning units run by private or co-operative sector. Apart from these units, there are a number of tiny units in which a lot of workers are engaged in the production of coir-based products.

Coir products have varied uses. Coir mats are excellent doormats, coir matting is used as floor spreads or carpets. Besides its main use as floor covering, it is an excellent packing material. They are used to protect goods against shock in transport. Coir is used for making rubberised cushion seating for automobiles and railways, as mattresses and pillows, wall carpets, wall bags to hang weapons, dumping mats and so on. Coir products are able to hold their own characteristics invariably in all conditions. They resist wet conditions, deaden sounds, give cool comfort in hot climate but retain warmth when the mercury falls.

The coir industry distinguishes fibre in two distinct varieties namely white fibre and brown fibre. White fibre is extracted after a long process and it requires skilled labour. White fibre is comparatively lighter and amenable for the production of a wide range of coir products like mats, matting, rugs and carpets of superior quality. Brown fibre is produced from dry

husk comparatively within a short span of time. Brown fibre is much tougher and more resilient and is used for the production of burshes, rubberised coir materials, acoustic pads, carpet underlay, insulation materials and the like. While the white fibre is mostly produced in Kerala, the brown fibre is produced in Tamil Nadu, Karnataka, Andhra Pradhesh and Orissa.

Indian coir and coir products have domestic as well as foreign markets. The domestic market is gradually expanding. The Indian coir board functions with the head quarters at cochin through 2 regional offices one at Bangalore and the other at Vishakapattinam with 2 research Institutes located at Kalavoor and Bangalore. To strengthen the credit and marketing facilities. Indian coir board runs 4 regional coir training and coir development centres. They are located at Thanjavur (Tamil Nadu), Arsikere (Karnataka), Bhubaneswar (Orissa) and Rajamundry (Andhra Pradesh).[11]

From the beginning till now, the main stay or the substantial percentage of production of this industry was to meet the export markets. India has a virtual monopoly in the supply of spun yarn. But during the last 2 decades the export of coir and coir products has been going down.

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11. Coir News, Dec. 1999. p-2.

The industry from its very inception has gone through endless series of crisis because of its over dependence on the export market. There are so many operational problems apart from this. Right from the cultivation of coconut palms, from the processing of coconut husks up to the production of coir yarn, coir products etc., and of marketing the same, the coir industry has to face innumerable problems.

The cost factors in production, the techniques adopted in fibre extraction, the investment in various assets, the employment of cheap labour, the agencies involved in processing raw materials and in marketing the coir products the appraisal raw materials and in marketing the coir products the appraisal of financial results of investment and the like are the various issues to be examined in connection with the coir industry in Thanjavur district. And thus "A study of coir industry in Thanjavur district" has been undertaken in relation to the small-scale private sector units which are the main distinct sectors of coir industry functioning in the Thanjavur district.

This study states the present situation of the coir board. Also it brings out the financial crisis that the board has to face due to its lack of autonomy. It analyses clearly the reasons for its inability to attain greater efficiency and produce

remarkable results. Furthermore the study suggests a few steps to ensure maximum utilisation of the available raw material to make the industry more lucrative and attractive.

Thanjavur district is a region of large scale coconut cultivation. The coconut husk is used in cottage industries for the production of coir. The industries offer employment for poor people in rural areas. This study proposes to throw light on the present condition, competitions and future scope of the coir industry in Thanjavur district.

The coir board guides and assists the coir units in their functioning by means of financial assistance for market development, modernisation, construction of loomsheds etc. It regulates the production of coir to achieve maximum profitability by careful co-ordination and assistance.

Still as the coir board, by its nature of formation, depends upon the grants of five year plan by the central Government, it lacks autonomy or corporation status to attain greater efficiency and remarkable results. The purpose behind the suggested steps is to ensure maximum utilisation of the available raw material to make the industry more profitable and attractive.

As per the survey of the coir board of Thanjavur district more than 4,000 workers are employed in the coir industry to produce nearly 11,000 tonnes of coir fibre. Above 75% of the fibre is being sold as raw material.[12] One of the aims of this study , is to highlight the untapped potential in the production of value added fibre products. It is modest and realistic to claim that more than ten fibre extraction units can well be added to the existing 141 units profitability and thereby generate more employment. The feasibility and viability of the above opinions are to be dealt with in the study.

REVIEW OF LITERATURE

Though literature on coconut and coir is available adequately, research studies in this area are few and can be numbered. One of the earliest studies was done by Mr. K. Baskaran unnithan during 1956 in the Kerala university, the title being **"THE COIR INDUSTRY IN TRAVANCORE COCHIN"**. Submitted for the award of M. Litt. Degree, it surveys the making of coir, the economics of the manufacture of coir and coir products. It also analyses the labour organisation, labour conditions, wages and the like with reference to the Travancore district.

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12. Primary Data collected from coir industries, Thanjavur District by the Research Scholar during the field visit.

Thankam Kurup (1961), conducted a detailed "Survey of the working conditions and life in general of a representative section of women workers in the coir factories at Alleppey". She conducted a study of about 6,000 workers out of whom 450 were women. The nature of the work done by the worker in the study unit was separation of husk and soaking.

Another study entitled "small scale industries in Kerala" by Mr. M.A. Oomman, in 1967, dealt with the process of production and varieties of coir yarn.

The Ph.D., research work "coir industry in India with special reference to marketing and trade" submitted by Mr. K. Baskaran unnithan, in 1968 to the Kerala university analysed the marketing problems faced by the coir industry.

This study falls into 3 parts. The first part gives a background of the industry. It deals with the locational factors and the various processes in the manufacture of coir and coir products and the structure and organisation of the industry. The treatment in this section is by and large descriptive. But the core of this work is an analytical study of the cost of production of different varieties of coir products.

The second part examines internal marketing. Two major approaches to the study of marketing are introduced viz., Institutional approach and Functional approach

In the institutional approach, each segmentation of the market such as the retailing system and the wholesale system etc., is described and analysed in detail.

In the functional approach the study concentrates on marketing functions such as buying, selling, storage, grading, financing etc. The problems of internal marketing and the development of co-operative marketing are then dealt with.

The third part analyses external marketing. Special importance has been to this subject because of the importance of coir as an export commodity. The problems of export promotion have been discussed in all aspects.

Another study by Rama Rao entitles,"Shift In Female Work Participation" was conducted in 1968. In his study, he observes that the wages prevailling in the coir industry are one of the lowest in the state of Kerala and hence the actual income of coir workers was not determined by the quantum of employment alone.

Dr. M.V. Pylee, a Management Expert, titled "A Study Of Coir Industry -- problems and prospects".conducted another study on 1975. This study was conducted at the request of the Coir Board, Cochin with reference to the request of the shortage and production

bottlenecks of yarn and its products and the efffects of the difficulties, if any, in the export trade, and to find solution. The study heavily dealt with the retting process - manual process as well as mechanical process.

One more study, "Women in Rural Industries" by Leela Nair (1979) found that the coir industry was estimated to provide employment to about 5 lakh families. The workers in the coir industy engaged in the spinning and pre-spinning stages undertook pluking of coconuts, de-husking , collection and willowing. in spinning,on an average,the earning was less than Rs.5per kilogram of output. Although minimum wages were fixed for most of these jobs, in actual practice, the manufacturers and traders were not strictly adhering to them.

Another study entitled, the industrial co-operatives for coir industry in Salem, was undertaken by Dr. R. Cauvery in 1981. The study evaluated the existing position of the coir co-operatives and the problems faced by them in Salem district.

The district was having 798 coir rope making small units, producing 14,000 M.T. of ropes per annum for a total number of 240 working days. All these units generated employment opportunities for 5,405 people (men 1782 women 1833 and children 1790). The average income per day was Rs. 9 for a man, Rs. 7 for a woman and Rs. 4 for a child. At the time of the study there were 1,800 coir twisting machines functioning in the

district, providing direct or indirect employment for 68 thousand persons. There were about 56 businessmen who procured the ropes and sent them to North India, making a business of Rs. 8 crores.

The main problem faced by the coir industry was that of short supply of locally available husk. There were two types of co-operatives engaged in the coir industry namely coir workers industrial co-operative society and the central coir marketing co-operative society. The former was engaged in the production of coir goods after purchasing the fibre in the open market. The latter was expected to sell the coir products in North India. But this society was unable to compete with private merchants and so had become sick.

Another study, "Women in the unorganised sector-with special reference to Kerala" by Leela Gulati (1984) focused attention on the pattern of work and income of women workers engaged in the coir industry. Many other aspects of day-to-day life of coir women were also brought to light.

"A study of coir industry" in Kerala was conducted by Isaac Thomas (1984). According to him historically the production of coir was linked with the life work and struggle of women for their subsistence.

The report on bench mark survey of model coir villages, Kodiamkulam, Krikkad and Perumbalam (1984)

reported that the condition of workers engaged in the coir industry was pitiable was the majority of them were below the poverty line.

One more study entitled, "Wages and living conditions of workers in Agastheeswaram Block", submitted to the madurai Kamaraj university in 1986 by Vishwa Perumal pointed out that coir workers in India though illiterate were skilled in coir making. They formed the most important factor in developing the coir industry in India. They possessed an innate knowledge of the craft. Yet they were socially and economically backward. Because of their ignorance, superstition and illiteracy, they were exploited by the intermediaries and the owners of coir units.

Another study by A.G. Chithra in 1989 on "Economic conditions of coir industry workers in Pattukkottai Block" analysed the existing status of the coir workers.

The literature surveyed hitherto exhibit the various issues relating to the coir industry piecemeal. But a study covering the organizational pattern, investment pattern, production, marketing etc., in relation to the coir industrial units of bother private and co-operatived sectors in Thanjavur has not been taken up by any of the researchers in the past. Therefore an attempt was made by the present researcher to study the coir units in the agro-based Thanjavur district with a comprehensive frame of references.

The recent study by "A study of coir industries in Thanjavur district" (Mar. 1996) by Prof. Seeni Kamal has analysed the organisational structure, financial condition, production pattern and the like functional aspects of the coir industrial units both in the private and co-operative sectors in Thanjavur district. The study has also revealed the economic problems of the coir units and the problems faced in marketing the coir products. Basically the study is made with a view to give suggestions for the batterment of the coir industry in this region.

SCOPE OF THE STUDY

The study limits its scope within Thanjavur district. The primary data for the analysis are collected from entrepreneurs of coir industries in this district. The secondary data are taken into account for the comparative analysis .

OBJECTIVES OF THE STUDY

The main objective of this study entitled "A Study Of Coir Industry In Thanjavur District" are as follows.

1. To know about the present position of the coir industtry.
2. To assess the functions of the coir board.
3. To analyse the production problems faced by the coir industry.
4. To examine the financial position of the coir industry.
5. To study the problem of the availability of labourers.

6. To get to know the marketing problems of the coir industry.
7. To make suggestion for improving the Coir Industry in Thanjavur District.

METHODOLOGY

To attain the objectives stated above, the information was collected from primary as well as secondary soures. Primary data were collected through a schedule from the entrepreneurs.

In addition to the primary data, secondary data were obtained from the booklets, magazines, Annual reports of the coir board, Thanjavur and the Directorate of Economics and statistics, Ministry of Agriculture, Government of India, Chennai.

The primary data were collected from 1991 to 2000, to study the coir production, marketing and profits from the coir industry.

Out of 141 units, a stratified sample of 100 units are taken for the study. Stratification is done in order to ensure that the sample units within each group should be homogeneous.

The statistical tools like Analysis of Variance, Partial, Multiple and stepwise regression of techniques are applied to study the variations in the production. To test the significance of independent variables 't', 'F' and Durbin-watson 'd' test are used.

A similar study was conducted to verify the marketing fluctuations in the coir industry by framing a suitable model.

The profit line is drawn by applying "Least-Square's technique" to forecast the marketing study of the coir industry.

CHAPTERISATION

The study is co-ordinated in seven chapters.

CHAPTER - I

This ***introductory*** chapter is intended to provide a brief idea of the subject matter of this thesis , nature of the topic, the objectives of the study, the Methodology used, the Statistical tools used and the chapter classification have also been detailed in this chapter.

CHAPTER - II

A ***profile of the coir industry*** is presented in this chapter. An attempt has been made to present the strategies followed by the coir board about the coir industries.

CHAPTER - III

This chapter "***Production Management of Coir Industry***" deals with the problems connected with the acquisition

of uniform quality of raw materials, due to pest affects in the coconut trees.

CHAPTER - IV

This chapter "***Financial Management in Coir Industry***" advocates the need for more funds and its proper management. In short, finance has to be obtained in order to encourage coconut farmers and entrepreneurs.

CHAPTER - V

This chapter "***Personnel Management of Coir Industry***" discusses the labour problems and the possibility to implement reasonable welfare measures are discussed.

CHAPTER - VI

This chapter "***Marketing Management of Coir Industry***" deals with factors affecting marketing of finished products and the problems faced by the entrepreneurs in the marketing of coir products in Thanjavur district.

CHAPTER - VII

The last chapter "***Resume***" consolidates all the observations made in the previous chapters. This is intended to make the whole thesis a comprehensive study with the beginning, a middle and a proper end.

PROFILE OF THE COIR INDUSTRY

CHAPTER II

PROFILE OF THE COIR INDUSTRY

HISTORY OF THE COIR BOARD

If we scrutinize the history of the coir board, in 1945 The Indian Central Coconut Committee was set up by the Government of India to promote systematic development of coconut industry in the country. The committee was given statutory powers for undertaking coconut development and research. When the coconut committee was abolished in 1966, the ICAR took over the administrative control of the central coconut research stations at Kayamkulam and Kasara god. The development functions were entrusted with the Directorate included formulation, planning and co-ordination of programmes pertaining to the development, processing and marketing aspects of the crop in India.

The coir board was set up in 1954 under the coir industry Act 1953, to promote the development of the coir. Industry in the various states in India under the control of Central Government. Kerala is the most popular state for the coir products. This state only gave a white fibre.

Data presented in this chapter are Primary, collected by the research scholar during the field visit in Thanjavur district and secondary data collected from coir board, Thanjavur.

Whereas Tamil Nadu gives a brown fibre. In 1967 white fibre was introduced at Thenkasi and Machines came from London.

Coir is an important agro based cottage industry of great significance in India. It is a highly labour intensive industry covering wide range of activities including collection of husk, retting fibre extraction, spinning and manufacture of coir and coir products. Coir Industry in India supports around half a million people belonging to economically weaker section of the rural population.

Coir Mats, mattings, rugs, coir rope, coir foom and geo-textiles are some of the main coir-products manufactured in the country. The brown coir fibre in the country is estimated of 2,50,000 tonnes out of which 1,27,000tones are White Fibre and the rest 1,23,000 tones is brown fibre.

SERVICES OF THE BOARD

1. Coir Board Provides training to the people for the development of coir industry.
2. Coir Board has introduced so many new schemes for employers, workers and trainees.
3. It provides a study about the coir industry and coir board to the people or desirers.
4. It helps to self - work to the trainers.
5. It encourages women workers also.

6. It exports the coir products to foreign countries.
7. It collects coir products from the small industries and sell it to various customers.
8. It implements new procedures in the working method, of the coir board.

GROWTH OF COIR BOARD

Various steps had been taken from time to time for the improvement and growth of the Coir Board. The coir products has got significance due to the constant steps taken by the board in bringing growth to a considerable extent. In that way inspection and certification of quality of coir and coir products to the domestic markets is done by the coir board through the coir mark scheme, introduced in April 1975. This scheme was originally concentrating on items sold through the coir board showrooms and sales depots and depots of the Accredited dealers. This scheme has further been extended to the sales of the co-operative institution and other organisations approved consequent to the introduction of 20% rebate sale by the Government of India.

Coir board has taken various schemes under the Research and Development, like modernization and standardization of ratts, looms and equipment, distributing of

standard ratts, looms and equipments, extension service in spinning, bleaching, dyeing etc. these schemes contribute in improving the quality of coir and products to a large extent.

DEVELOPMENT OF COIR INDUSTRY

The development programmes of coconut received more attention after the formation of the board. The major functions of the board interalia include adopting measures for the development of coconut industry, recommending measures for improving marketing of coconut and its products, regulating importr and export of coconut and its products adopting measures for assistance coconut growers to get incentive prices for coconut and its products, providing financial and technical assistance for cultivation processing and marketing of coconut. Fixing grade specification and standard of coconut product etc.

THE ACTIVITIES OF COIR BOARD

1. Develop the coconut fibre, coir and coir products in export business and make propaganda for that.
2. Regulation of the production of coconut husks. Register the coir products manufacturers issue of licences to the coir products exporters through registration of coir spinning machines and wons on the supervision of Central Government.

3. Taking up scientific Technical and Economical investigation maintanance and promotion by coir board or helping to the activities.
4. Collection of statistics in respect of the coir industry from the coir products manufacturers, distributors or the persons appointed for this and printing the same in full or part or its narration.
5. Quality control, inspection on fibre coir and coir products if necessary.
6. Develop the business of coconut husks coconut fibre on coir in India and other places and avoid unnecessary competitions.
7. To assist for establishing coir products manufactures by with electric power or to install from the coir board.
8. To promote co-operative sector among the producers of coconut husk coconut fibre and coir and coir products manufactures.
9. To assure permanent income to the producers of coconut husk, fibre and coir and the manufactured of coir products.
10. Regulation for the internal business and expert and for stocking and business of fibre coir and coir product further issue of licence to husk retting sites and godowns.

11. Give advise in all subjects relating to the development of coir industry.
12. Watching the other subjects intended to this.

To watch the above works the following centres are running under the coir board, Cochin.

1. Regional office Bangalore.
2. Regional office Visakapattinam.
3. Central Coir Research Institute, Kalavoor.
4. National Coir Training and Design centre, Kalavoor.
5. Central Institute of Coir Technology, Bangalore.
6. Regional Coir Training and Development Centre,Thanjavur.
7. Regional Coir Training and Development Centre, Arisekere, Karnataka.
8. Regional Coir Training and Development Centre, Rajamundry, Andra Pradesh.
9. Regional Coir Training and Development Centre, Bubeneshwar, Orissa.

ACTIVITIES OF RCTDC THANJAVUR

In this Thanjavur training centre, coir training is being given to the supervisions of Industrial Co-operatives belonging to the Industries and Commerce Department to the workers sponsored by the coir Industrial co-operative

societies and private coir industrialists and to the individuals interested in coir Industry.

The following 3 kinds of Training are being conducted in this training centre.

1. Coir Technology Training course - 6 month for 10th passed boys.
2. Coir Artisan Training course - 6 month for 10th failed of below for boys.
3. Motorised ratt - coir spinning - 2 month for women.

All the trainees boys and women are issued Rs. 350/- per month as stipend. Hostel with boarding facilities are available in this centre. A television is provided in the Hostel for the entertainment of the trainees, further for sports facilities such as Volley ball, Tenniscort, Carram Board and Chess Board are available here. And also study tour to the Coir Technology course and coir artisan course trainees for 10 days and 5 days respectively have been arranged in coir board expenses.

Coir spinning, Dyeing to the coir products, Mat and matting and Brush making courses are conducted in this training centre.

In Thanjavur training centre the following machineries are available for training purpose they are Crusher, Defibring machine, Durbo Cleaner, Shifter, Burster, Decordicator, Band saw machine, Thickness plainer, Circular saw machine, Wood turning lathe, Drilling machine, Wire twisting machine, Jig saw machine, Sheering machine, Corridar mat frame and press, Man power wooden loom for mattings, Cycle rim ratts for ply coir spinning, Salem type ratt for manufacture of 3 ply and ropes, Willowing machine, Pedal operated 2 ply spinning machine.

TRAINING

The National coir training and design centre and four regional coir training and development centres conduct the Advanced training course, Artisans training course, Coir Technology course and Training in spinning coir yarn on motorised ratt training programmes.

In order to meet the requirement of spinnes for spinning coir yarn on motorised ratt the existing capacity in the National coir training and design centre should be doubled so that training can be given to 1200 women per year. Similarly each R.C.T & DC is to be provided with 25 motorised ratts. So that 600 women can be trained in spinning on motorised ratt in an

year. In DCE/DCPC necessary infrastructural facilities may be provided for importing training in spinning coir yarn on motorised ratt for 150 women per year.

STRATEGY

The strategy for development of coir industry consists of:

1. Machanisation of the defibering of husk, spinning of coir yarn and manufacture of coir products and quality upgradation by means of appropriate technology without displacing the workers in areas where coir industry was developed traditionally and where a large number of workers depend on it for livelihood. In other areas the thrust should be on manufacture of value added products through modern technology.

2. Upgradation of the skill of workers th rough training for increasing productivity and income.

3. Expansion of domestic market through market development scheme, participation in domestic exhibitions and fairs by Coir Board, publicity through T.V. News Papers etc.

4. Increase in export through market development missions, sponsoring delegations, participation in

trade fairs and exhibitions abroad organising buyer seller meets and other means of publicity and propaganda by Coir Board through Export Market Development Scheme.

5. Promotion of new coir products like geo-textiles, rubberised coir, needled felt, coir pith etc.

6. Promotion of Research and Development in process improvement, product diversification, modernisation, elimination of drudgery and pollution and extension of fruits of research and development to the concerned sections in the coir industry.

Coir industry which is based on coconut husk, an agro-waste, provides employment to about half a million poor people mostly women in the rural sector. At the current level of production, only 25% of husk available is consumed by coir industry in the country. Therefore, there exists vast potential for stepping up production of coir fibre and value added coir production thereby providing better employment and higher income to the people engaged in the coir industry. There is growing demand for coir products such as coir geo-textiles, rubberised coir, coir pith etc., and good potential for new

applications and end uses which depend on the unique, natural properties of coir fibre.

The plan of coir board would result in substantial increase in the manufacture of coir fibre and coir products for domestic consumption and export. This would create significant impact, not only on the coir industry, but on entire economy of coir producing states and improve the income and living standards of thousands of small scale coir manufacturers and lakhs of workers engaged in the coir industry. In addition, increasing volumes of bio-degradable and environment friendly products would be available.

Coconut husk, the raw material for coir industry, is a renewable agro-waste arising out of extraction of coconut. White fibre is extracted from husk subjected to a process of natural retting. For retting husk is kept under water in ponds or lagoons or backwaters for 6 to 10 months. The effluence of retting pollute surface water. The new bio-technology developed using 'coirret' converts mechanically extracted green husk fibre into white fibre within 72 hours. Coirret can be used in concrete tanks. A cost effective method to treat the ret liquor left in the tank has also been developed. Thus white fibre can be produced without any pollution.

Extraction of fibre from husk leaves coir pith or coir dust as waste. Extraction of 1 kg fibre generates 2 kgs of coir pith. It occupies large space polluting the environment. Its disposal is a big problem in all coir producing states. The simplest but effective solution to this problem is to convert coir pith into organic manure by composting it with 'Pithplus'. Pithplus composts pith within 30 days into organic fertilizer useful to all crops. A waste disposal problems is turned into a money maker.

Coir products like mat, matting, carpet, rug, rope, twisted coir and geo-fabrics manufactured from white/brown coir do not cause any environmental pollution as coir is 100% natural and bio-degradable.

In rubberised coir the non coir constituents are rubber latex and small quantities of blinding chemicals. The rubber latex is a natural product and binding agent does not amount to over 5% of the content of rubberised coir. The product is fully bio-degradable and does not pose any environmental pollution when disposed off. The rubberised coir mattress would be substituting polyurethane foam and polypropylene. The polyurethane foam causes damages to health and environment during production and emits dangerous toxic gases when burnt.

At present the geo-textile market is dominated by syntheic products. The growing concern for environment in the developed countries offers better chance for geo-fabrics made out of natural replenishable products like coir. Coir geo-textiles are widely accepted for various civil engineering practices connected with soil management, erosion control etc. The production and use of coir materials will not only help preserving the environment but also promote value added export of coir from India.

Empowerment of Women - An Aspect of Development of Coir Industry

Out of half a million poor people employed in the coir industry, women constitute the major chunk of about 80%. The distribution of workers and women workers in various sectors of the industry is given below:

Table 2.1 shows Distribution of Coir Workers

Category	Total Workers	Women Workers
Fibre extraction	98,800	55,000
Spinning	3,50,400	3,30,000
Manufacturing	29,900	5,000
Other work related to coir sector	20,900	10,000
Total	5,00,000	4,00,000

It is seen that most of the women coir workers are engaged in spinning activity. By and large extraction of coir fibre and spinning of coir yarn is a house hold activity particularly in Kerala where coir industry developed centuries ago. During monsoon period activities in extraction of coir fibre and spinning of coir yarn are conducted only on a very limited scale. In the decentralized operations the women workers do not have full time work on working days not enough days of work. It is rate to get 200 days work in an year for a worker in the spinning sector. A women spinner has to walk forward and backward for about 10 km. a day for spinning coir yarn on tradional ratt. She earns on an average of Rs. 27/- per day on working days. This is below the approved minimum wages. The women coir workers are an under privileged and exploited lot.

The motorised ratt will help women workers to earn higher income which in the initial stage will be around one and half times what they are getting now. The average production of Anjengo type yarn on traditional ratt by a group of 3 workers is 15kgs.per day. The motorised ratt can be operated by a single worker and in the initial stage makes 7 to 8kgs. of yarn which would give Rs. 40/- in a day. The introduction of motorised ratt for spinning coir yarn not only eliminates the drudgery in the traditional way of spinning but also improves

the productivity and income earning capacity of rural women coir spinners. This would, in turn improve their economic condition, working environment and lift them above the poverty line. Therefore the development of coir industry has a pronounced aspect of empowering rural women folk and enlisting their participation in the develoment of the nation.

Leavy on coconut husk was scrapped in Kerala. Introduction of motorised ratt for spinning coir yarn, 'Coirret' to ret green husk brown fibre into retted fibre in 72 hours as against 6-10 months required for traditional retting. 'Pithplus' to convert coir pith into organic manure in 30 days, a technology to recycle ret water, fabrication of a 2 metre automatic loom, implementation of two FAO projects have set the coir industry firmly on the track of modernisation. Efforts were set in motion to develop a number of shades with reactive dyes. The pilot project to produce and sell 'coirret' and 'Pithplus' proved to be a success.

Coir industry surveys were completed in Lakshadweep, Tamilnadu and West Bengal. The survey is under progress in Kerala and Orissa. Computerisation was partially implemented in Coir Board Sale of coir through showrooms reached Rs. 897.11 crores in 1999-2000.

PRODUCTION INFRASTRUCTURE

The coir board is having adequate infrastructural facilities as shown in the following details.

1. Coir Fibre

Existing Production

a. White fibre	1,27,000 tonnes
b. Brown fibre	1,23,000 tonnes
Total	2,50,000 tonnes

The coir board aims at stepping up production of fibre from the current level of 2,50,000 tonnes to 5,00,000 tonnes. The traditional method of retting is anticipated to decrease by an average rate of 10% per annum and expected to discontinue at the end of the 10 year. It is assumed that only 60% of the coconut production of 23297million nuts in 2006 AD will be available for defibering, as the rest would be consumed as tender coconuts. Fibre from dry husk is the raw material for curled coir and needled felt necessary for the manufacture of rubberised coir and polycoir/coirply respectively. Production of fibre from dry husk therefore, will continue. The anticipated production of fibre will be as follows:

Green husk fibre	3,50,000 tonnes
Dry husk fibre	1,50,000 tonnes
Total	5,00,000 tonnes

Table 2.2 shows Percentage Utilisation of Coconut

Sl. No.	Items of Utilisation	Percentage
1.	Domestic Consumption	3.03
2.	Religious Purposes	3.71
3.	Extracting oil and copra	2.45
4.	Marketing	90.81
	Total	100.00

Source: Coir Board, Thanjavur.

The Coconut is go for marketing and they form 90.81% of the whole utilisation. The extraction of oil from copra is extremely low (ie) only 2.45%. Much is needed to be done in this regard. Both the domestic consumption and religious purposes uses cover 6.74% and they cannot be avoided.

Table 2.3 shows Growth of Coir Industries in Thanjavur District

Year	No. of Coir Industries
1991	85
1992	90
1993	92
1994	106
1995	111
1996	121
1997	124
1998	131
1999	137
2000	141

Source: District Industrial Centre - Thanjavur

The steady growth in the number of coir industries can be find in Thanjavur District. The main factor responsible for this is the loan assistance provided by the District Industrial Centre and some Nationalised Banks. This enable the landlords to become coconut growers. Further the handicaps like lack of irrigational facilities, unfavourable fixing of prices for grains by the State Government, the hike in the cost of fertilizers and seeds, etc., compel and convert the landlords towards coconut production.

When the copra are purchased by oil extracting units, the husks remain useless and they induce the landlords to go for coir industries besides the attractive subsidies offered by the coir board through District Industrial Centre, banks and other financial institutions. The growth is more marked from the 1991 upto 2000 which were 85 and 141 respectively.

Detail of the existing defibering units in India are given below:

Table 2.4 shows State-wise Details of Defibering Units.

State	No. of unit	Production capacity per shift(Tonnes)
Kerala	78	15,600
Tamilnadu	402	80,400
Karnataka	115	23,000
Andhrapradesh	87	17,400
Orissa	12	2,400
West Bengal	5	1,000
Assam	4	800
Goa	2	400
Total	705	1,41,000

It is expected that out of the existing 705 defibering units available, 70% of units will run two shifts owing to the increased availability of coconut husk to produce about 2,40,000 MT's of fibre. Additional capacity has to be created to produce 2,60,000 tonnes fibre. A defibering mill can process both dry and green husk.

I. Defibering mill

The number of defibering mill required to produce 2,60,000 tonnes fibre from green and dry husk @ 200 tonnes/unit per shift annually. It is assumed that 60% of units will run two shifts.	815

Financial outlay for establishing a defibering mill works out as follows:

1. Land 50 to 150 cents	: Rs. 5 Lakhs
2. Building	: Rs. 5 Lakhs
3. Machinery & Equipement	: Rs. 5 Lakhs
Total	Rs. 15 Lakhs

At present financial assistance to the tune of Rs. 1,00,000/- is available for establishing a defibering mill. This amount is quite inadequate to support the entrepreneurs and therefore, proposed to enhance the assistance to Rs. 2,00,000/- per unit. The year / State-wise distribution of Defibering Mills is given in the following 2.5 and 2.6 tables.

Table 2.5 shows Year-wise Allocation of Defibering Mills

Year	No of units	Financial assistance from Govt.(Rs. Lakhs)
1997	55	110
1998	65	130
1999	75	150
2000	75	150
Total	270	540

Table 2.6 shows State - wise Distribution of Defibering Mills

Year	Kerala	Tamil nadu	Karnataka	Andhra Pradesh	Orissa	West Bengal	Others	Total
1997	30	10	6	5	1	1	2	55
1998	30	20	6	5	1	1	2	65
1999	40	20	6	5	1	1	2	75
2000	40	20	6	5	1	1	2	7[illegible]
Total	140	70	24	20	4	4	8	27[illegible]

ii. Pith Fertilizer Unit

Extraction of 1 kilo of fibre generates 2 kilo of coir pith. Production of 5 lakh tonnes of coir fibre would result in the accumulation of 10 lakhs tonnes of coir pith. As the defibering mills will be having open land and water connection, no separate infrastructural facility is needed, to treat the pith except for a refrigerator/deep freezer for keeping Pithplus. An amount of Rs. 30,000 is estimated for this purpose.

The Pithplus and Urea costing Rs. 2,550/- required for first batch (50 tonnes)misproposed to be supplied free of cost by Coir Board to each of the 1,520 defibering mills to make organic manure out of coir pith. With a view to provide necessary support to the agencies engaged in marketing the pith manure a provision of Rs. 100 per ton of coir pith manure towards financial assistance is also proposed.

This assistance can be extended for marketing the pith manure (30 tonnes) coming out of the first batch. The expenditure on marketing assistance works out to Rs. 3,000 per unit. Thus total assistance per unit will be Rs. 5,550/-.

Table 2.7 shows Year - wise Allocation of Pith Fertilizer Unit(Rs. in Lakhs)

Year	Number	Financial Outlay	Financial Assistance
1997	25	37.5	6.94
1998	130	39.0	7.22
1999	140	42.0	7.77
2000	140	42.0	7.77
Total	535	160.5	29.70

Table 2.8 shows State - Wise Distribution of Pith Fertilizer Units (in No.)

Year	Kerala	Tamil nadu	Karnataka	Andhra Pradesh	Orissa	West Bengal	Others	Total
1997	50	40	20	11	1	1	2	125
1998	50	45	20	11	1	1	2	130
1999	50	55	20	11	1	1	2	140
2000	50	55	20	11	1	1	2	140
Total	200	195	80	44	4	4	8	535

iii. Pith Sterlization/Pasteurisation Units

Sterlized / pasteurised pith on briquette form has a very good export and internal market potential. There is scope for establishing 10 such units producing sterlized pith @ 400 tonnes per annum. A unit is estimated to cost Rs. 50 Lakhs.

Table 2.9 shows Year - wise Distribution of Pith Sterlization / Pasteurisation Units.(in No.)

Year	Kerala	Tamil nadu	Karna taka	Andhra Pradesh	Orissa	Total Units	Financial assistance @Rs.2 lakhs per unit
1997	1	-	-	-	-	1	2
1998	-	-	-	1	-	1	2
1999	-	1	-	-	-	1	2
2000	-	-	1	-	-	1	2
Total	1	1	1	0	-	4	8

iv. Coittry Treatment Unit

With the invention of Coirret, it has been possible to convert green husk fibre into white fibre. It is estimated that 3,50,000 tonnes of green husk fibre will be produced per annum out of which about 50,000 tonnes of green husk brown fibre will be used in bleach variety yarn and rope. The remaining

3 lakhs tonnes of green husk brown fibre needs to be treated with correct for spinning coir yarn on motorised / traditional ratt. A unit of 5 tanks has the capacity to treat 400 tonnes of fibre per annum. Therefore 750 units have to be set up to treat 3 lakhs tonnes of fibre coirret treatment unit can function alongwith coir spinning unit. Each unit requires the following:

RCC tanks	:	5nos (4 nos. for coirret treatment and 1 for effluent treatment)
Refrigerator	:	1 Nos
pump set	:	1 Nos

Financial outlay for setting up a coirret treatment unit is Rs. 3 lakhs excluding land. It is proposed to set up 750 coirret treatment plants. To encourage the entrepreneurs to adopt this pollution free retting process, a financial assistance of Rs. 1lakhs per unit is proposed. The allocation of unit is given in the table 2.10.

Table 2.10 shows Distribution of Coirret Treatment Unit

Year	Kerala	Tamil nadu	Karna taka	Andhra Pradesh	Orissa	West Benga	Others	Total No's	outlay (Rs.lakhs)	Financial assistance @Rs.inlakhs per unit
1997	50	13	6	4	1	-	1	75	225	75
1998	50	13	6	4	-	1	1	75	225	75
1999	50	13	6	4	1	-	1	75	225	75
2000	50	13	6	4	-	1	1	75	225	75
Total	200	52	24	16	2	2	4	300	900	300

2. coir yarn

The plan of coir board envisages production of 3,12,000 tonnes of different varieties of coir yarn. Assuming that 25% of yarn production will be by traditional ratt and 5% by hand spinning method, additional facility for spinning 2,19,000 tonnes is to be created for spinning co r yarn on motorised ratt and automatic spinning units. Government of Kerala propose to install 20,000 motorised ratt under Integrated Coir Development Programme (ICDP). 52,000 motorised ratt will be operated under Mahila Coir Yojana. 100 automatic spinning units (600 machines) will be installed in States including Kerala under ICDP. 2,16,000 tonnes of coir yarn will be produced in motorised ratt and 3,000 tonnes of coir yarn in automatic spinning machine.

The motorised ratt proposed to be distributed under the Mahila Coir Yojana are clearly shown in the table 2.11.

Table 2.11 shows Distribution of Motorised Ratt under Mahila Coir Yojana

State	No.of units	Financial outlay (Rs. Lakhs)
Kerala	35,000	3,500
TamilNadu	6,000	600
Karnataka	4,000	400
Andhrapradesh	3,000	300
Orissa	1,000	100
West Bengal	1,000	100
Other States	2,000	200
Total	52,000	5,200

The ratts distributed to Mahilel Coir Yojana beneficiaries will function as home units. Financial assistance of Rs. 7,500/- per ratt is available for Mahila Coir Yojana beneficiaries. Year-wise distribution of Motorsied ratt is given in the table 2.12.

Table 2.12 shows Year - wise Distribution of Motorsied Ratt(in NO.)

Year	Kerala	Tamil nadu	Karna taka	Andhra Pradesh	Orissa	West Bengal	Others	Total	Financial assistance @Rs.inlakhs
1997	3,500	600	400	300	100	100	200	5,200	390
1998	3,500	600	400	300	100	100	200	5,200	390
1999	3,500	600	400	300	100	100	200	5,200	390
2000	3,500	600,	400,	300	100	100	200	5,200	390
Total	14,000	2,400	1,600	1,200	400	400	1,800	20,800	1,560

Table 2.13 shows Distribution or Automatic Spinning Units

Year	Kerala	Tamil nadu	Karna taka	Andhra Pradesh	Orissa	West Bengal	Others	Total units	outlay (Rs.lakhs)	Financial subsidy (Rs.lakhs)
1997	-	6	1	1	1	-	1	10	50	10
1998	-	6	1	1	-	1	1	10	50	10
1999	1	6	1	1	1	-	-	10	50	10
2000	-	6	1	1	-	1	1	10	50	10
Total	1	24	4	4	2	2	3	40	200	40

Assistance to set up Motorised Ratt/Automatic Spinning Machine Manufacturing Unit

The coir board envisages introductior of 72,000 motorised ratts (5,200 under Mahila Coir Yojana and 20,000 under ICDP) and 600 automatic spinning machines (100 units). Apart from this there will be demand fo· motorised ratt and automatic spinning machine to replace the existing traditional spinning equipments. At present there are only 5 approved motorised ratt manufacturing units. All of them are located in Kerala. These parties have only limited capacity for production of ratt and they are not in a position to produce more to cope up with the demand in the market. Six units are available for the manufacture of automatic spinning machine and other related equipements. There are located in Pollachi (Tamilnadu), one in Bangalore (Karnataka) and two in Alleppy(Kerala). To meet the future demand, minium 25 motorised/automatic spinning machine manufacturing units are to be set up.

Motorised ratt/automatic spinning machine manufacturing units will be set up as indicated below:

Table 2.14 shows State - wise Proposal for Units Manufacturing Spinning machine.

State	No.of units	Financial outlay (Rs. lakhs)	Financial Assistance (Rs. lakhs)
Kerala	10	105.60	10
Tamilnadu	5	52.80	5
Karnataka	2	21.12	2
Andhrapradhesh	2	21.12	2
Orissa	2	21.12	2
West Bengal	2	21.12	2
Other States	2	21.12	2
Total	25	264.00	25

3. Coir Products

Existing production capacity for finished coir products such as mat, matting, carpet etc. is given below:

Table 2.15 shows Production Capacity of Mat and Matting Units

Item	No.of looms	Installed Capacity (in tonnes)
Handloom mat		
a. Fibre mat	3854	7218
b. Carnatic mat	2519	3752
c. Creel mat	5836	13175
d. Rod mat	3339	13400
e. Loop mat	120	281
f. Bit mat	40	96
Frame mat		
a. Mesh mat	268	456
b. Corridor mat	1904	4585
c. Sinnet mat	522	1571
d. Rope mat	148	1052
Handloom Matting & Carpet		
a. Matting	2016	34588
b. Carpet	232	211
Total	20798	80395

Presently there are 89 curled coir manufacturing and 65 rubberised coir product manufacturing units available in the industry. A curled coir unit consists of minimum 2 curling machines and other essential equipements. Annual installed capacity of a curling unit and a rubberised coir unit per single shift is:

Curling unit	-	250 tonnes
Rubberised coir unit	-	300 tonnes

Curled coir units and rubberised coir units work in two shifts. Regarding production of mat and matting, majority of mat looms and matting looms in the handloom sector work in unorganised household units where more than one shift is not practical. However, about 20% of these looms are in organised factories where more than one shift can be operated.

Science & Technology

The ongoing Science & Technology programmes of the Coir Board lay stress on the following aspects:

- process improvement and elimination of durdgery
- product diversification

- product development and new uses of coir various projects of these aspects are implemented through two Research Centres of the Coir Board.

- Central Coir Research Institute at Alleppey and Central Institute of Coir Technology, Bangalore

A. Process improvement in extraction of white fibre - Treating of coir fibre extracted by mechanical Means and brown fibre derived from dry coconut husks and effluent treatment.

B. Development of spinning ratt

C. Improvement of coir handlooms- digenisation of powerloom for weaving coir matting.

D. Studies on the improvement of bleaching, dyeing of coir and shade matching by conducting studies on light/water/wash/rubbing fastness etc.

E. Dye House

F. Physical Testing and Standardisation.

G. Product Development and new uses of Coir Pith

i. Reduction in the period of composing pith

ii. Development of new and novel coir product for acoustic control and roof surface cooling including prefabricated structures for building purposes.

H. Product Diversification

i. To import soft and supple feel to coir fibre and products by using polymer emulsions.

ii. To import fire retardancy to coir products

iii. Field level demonstrations on the use of coir geotextiles including laying road using textile to protect settling and rutting.

iv. Field level demonstration on the use of coir matting as roof surface cooling material.

I. Studies on improved Weaving Techniques

i. Development of patterns and designs on mats, mattings and carpet etc.

ii. Popularisation of patterns and designs devel oped by Central Coir Research Institute in trade.

J. Design Development

i. Production of design scards

ii. Reproduction of stencil printed coir products

K. Technical Consultancy and Extension Service

i. Training Programme

ii. Quality awareness programme

iii. Extension of research findings to the trade.

L. Mechanical Extraction of Coir Fibre(C.I.C.T)

i. Extension of service facilities to coir entrepreneurs for conversion of coir fibre to needled felt.

ii. Extension service facilities for testing curled coir, rope, rubberised coir etc.

iii. Product diversification of brown coir sector.

Besides intensifying efforts in these areas of research for improvement . It is necessary to enlarge the scope of research activities.

In addition to the above research the following areas will cover

1. Bio-bleaching of Coir
2. Development of equipments for production of mat, matting tufted fabrics
3. Development of coir pith as horticulture growing medium, extraction of organic matter from coir pith like ignosulphonates, resorcenol, pyrogallol, catechol, train for industrial use, as building material, low cost packing material and to maintain the optimum and electrical conductivity of raw and scomposted coir pith.
4. Development of rubber based tufted coir products.
5. To develop carbon fibre out of coir
6. Use of coir in geo-technical applications and establish ASTM standard Testing Laboratory for geo-textiles.
7. Establishment of pilot project for the production of velour mats, jacquard matting etc. and extension of service facilities to the exports.
8. Development of equipment and process improvement for reducing drudgery of the labour.
9. Development of design for coir products with the aid of computer and popularising the design in the trade.

10. Studies on printing of coir products with faster colours for export purpose.
11. Assistance for upgradation of equipments, catering to the needs of the trade in all technical aspects.
12. Study on different machines used for augmenting the production and quality of the brown fibre products, indigenisation of needled felt plant.
13. Organising a Research Library and Documentation Centre.
14. Development of coir fibre/pith as a wood substitute.
15. Use of non-conventional energy system viz., wind/ solar for running the coir processing machinery.
16. Pith carbonisation and production of activated carbon.
17. Manufacture of 2-tie and 3-tie bristle fibre and husk cube.

This list is not exhaustive but illustrative only.

It is proposed to convert the existing Testing laboratory of CCRI functioning at a modest level to an accredited national level Testing Laboratory with all modern facilities for testing all items of coir. There will be facilities to test coir geo-textiles as per American Society for Testing & Materials (ASTM) standards so as to enable the Central Coir Research Institute to test the coir geo-textiles and issue certificates to the exporters for getting recognition from various governmental

agencies and decision makers in the major market, of geo-textiles like United states of America and other European countries.

The Central Coir Research Institute has already taken up a project on softening, dyeing, bleaching and printing funded by the FAO. Efforts may be made to get assistance from the international agencies like UNDP, ITC, Asian Development Bank etc., on specific research projects.

The Central Coir Research Institute is the pioneer researach institute doing research pertaining to the field of coir, coir pith and various products out of them. It will be necessary to project this institute as an International Coir Research Institute.

The following machines/quipments will be required to augment the facilities at the Institute for conducting the research under the proposal plan.

1. Rope testing equipment
2. Equipments for testing the chemical/physical properties of geo-textiles
3. Wash/Water fastness testing equipment.
4. CAD System
5. Thermic fluid system for dye house

6. Cupola for workshop
7. Mass Spectrometer(M.S) spectrometer
8. Nuclear Magnetic Resonance(N.M.R)

Installation of a Diesel Generator at CICT

The Board has been extending service facilities to the exporters for export of coir needled felt by producing and supplying the required quantities of needled felt in the plant set up at Central Institute of Coir Technology, Bangalore. Further the Board has also set up a pilot plant for the manufacture of polycoir at the Institute. In the recent past the Government of Karnataka have imposed heavy powercut due to power shortage and this hindered the production of needled felt at Central Institute of Coir Technology considerably. In order to continue the production of coir needled felt unhindered and to keep up the delivery schedules, it is proposed to install one 125 KVA diesel generator at CIST at a total cost of Rs. 13 lakhs. Necessary provision has also been made to maintain the generator during the coming 10 years under the plan.

Field studies on the application of coir pith manure on different plants

The Central Coir Research Institute, Hindustan Coir and the National Coir Training & Design Centre are located in the Coir Board complex at Kalavoor with a 13 acre compound. The Research and Development Committee of Board had decided to formulate a project to study the effect of coir pith manure on different plants so as to finalise the recommended dosage of manure to each plant. It is proposed to conduct the study by utilising the vacant land available at the Board's complex at Kalavoor. The entire campus will be given a facelift by planing different types of fruit bearing trees, ornamental plants, medicinal plants etc. and treated with coir pith manure. The soil characteristics before and after application of the manure will be studied. A provision of Rs. 6 lakhs has been envisaged for this purpose.

Setting up of coir museum

Coir industry is a traditional cottage industry. Age old equipments and looms are in vogue in the industry. As part of modernisation of the industry, the Board had developed standard spinning wheels, improved looms, semi-automatic looms and power looms. With the concerted efforts made by the

Board, these modern equipments/looms are being popularised in the industry. It is likely that over a period of time some of these equipment will become obsolete. In order to preserve the age old equipments and designs/patterns of coir products to mark the evolution of the industry, it is proposed to set up a Coir Museum at a total cost of Rs. 15 lakhs.

To cope up with the volume of work envisaged under the Ten Year Plan plan in Science & Technology it is necessary to organise the research effort in suitable divisions. The staff strength of the Central Coir Research Institute, Kalavoor, Central Institute of Coir Technology, Bangalore and Regional Coir Training & Development Centre requires to be substantially increased by positioning suitable qualified personnel at the senior and supporting levels. The financial outlay proposed for implementation of these projects include provision for staff component also.

Setting up of Extension Centre in Tamilnadu

Tamilnadu is the major state producing brown coir and it stands only second to Kerala in the production of coir fibre. There are about 402 defibering units in the State with an annual production of 80,400 Metric tonnes of coir fibre. Eventhough some quantities of coir fibre are converted to

coir rope, curled coir etc., the diversification activities in the post fibre stage and utilization of coir pith to economic advantage is rather in a low level. While there is a research institute set up in Karnataka there is none in the major brown fibre producing State-Tamilnadu. There is the need for an extension centre to be set up in Tamilnadu to extend the research findings to the trade and to conduct field demonstrations and training in modern technologies developed. Considering the geographical location and concentration of coir fibre units, it is proposed to set up an Extension Centre at Tenkasi in Tamilnadu at an estimated cost of Rs. 30lakhs.

Development of Domestic Market

Improving the marketing of coir products in India and elsewhere is an important statutory function of the Coir Board.

With a population of about 1,000 mill on, India is one of the largest markets in the world. Even if only 50% of the population is taken into consideration for making an assessment of marketing opportunity, it will be seen that the Indian market offers tremendous scope for coir products.

With the modernisation of the Coir Industry using better equipments and higher utilisation of raw materials, a steep increase in the output of coir units is expected in the coming

years thereby necessitating better marketing of coir products within the country. A stable internal market is essential for the healthy and orderly growth of coir industry even if it has a high export orientation.

Organised marketing of coir products is undertaken by coir Board, Coir Marketing Federation, Apex Cooperatives, Coir Corporations and a few private coir manufacturing units. But for a country of India's size the existing sales outlets numbering about 200 is quite inadequate to meet the marketing potential.

In the 10 year plan, it is proposed to improve the sale of coir products within the country through various market development programmes listed below:

1. Market Development Assistance

This scheme replaces the existing rebate scheme and envisages granting of market development assistance to the tune of 10% of the gross annual sales turnover which will be shared equally by the Central and the concerned State Governments. This scheme has been sent to the Govt. of India for approval vide letter No. CB/95/Mkg/9/5 dated 23.6.952.

2. Publicity and Propaganda

To create consumer awareness about coir products and to popularise them, publicity and propaganda measures through the following media are proposed to be undertaken during the Ten Year Plan.

1. T.V. Publicity
2. Sales Campaign by way of advertisements in newspapers journals, periodicals etc.,
3. Production of publicity films on coir and its screening
4. Production and distribution of pamphlets and catalogues on coir products
5. Positioning of attractive hoardings at vantage points in important metropolitan areas having Coir Board Showroom & Sales Depot
6. Participation in important national and regional trade fairs/exhibitions.

3. Showroom & Sales Depots

Coir Board Showrooms & Sales Depots are engaged in the marketing of quality coir products. The marketing efforts of the Coir Board had contributed a lot in the creation of the existing market for coir products in the

country. The vast unexploited potential existing in various regions of the country calls for setting up more sales outlets for popularising coir products. It is proposed to establish twentyfive new showrooms & sales depots during the next ten year period. In addition to this the existing showrooms & sales depots will have to be renovated once in seven years, if necessary for better consumer appeal.

4. Purchase of Generator for the Board's Showrooms

The Board is running 30 show rooms in the major cities of the country to promote the internal consumption of coir and coir products. The number of showroom will go up to 55 in the Ten year plan. The showroom suffer from inadequate and erratic supply of power. To meet this situation, it is proposed to install one generator each in all the showrooms.

5. Revolving Fund

Coir Products for sale through Board's showroom & sales depots is procured on consignment basis. The consignors are paid only after realising the cost of the goods sold. The smallscale manufacturers as well as Cooperatives are too weak financially to supply the goods on credit. It is therefore proposed that the board may extend advance on a quarterly basis to the tune of 50% of the cost goods at an interest of

4% and adjust the same while the invoice of the consignors are settled, immediately after receipt of the goods in good condition in the showroom & sales depots situated in various parts of the country. This will definitely help the consignors to run their manufacturing activities unhindered and the workers engaged by them will also get continuous employment.

An outlay of Rs. 2,000 lakhs is proposed in the plan for the purpose.

6. Mobile Showrooms

Coir products, being bulky, are not easyto carry. It is felt that in the event of coir products reaching the customers, the sale of coir goods would improve. Therefore, it is proposed to introduce mobile showrooms in all major cities of the country. The vans carrying coir goods will ply in the housing colonies and in the suburban areas. They will not only transport coir products but also give publicity to coir products.

A provision of Rs. 150 lakhs has been made in the plan for 10 mobile vans.

7. Pre-fabricated Stalls, Stands, etc

Participation in exhibitions is an effective measure of publicity. The Board participates in important exhibitions

in India and abroad. As per practice hitherto followed infrastructural facilities are arranged through contractors which is time consuming and quite expensive. It is proposed to make pre-fabricated exhibitions stalls and display stands for exhibitions in India and abroad. A minimum area of 30 sq.mtrs. has to be covered with pre-fabricated stands in exhibitions abroad and 300 sq.mtrs in the case of IITF, New Delhi and a minimum of 1000 sq.ft area has to be covered in other major exhibitions in India. In order to get 6 numbers of prefabricated exhibition stands an amount of Rs. 30 lakhs is provided.

It is proposed to purchase a truck for transporting exhibits, stands and stall to exhibitions. This truck can be used for transportation of floor coverings manufactured in the Board's powerloom factory - Hindustan Coir at Kalavoor to various showrooms when it is not otherwise engaged. A provision of Rs. 15 lakhs is made for this purpose.

8. Coir Expo

It is proposed to organise Coir Expo on a regular basis every year in important cities having growth potential for selling coir products. During Coir Expo, coir products will be granted a rebate of 25% for better sales, as in the case of National Handloom Expo.

Raw Material Bank

Mostly, coir products intended for export and domestic market are produced by smallscale manufacturers. There are about 5000 small scale units engaged in the manufacture of coir products. They procure coir fibre, yarn, chemicals etc., mainly from private traders and are often exploited.

In order to ensure prompt supply of raw materials at reasonable and stable prices to the smallscale manufacturers a Raw Material Bank is proposed to be set up for which assistance from the Government of India will be Rs. 100 lakhs over a period of ten years. Coir Board has already approved a scheme to assist Coirfed to set up a Raw Material Bank. A similar Raw Material Bank will be considered under TANCOFED in Tamilnadu during the plan period, when Tamilnadu starts production of coir products for export.

Export Promotion

Coir Industry is export oriented, Coir Board is the Central Agency entrusted with the task of developing market for coir, both in India and abroad.

The export of coir and coir products from India reached an all time high of 82718 tonnes valued at Rs. 98.17

million during 1956-57. This declined to an all time low of 23214 tonnes valued at 314.45 million during 1986-87. Since then there is an upward trend in the export of coir products. In 1994-95, 48086 tonnes of coir products valued at Rs. 1716.4 million were exported.

Coir is a natural fibre, biodegradable and environment friendly. The developed nations encourage the use of natural and biodegradable products. This is a favourable trend for coir. It is expected that at the end of the Ten Year Plan, the export of coir would reach 1,20,000 tonnes valued at Rs. 8,000 Million.

To achieve the above target the following promotional measures are proposed to be undertaken.

1. Participation in International Conferences

Participation in International Conferences on Coir and Hard Fibres and their various applications would give opportunities to interact wilth international organisations and counterpart organisations, to keep abreast of various developments and also to promote coir. Therefore it is proposed that Coir Board should attend various international conferences like FAO meetings on Hard Fibres, International Erosion Control Association meeting etc.

2. Participation in Exhibitions

Coir Board may participate in atleast 12 exhibitions/ fairs abroad annually. This would enable the board to effectively popularise coir and introduce new products and designs in the world market.

3. Sponsoring of Delegations/Market Development Missions

Coir Board will sponsor Delegations and Market Development Missions to visit various countries to explore and develop the market for coir.

4. Seminars/Workshops

Seminars and workshops will be orga ıised in different countries to create an awareness about coir products and to introduce new items such as coir geo-ıextiles, rubberised coir, coir pith etc.

5. Display of Advertisement/Sponsoring of International Sports Events

International sport events attract people in large numbers. It is proposed to display advertisements on coir/sponsor such events as a promotional effort for coir, subject to availability of funds.

6. Production of Brochure/Pamphlets on Coir

Brochures/pamphlets on various coir products will be produced and distributed to people at large for educating them.

7. Export Development Assistance

A detailed scheme for extending assistance to the exporters for promotion of coir products abroad is under consideration of the Government of India. The scheme envisages assistance for participation in exhibitions and export promotion tours abroad.

8. Press & TV publicity

Press and TV publicity will be undertaken to popularise coir products. TV publicity is the most powerful and widely used medium of publicity. This medium would help in familiarising people with coir products effectively.

9. Organising visit of Importers/Press, coir awards and survey on exporters

Delegations of importers/press from the importing countries will be invited to visit the production centres to give them first experience of coir industry so that they are in a better position to promote coir products in their countries.

Coir Awards will be distributed for outstanding performance in different fields. Periodical survey on coir exporters to assess the infrastructural facilities available with them and formulate suitable schemes to improve quality of coir product for export.

10. Publicity through Indian Coir Importers Associations

Publicity programmes through the Indian Coir Importers Associations is an ongoing programme. The provision made is towards assistance/counterpart contribution to be given by the board.

A proposal to amend Rule 13(1)(2)and 14, and 15 to enable the board to create a "Coir Fund" by leavying a development cess not exceeding 1 percent of the FOB value has been forwarded to the Government of India for approval and notification. This would supplement the funds for coir export promotion sanctioned by the Government of India.

Quality upgradation

Coir being a natuvvvral fibre, the coir products are environment friendly and biodegradable. The demand for coir product in India and abroad is increasing. Continuous improvement in the quality of coir products

is essential to sustain the present demand for coir products and also for better prospects is a world which is becoming very quality conscious.

Under the quality upgradation scheme the following programmes are envisaged.

a. Quality Camps

This scheme is intended to create quality awareness among coir workers so that they make better coir products. Quality camps will be organised in fibre extraction, spinning and manufacturing sectors 200 workers will participate in each camp. Anticipated expenditure per camp is Rs. 15,000/-.

It is proposed to organise 300 quality camps during the 10 year plan.

b. Common Facility Centre

This scheme is for providing facilities to the smallscale manufacturers of coir products to ret fibre, to bleach and dye various coir products in a better way. Thirty Common Facility Centres are proposed to be set up.

c. Inplant Inspection

Under this scheme inspection of coir products in the coir units is made during manufacturing and the workers are enabled to rectify defects if any.

d. Assistance to Construct Loomshed

About 5000 smallscale manufacturers are engaged in the manufacture of coir products for domestic and export market. Majority of smallscale manufacturers are having 2 to 5 looms in dilapidated loomsheds. This scheme is to assist such smallscale manufacturers manufacturers to set up better loomsheds.

e. Organising EDP & QIP

This scheme is to organise Enterpreneur Development Programmes and Quality Improvement Programmes in potential areas. Rs. 10,000/- is estimated to be the expenditure to organise an EDP/QIP. Under the Ten Year Plan 200 EDPs/QIPs will be organised.

f. Mobile workshop

This scheme is to help the Cooperative Societies to attend to the calls of smallscale manufacturers of fibre,

yarn and products for providing assistance to repair equipments, whenever needed.

g. Financial Assistance to Coir units Acquiring Certification Under ISO 9000

This scheme is to encourage the manufacturing units to acquire certification under ISO 9000 to enable them to compete in the international market. 10 units will be assisted during the Ten Year Plan.

h. Award

This scheme is to encourage the workers in coir sector to achieve excellence in production. Awards will be distributed every year to the eligible coir workers for best performance in spinning weaving etc.

Training

The Coir Board plan for development of coir industry envisages establishment of a large number of defibering mills throughout the country for extraction of fibre green/dry husk. There will be substantial increase in the production of coir fibre during the Plan period. The production of fibre in the terminal year is estimated at 5,00,000 tonnes. Similarly production of 3,12,000 tonnes of coir yarn and

1,88,000 tonnes of various coir products is also anticipated. To achieve the production envisaged in the Ten Year Plan adequate skilled workforce has to be positioned.

To meet the requirement of trained manpower, Coir Board through its training, institutions located in Kerala, Tamilnadu, Karnataka, Andhra Pradhesh, Orissa and Assam provides training in spinning coir yarn on motorised ratt and manufacture of various coir products. The existing traditional spinners also require training to operate motorised ratt. Similarly workers have to be given training for manufacture of coir products on handloom/semi automatic looms/powerlooms.

The National Coir Training & Design Centre and four Regional Coir Training & Development centre conduct the Advanced Training Course, Artisans Training Course, Coir Technology Course and Training in spinning coir yarn on motorised ratt.

In order to meet the requirement of spinners for spinning coir yarn on motorised ratt the existing capacity in the National Coir Training & Design Centre Should be doubled so that training can be given to 1200 women per year, Similarly each RCT & DC is to be provided with 25 motorised ratts so that 600 women can be trained in spinning on

motorised ratt in an year. In DCEC/DCPC necessary infrastructural facilities may be provided for imparing training in spinning coir yarn on motorised ratt for 150 women per year.

It is possible for a woman successfully trained by the training institute to impart training to others on her motorised ratt received under the Mahila Coir Yojana. The cooperative societies/voluntary organisation and other institutes engaged in spinning can make use of the service of the trained women for imparting training in spinning coir yarn on motorised ratt. Such cooperatives/voluntary organisations/ institutes may be given an incentive of Rs. 300/- per trainee who passes the prescribed test. During the Ten Year plan period 19,500 women can be trained on motorised ratt by the training institutes of the Board.

The courses like Advanced Training, Artisans Training and Coir Technology being conducted in the training centres of the Board give emphasis on the manufacture of various coir products. Utilising the existing infrastructure.

1. Ladies Hostel for NCT & DC

At present 100 women candidates are undergoing training in spinning coir yarn on motorised ratt. The number of the trainees is to be doubled to meet the requirement of

spinners on motorised ratt. Most of these women hailing from far away rural villages of Kerala need hostel accommodation at National Coir Training and Design Centre, Kalavoor.

2. Construction of workshed for NCT & DC

When the strength of the trainees under the Mahila Coir Yojana is doubled a workshed isneeded to house 100 additional motorised ratts at National Coir Training & Design Centre.

3. Two hundred additional motorised ratts are also necessary in the training centres elsewhere.

4. The staff strength of the training centres will have to be suitably strengthened during the course of the plan.

Setting up of a Demonstration-cum-Production Centre at Dhancheberia, South 24 Parganas West Bengal

West Bengal is one of the important coconut growing States in India, with an annual production of 310.3 million nuts. Eventhough there are a few coir units engaged in the extraction of coir fibre, the utilisation of husk for the coir industry is very low. It is proposed to set up a Demonstration cum-production Centre at Dhancheberia, West Bengal to demonstrate the production and processing of coir fibre into value added products at an estimated cost of Rs. 10 lakhs. The land and building for the Centre would be provided by the State Government.

Strengthening the DCPC, Goa

Goa is one of the important coconut producing states in India. The annual production of coconut in the State is estimated at 113 million nuts. At 50% utilization of coconut husks, there is potential for production of about 4520 metric tonnes per annum. With a view to develop the coir industry in the State, the Industries Department of the Government of Goa had set up a coir production unit at Cundium. The Government of Goa had requested Coir Board to assist them in augmenting the facilities of the unit. It is proposed to augment the facilities of the centre by positioning additional technical staff and installing looms/equipments at a provisional estimate of Rs. 5 lakhs.

Welfare Measures

Coir Industry is employment oriented about half a million poor people in rural sector, of whom 80% are women, depend on coir industry. Coir workers are one of the lowest paid category of workers. Underemployment and unhygienic working conditions are some of the features of the industry. As a result, after certain years of labour, workers are unable to earn their livelihood due to ill health. To mitigate

the hardships of the labour workers, become welfare scheme for implementation by various states has been chalked out.

The scheme proposes assistance to the coir workers who have completed 60 years of age or are not able to work, family pension, assistance to permanently/temporarily disabled, exgratia payment to spouse who met with fatal accident, assistance for funeral expenses, reimbursement of medical expenses, post metric education scholarship/stipend to the children, assistance towards maternity expenses, old age home, group insurance to coir workers etc.

Trade Information Service

Collection of statistics relating to coir industry for better planning and direction of the Industry, it is essential to have up-to-date statistics. With a view to update basic data, studies/surveys on production and consumption of raw materials, number of production units, installed capacity, actual production of coir and coir products, workers engaged in coir activities, wage levels, financial assistance, training facilities, freight rates, minimum export prices, cross currency rates, shipping schedules, handling charges at the port etc., are to be organised. For proper compilation of data, its storage, retrieval, analysis and dissemination as and when needed, a computerised

trade information system has already been organised in a small way in Coir Board. It is proposed to strengthen the system in a phased manner by extending the facilities for financial accounting budgeting, invoice checking, personnel management, showroom accounting etc. It is also proposed to organise a library and a documentation centre with computer linkage to major showrooms & Sales Depots Regional Offices at Bangalore and Visakhapatnam, State Appex Coir Federations and also various departments in the Head Office. Centrally sponsored scheme of cooperativisation in coir industries are

1. Share Capital assistance for revitalisation of existing societies and for formulation of new societies by way of extending loan.
2. Managerial subsidy for providing appointment of paid Secretaries,Business Managers in the primary coir yarn and coir products societies by way of grant.
3. Assistance for purchases, modernisation and renovation of equipments by primary and product societies by way of grant and loan.
4. Marketing Assistance for opening sales outlets for coir by Apex Coir Societies by way of grant.

There are Three types of societies in the Coir Industry.

Primary Societies engaged in the production of coir fibre/yarn, Manufacturing Societies engaged in the production of coir mats and matting and Apex Societies engaged in the marketing of products of primary manufacturing societies.

The Board has recently approved and recommended to the Govt. of India a new scheme for extending financial assistance for development of domestic market viz., Market Development Assistance Scheme. This will replace the existing provision in the Cooperativisation Scheme for assistance to coir cooperatives for marketing and the rebate scheme.

It is proposed to assist manufacturing/Apex Societies to procure transport truck and also to construct godowns for storing raw materials/finished products and to set up mechanised looms for manufacturing mattings of good quality. It is also proposed to assist atleast one major coir manufacturing cooperative society in setting up a modern dye house.

Continuance of the centrally sponsored scheme of cooperativisation with the modifications suggested above in the Ten Year Plan is of paramount importance to strengthen the Cooperative sector which plays a vital role in protecting the

interests of the coir workers and making quality coir products. An outlay of Rs. 136 crores is proposed in the Ten year Plan for the centrally sponsored cooperativisation scheme.

Employment generation

By and large extraction of coir fibre and spinning of coir yarn is a household activity, particularly in Kerala, where coir industry has developed over several centres. The coir workers in the coir extraction and spinning sectors are generally speaking, underemployed. In the decentralised operations, the workers do not have full time work on working days, the hours of work per day being limited to about 4 to 6 hours. The number of working days for artisans in fibre extraction and spinning sector is in the range of 100 to 150 days per year.

The increased production in fibre extraction, spinning and manufacturing sectors of the industry would lead to fuller employment to the under employed coir workers providing work at least 200 days per year. The establishment of the defibering mills, introduction of motorised ratt for spinning under Mahila Coir Yojana and Integrated Coir Development Projects and increase in the installed capacity for manufacturing products like curled coir, rubberised coir, mat, matting etc., would result in additional employment in the coir industry.

supportive measures

In order to implement the schemes for Development of Coir Industry, it is not enough to make provision for finance only. Decentralisation and liberalisation of administration and financial powers are absolutely necessary.

PRODUCTION MANAGEMENT EXT
OF COIR INDUSTRY

CHAPTER III

PRODUCTION MANAGEMENT OF COIR INDUSTRY

3.1 Introduction

The use of natural fibres for erosion control and stabilisation of existing slopes and cuttings in high ways is well known. Various geosynthetic produces are also available in a wide range for geotechnical applications. Thanjavur district is a region of large scale coconut cultivation. The coconut husk is used in cottage industries for production of Coir. Coir because of its high ligrin content is more stiff and durable than other natural fibres and is available in Thanjavur District. One of the purposes of this study is to highlight the production of Coir, from the data collected from the following five major Taluks out of eight taluks in this district. They are Thanjavur, Orathanad, Pattukkottai, Thiruvaiyaru and Peravurani

3.2 Profile of this study

Thanjavur is one of the districts of Tamil Nadu. Here most of the people are engaged in agriculture facilitated by five rivers including river cauvery.

This district has eight taluks, namely Thanjavur, Pattukkottai, Peravurani, Orathanad, Kumbakonam, Thiruvidaimaruthur, Thiruvaiyaru and Papanasam.

The main occupation of the people of this district is agriculture but in course of the time nearly 50% of the peoples

diverted their occupation from agriculture to other occupations especially coconut production due to the poor irrigation facility, non availability of labourers, hike in fertilizer price, low prices of their products and some other reasons.

Thanjavur district is a region of large scale coconut cultivation. The coconut husk is used in cottage industries for the production of fibre and other coir products. The industries offer employment for poor people in rural areas. This study proposes to throw light on the present condition.

The Coir Board guides and assists the coir units in their functioning by means of financial assistance for modernisation market development , construction of loomsheds etc., It regulates the production of coir to achieve maximum profitability by careful co-ordination and assistance.

Still as the coir board by its nature of formation depends upon the grants of five year plan by the Central Government, it lacks autonomy or corporations status to attain greater efficiency and remarkable results. The purpose behind the suggested steps is to ensure maximum utilisation of the available rawmaterial to make the industry more profitable and attractive.

As per the survey of the coir board, Thanjavur in Pattukkottai 2474(1416 male and 1058 female) workers are employed in Orathanad 321(190 male and 131 female) workers are employed in

Thiruvaiyaru198(112 male and 86 female) workers are employed in Peravurani 384(171 male and 213 female) workers employed in Thanjavur 240(121 male and 111 female) workers are employed in the Coir industry to produce nearly 14,252.5 tons of Coir fibre. Above 75% of the fibre is being sold as raw-material.

One of the aims of this study is to highlight the untapped potential in the production of value added fibre products. It is modest and realistic to claim that more than ten fibre extraction units can well be added to the existing 141 units profitability and there by generate more employment. The viability of the above suggestions are to be dealt with in the study.

3.3 Sampling Design and Sampling methods

"All progress is born of inquiry. Doubt is often better than over - confidence, for it leads to inquiry and inquiry leads to investigation" is a famous Hudson maxim in the context of research. In dealing with any research problem, it is often found that data at hand are inadequate and hence it becomes necessary to collect data that are appropriate. One of the ways of collecting the appropriate data which differ considerably in context of money costs, time and other resources is through secondary sources such as published records, related Journals from Coir Board, Thanjavur.

3.4 : A Study based on production of Coir, from the data collected from Orathanad Taluk

In this study, a sophisticated statistical analysis was carried out by applying Cobb.Douglas model is used to examine the production pattern of the Coir to the data collected for ten years from 1991 to 2000. This secondary data is collected from 10 units average production.

Table 3:1.1 Data relating to production of Coir at Orathanad Taluk.

Year	Production (in Tons)	Cost of production (in Rs)	Number of Labours	Number of Man Hr	Profit in Rs
1991	267.1	5,17,793	34	68,000	1,53,513
1992	167.6	5,35,338	36	72,000	1,55,206
1993	168.5	5,46,783	37	74,000	1,57,627
1994	168.8	5,65,732	37	74,000	1,59,383
1995	168.9	5,74,507	39	78,000	1,60,989
1996	169.5	5,95,928	40	80,000	1,62,249
1997	169.8	6,11,273	42	84,000	1,63,685
1998	170.1	6,35,571	43	86,000	1,66,138
1999	170.0	6,46,697	44	88,000	1,67,711
2000	171.1	6,63,953	45	90,000	1,70,047

Source : Primary Data

The general form of Cobb.Dougles model is

$$Y = f(X_1,X_2,X_3,X_4).e^{\epsilon}, \qquad \text{.....1}$$

where $f(X_1,X_2,X_3,X_4) = \beta_0 X_1^{\beta_1} X_2^{\beta_2} X_3^{\beta_3} X_4^{\beta_4}$

Here $\beta_0,\beta_1,\beta_2,\beta_3,\beta_4$ are some constants.

Y : dependent variable taken as production of a Coir (in tons) and X_1,X_2,X_3,X_4 are independant factors such as

X_1 : cost of production, X_2 : number of labours,

X_3 : number of man hours, X_4 : profits for the previous years

This model can do be written as

$$Y^* = \beta_0+\beta_1 I_n X_1+\beta_2 I_n X_2+\beta_3 I_n X_3+\beta_4 I_n X_4+\epsilon. \qquad \text{....2}$$

and ϵ is the error term which is assumed to be normally distributed with

$$E(\epsilon)=0 \text{ and } E(\epsilon'\epsilon)=\sigma^2 I \qquad \text{....3}$$

Here $I_n X_i = \log X_i$ and thus this model 1 reduces to log linear model. The unknown Parameters b_i are estimated by the method of Least Squares, with minimising the error sum of squares. In this method, solving the system of equations with

$$\frac{\partial\, \epsilon'\epsilon}{\partial\, \beta_i} = 0 \text{ gives } \beta = (X^{*1} X^*)^{-1} x^{*1} y \text{ where}$$

$$X^{*1}X^* = \Sigma X_i^2 - \frac{(\Sigma X_i)^2}{n}\ ; X^{*1}y = \Sigma X_i Y_i - \frac{(EX_i)(EY_i)}{n} \qquad \text{....4}$$

Orathanad is one of the important taluk in Thanjavur district. As per 1991 census the population is 2,21,291 (110463 male and 110825 female) Orathanad functions as an individual taluk which is bifuricated[1] from Thanjavur and Pattukkottai Taluk.

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1. Assistant Director of statistics, Thanjavur - District hand book 2000-2001 p-17.

The main occupation of the people of this area is agriculture. Even that depends solely upon irrigations, the water released from Stanley dam (also known as Mettur dam) every year on June 12th which reaches Orathanad area on June 20th. But in recent times because of sinking water level at the dam this routine gets affected. Consequently people find it difficult to concentrate upon agriculture. The lack of alternative occupation has inspired people to approach Coir Board and become entrepreneours in Coir Industry. Thus ten persons have established themselves as Coir Businessmen in Orathanad taluk.

As far as Orathanad is concerned the number of the coir entrepreneours is not in proportion to the population. Based on the data available from 1991to 2000 for 10 years, following objectives are examined in order to verify production process.

Objective 1: To verify whether there is any variation in the production of Coir (Y) due to the explanatory factors such as cost of productions (X_1) number of labours (X_2); number of manhours worked (X_3) and profits of previous periods (X_4).

Objective 2: To check the factorsX_1,X_2,X_3 and X_4 had uniform effect on Y.

Objective 3: To observe whether there is any significant amount of influence of X_i (i=1,2,3,4) on Y.

Objective 4: To identify the existence of auto correlation coefficient (ρ) between explanatory factors.

Objective 5: To check the effect of multicollinearity on estimators of unknown parameters.

In order to study above objectives, the researcher fitted Cobb-Douglas production models and conclusions are drawn with the application of least square techniques, Regression models step-wise regression models; correlation analysis and necessary statistical tests.

Based on the data presented in Table 3:1.1, the estimated production models are:

$$Y = 21.237\ X_1^{0.069}\ X_2^{0.134}\ X_3^{0.138}\ X_4^{0.0075}\ e^{\epsilon} \quad ....5$$

$$Y = 25.462\ X_1^{0.0072}\ X_2^{0.158}\ X_3^{0.144}\ e^{\epsilon} \quad ....6$$

$$Y = 28.624\ X_1^{0.095}\ X_2^{0.166}\ e^{\epsilon} \quad ....7$$

Study based on objective 1: To study variations in production of Coir due to explanatory factors, analysing variance techniques (ANOVA)are applied and necessary conclusions are drawn after framing the suitable Null hypothesis that

$$H_o: m_x = m_x = m_x = m_x = 0 \quad ....8$$

Table 3.1.2 ANOVA table based on the determinants

{ $Y = X_i (i=1,2,3,4)$ }

Source of Variation	df degrees of freedom	SS Sum of Squares	MSS Meansum of Squares	F-ratio
Due to X_i(i=1,2,3,4)	4	0.0000808	0.0000202	12.520
Residual	5	0.000008	0.0000016	-
Total	9	0.000088		

The calculated value of F is 12.5. The table value of F for (4,5) df at 5% level is 5.19; this leads to the rejection of Null hypothesis. Hence there is significant variation in production of Coir in Orathnad Taluk from year by year.

The Coir Industry in Orathanad taluk has not able to gain popularity because of the following reasons. The landless labourers are quite high in number in that taluk with in the district population of 22,05,375, the farmers population in the district is 3,23,026 among these population the farmers are not able to start Coir Industry because of inadequate lands that is minimum fire acres of land is needed. In addition the landlords hardly come forward to start this Coir Industry. The farmer who cultivates the land gets the harvest in three months whereas he who plants coconut trees has to wait for 3 years to get the crop. So, this is one of the reasons why the farmers do not want to start coir industries Regarding the

expenses of cultivation of paddy and coconut plants the former is less expensive than the latter.

The coconut market is low nowadays and also the government does not give any incentive to grow coconut trees. The coirboard gives 25% of subsidy only after the completion of a coir industry; they do not give in the begining; it is a drawback. The important thing in the coir industry is the fibre. It should be cleaned and to be made coir by slow process. So, the period of action is small and wages of workers is low.

In order to identify the individual and combined contributions of explanatory taken X_i(i=1,2,3,4) a step wise regression to change is applied and the results are presented.

Table 3:1.3 : Individual contribution of X_1,X_2,X_3,X_4

Factors	df	F-calculated value	Significant/ Not significant (at 5% level)
Due to X_1,X_2,X_3,X_4	(4,5)	12.625	Significant
Due to X_1 alone	(1,8)	8.4261	Significant
Addition of X_2,X_3,X_4	(3,5)	6.1151	Significant
Due to X_2 alone	(1,8)	7.2231	Significant
Addition of X_1,X_3,X_4	(3,5)	6.1182	Significant
Due to X_3 alone	(1,8)	5.4665	Significant
Addition of X_1,X_2,X_4	(3,5)	7.224	Significant
Due to X_4 alone	(1,8)	4.4110	Not Significant
Addition of X_1,X_2,X_3	(3,5)	8.6541	Signficant

Study based on objective 2:

The net effect of each explanatory factor have been alternatively tested by using t-statistic after framing the suitable NH

$H_o: \beta_i = 0 \quad vi=1,2,3,4$

The test Statistic is

$$t = \frac{\beta_i - \hat{\beta}_i(NH)}{\Sigma e_i^2/n-k \cdot \sqrt{a_{ii}}} \qquad ....9$$

where a_{ii} is the appropriate diagonal element in $(X^{*1}X^{*})^{-1}$ matrix and Σe_i^2 is residual sum of squares.

Table 3.1.4 Estimators; Standard Errors and t-values

Least squares Estimatiors:	$\hat{\beta}_1$=0.069	$\hat{\beta}_2$=−0.134	$\hat{\beta}_3$=0.138	$\hat{\beta}_4$=0.0073
Standard Errors	0.0237	0.0499	0.0590	0.0041
t-values	2.9115	2.6878	2.3381	1.823
% contribution	36%	30%	24%	10%

To verify whether the factors X_i (i=1,2,3,4) had uniform contribution $a_x 2$ statistic is applied where

$$x^2 = \sum_{i=1}^{4} \frac{(0_i - E_i)^2}{E_i} \qquad ....10$$

The statistic follows x^2 distributor with 4-1 = 3 df. Based on above test statistic, the calculated value of X^2 is 14.88. The table value of X^2 at 5% level of significance is 7.815. On comparison

it can be concluded that the contribution of explanatory factors towards Y in not uniform.

Study based on objective 3:

Multiple correlation indicates the strength of relationship between dependant variable 'y) and independant variables X_i (i-1,2,3,4). The formula for calculation of multiple correlaltion coefficient is

$$R2 = \frac{\beta^1 X^{*1} y}{Y^1 Y} = 0.8123$$

The significance of R^2 is tested with the help of F - statistic where

$$F = \frac{R^2/K\text{-}1}{[[1-R^2] / n\text{-}k]}$$

This statistic follows F distribution with (k-1, n-k) df.

Study based on objective 4:

Since the data collected for 10 years from 1991 to 2000, the researcher is interested to verify the effect of time on Coir production. It necessitated to observe the effect of correlation between time periods, called 'Auto Correlation'.

"Auto correlation refers to the relationship not between two different variables but between the successive values of the same variable". When data is collected in accordance with time, it is necessary to observe the effect of successive variables.

A simple case of linear relationship between any two successive values of the disturbance term ε_t is.

$$\varepsilon_t = r\varepsilon_{t-1} + u_t \qquad \text{....11}$$

with $E(u_t) = 0$ and variance of $u_t = \sigma^2 I$.

This is known as the first order auto regressive relationship. The auto correlation coefficeitnt can be calculated with the formula.

$$\rho = \frac{\sum_{t=2}^{n} e_t - e_{t-1}}{\sum_{t=2}^{n} e^2_{t-1}} \qquad \text{....12}$$

where $e_t = Y_t = \hat{\beta}_0 - \hat{\beta}_1 X_{1t} - \hat{\beta}_2 X_{2t} - \hat{\beta}_3 X_{3t} - \hat{\beta}_4 X_{4t}$.

To test the significance of the correlation coefficient, a Durbin-watson test is used after framing the suitable null hypothesis

Ho : r=0

$$\text{The test statistic is } d = \frac{\sum_{t=2}^{n} (e_t - e_{t-1})^2}{\sum_{t=2}^{n} e_t^2} \qquad \text{....13}$$

When d = 2; there is no auto correlation. Whenever 0<d<2, it can be concluded that there exists some degree of positive auto correlation and when adv 2<d<4, there is some degree of negative auto correlation coefficient.

Using above formula the calculated value of auto correlation coefficient is r = −0.3920 and d = 2.7147. Hence it can be concluded that there is least effect of auto correlation on least squares estimates.

Study based on objective 5:

Multicollinearity is not a condition but rather a phenomenon inherent in most relationships. When two explanatory variables are changing in nearly the same way, it becomes extremely difficult to establish the influence of each one regressor on y separately. If the variables in a given function are multi collinear, the estimates of Least - squares pose serious problems. In the presence of multi collinearity the standard errors of the estimates become infinitely large. To explore the effect of multicollinearity a simple correlation matrix based on the determinants (Y : X_1,X_2,X_3,X_4) is calculated.

Table 3:1.5: Correlation Matrix based on (Y : X_1,X_2,X_3,X_4)

	Y	X_1	X_2	X_3	X_4
Y	1				
X_1	0.9520* (8.7966)	1			
X_2	0.9508* (8.6804)	0.9901* (19.951)	1		
X_3	0.9482* (8.4423)	0.9892* (19.0886)	0.9999* (199.9831)	1	
X_4	0.7259* (2.98510	0.6916* (2.7083)	0.7212* (2.9447)	0.7162* (2.9026)	1

Note: The values in parenthesis are corresponding t-values.

* .... Significant

Table 3:1.6 Summary of Results based on model 5

Simple Regression Estimates	: $\hat{b}_1$=0.0814	$\hat{b}_2$=0.0727	$\hat{b}_3$=0.0728	$\hat{b}_4$=0.0383
Least squares Estimates	: $\hat{\beta}_1$=0.069	$\hat{\beta}_2$=-0.134	$\hat{\beta}_3$=0.138	$\hat{\beta}_4$=0.0075
t-values	: 2.9115*	2.6878*	2.3381*	1.823
F-values	: 8.4261*	7.2231*	5.4665*	4.4110
Multiple correlation coefficient			: $\bar{R}^2$ = 0.8123*	
Adjusted multiple correlation coefficient			: $\bar{R}^2$ = 0.7926*	
Autocorrelation coefficient			: $\hat{\rho}$ = — 0.3920	
Existence of multicollinearity			: Exists	

* ... Significant at 5% level

The significances of correlation coefficients are tested with the help of t - test statistic where

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}} \qquad \ldots 14$$

after framing the suitable null hypotheses H_o : ρ=0. Here n denote the number of pairs of observations in a given model. This statistic follows t - distribution with n-2 degrees of freedom.

From the above table, it is clear that the impact of X_1 : cost of production X_2 : number of labours, X_3 : number of man hours and X_4 : profit of previous year had a significant

role on total production. Among these 4 factors; X_1 impact is found to be more significant since its coefficient of determination is

$$r^2 = (0.9520)^2 = 0.9063.$$

There exists high multi collinearity between (X_2,X_3); (X_1,X_2) and (X_1,X_3) since

$$r(X_2,X_3) = 0.9999;\ r(X_1,X_2) = 0.9901$$

and $r(X_1,X_3) = 0.9842$.

From the above discussion following conclusions are drawn.

The factors such as X_1,X_2,X_3 had a significant impact on Y. The effect of X_4: previous year profits on Y is found to be insignificant.

Since $\beta_1+\beta_2+\beta_3+\beta_4 < 1$; this shows that this production processes is running under diminishing returns to scale. An increase in the scale means that all inputs or factors are increased in a given proportion. Increase in the scale thus occurs when all factors or inputs are increased keeping factor proportions unaltered. The study of changes in output as a consequence of changes in the scale forms the subject matter of "returns to scale".

Scientific management of coconut trees will make them more productive and less prone to diseases. The most essential point is the pouring in of more funds for developing Coconut tree areas by the DIC and other Banks. It would help to overcome the present conditions of self-financing by farmers

themselves. Further the entrepreneours have to be motivated, trained and guided. Thirdly welfare measures like insurance cover to the farmers are ought to be improved. Finally and fourthly well planned marketing strategy for finished products should be chalked out and implemented.

This industry is running not on profit motive but it is found to be heriditary industry. (as is evident that X_4 has insignificant impact on Y).

The farmers shift to other professions owing to many factors. Lack of adequate funds instigate them to go for work in the cities and suborban areas especially purchasing and selling vegetables,fruits and flowers. It enables them to become small-scale businessmen with a little borrowed money. They ever work in small hotels and do rickshaw pulling. In this way they shed the rural qualities and become semi-urbanised. Needless to say they undergo traumatic experiences some times. But on the whole they survive the changes and become adapted to city life. They become more status conscious.

Neglecting the insignificant role of X_4, a similar study is carried out with the determinants ($Y : X_1, X_2, X_3$) by using stepwise regression techniques.

The R^2 and $\bar{R}^2$ values reveal that variation to the extent of 81.23 and 79.26 percent in Coir production were caused by these 4 factors alone and remaining $1-R^2$ or $1-R^2$ is the percentage of variation due to other factors.

From the test of multi collinearity, the maximum value of the correlation coefficient is $r(X_2,X_3) = 0.9999$ and minimum value of correlation coefficient is $r(X_1,X_4) = 0.6916$

The Auto Correlation had least effect on y as r=-0.3920.

Table 3.1.7 : Summary of Results based on Model 6

Simple Regression Estimates	: $\hat{b}_1$=0.1213	$\hat{b}_2$=0.1136	$\hat{b}_3$=0 0931
Least squares Estimates	: $\hat{\beta}_1$=0.072	$\hat{\beta}_2$=-0.158	$\hat{\beta}_3$=0.144
t-values	: 3.228*	3.3624*	1.9512
F-values	:10.420*	11.3114*	3.9025
Multiple correlation coefficient		: R^2 = 0.8041*	
Adjusted multiple correlation coefficient		: $\bar{R}^2$ = 0.7645*	
Auto correlation coefficient		: $\hat{\rho}$=-0.1818.	

* Significant at 5% level

Based on the table 3:1.7: following conclusion are drawn

i. Among X_1,X_2,X_3, the effect of X_3 on y is verified insignificant.

ii. The R^2 and R^2 values reveal that variation to the extent of 80.41 percent ad 76.45 percent are due to these three factors alone.

iii. The auto correlation is negative and had no significant impact on least squares estimates.

iv. Among these three explanatory factors, it can be verified that the effect of X_3 on y relative to the effects of X_1 and X_2 is least. (As is evident from t - test and F-test).

Table 3:1.8 : Summary of results based on model 7

Simple Regression Estimates:	$\hat{b}_1 = 0.1552$	$\hat{b}_2=0.1212$
Least squares Estimates	: $\hat{\beta}_1=0.095$	$\hat{\beta}_2=-0.166$
t-values	: 3.8585*	3.3318*
F-values	: 14.889*	11.1010*
Multiple Correlation coefficient	:	$R^2=0.7972$*
Adjusted multiple correllation coefficient	:	$\overline{R}^2=0.7511$*
Autocorrelation coefficient	:	$\hat{\rho}=-0.0995$

* Significant at 5% level

From above study it is clear that the cost of production and labours had significant impact on y. Every year the production of fibres is decreasing, because it depends upon the cost of raw-materials, wages and other administrative expenses. It is purely labour oriented industry because it is difficult to avail the labourer through out the year.

3:2.1 : A study based on production of Coir from the data collected from Pattukkottai Taluk

Pattukkottai is one of the major Taluks in Thanjavur District. Basically the main occupation of the Taluk is agriculture. Due to lack of irrigation facilities the landlords go from paddy production to Coconut production. So Coconut production is the simplest method of cultivation. It does not require much irrigation facilities. So the agriculturist produce coconut tree and they are not interested to waste their husk. Thus they establish the Coir industries with the aid of Coir Board, Thanjavur. The district industrial centre also provide loan facilities to the entrepreneurs through the nationalised banks. At present there are sixty five industries through out the Taluk.

This study based on sixty five units, started in 1991 and ended in 2000. In Tamil Nadu, Pattukkottai is the familiar area for coconut and its husk. The people are interested in this industry for the following reasons.

The industry is given assistance by the Government through the coir board. Raw-materials are available easily. Exemption of taxes from the Government is there. The Government fixes the low tariff for the power consumption. Both male and female labourers are easily available. The workshop training is not necessary for the labourers. Finally it can be started with low investment neglecting all formalities.

Table 3:2.1 Data relating to production of coir at Pattukkottai Taluk

Year	Production in Tons	Cost of Production Rs.	No. of Labours	No of Man hours	Profit Rs.
1991	140.80	392092	25	50,000	153009
1992	135.19	406245	25	50,000	153751
1993	137.80	426931	27	54,000	154261
1994	136.30	427337	28	56,000	152492
1995	140.60	461173	29	58,000	153365
1996	137.44	473527	27	54,000	156681
1997	134.00	467991	30	60,000	156173
1998	137.00	440286	32	64,000	175661
1999	139.80	514196	32	64,000	159785
2000	141.00	521397	34	68,000	161205

Source : Primary Data

If we use Cobb-Dougles production function to study coir industry in Pattukkottai Taluk on the basis of data collected from the entrepreneurs for 10 years (from 1991 to 2000) the estimated models are as under.

$$Y = 5.7783 \quad X_1^{0.0522} X_2^{-0.3239} X_3^{0.3319} X_4^{0.0044} . e^E \quad ....15$$

$$Y = 6.6643 \quad X_1^{0.1102} \quad X_2^{-0.0925} \quad X_3^{0.4412} \quad e^E \quad ....16$$

$$Y = 6.6767 \quad X_1^{0.2231} \quad X_3^{0.5612} \quad e^E \quad ....17$$

Based on sophisticated statistical techniques, the researcher tried to analyse objectives of the study.

Table 3.2.2: ANOVA based on the determinants Y : X_1,X_2,X_3,X_4

SV	df	SS	MSS	F
Due to x_1,x_2,x_3,x_4	4	0.000044	0.000011	9.546
Residual	5	0.000526	0.000105	
Total	9	0.00057		

The calculated value of F is 9.546 at (5,4) df. The table value of F at 5% level for (5,4) df is 6.26. Since calculated value is greater than table value, one can conclude that there is significant variation is production of coir.

Table 3:2.3: Individual and combined contribution of X_i only

Factors	df	f-calculated values	Significant/ Not significant
Due to X_1,X_2,X_3,X_4	(5,4)	9.546	Significant
Due to x_1 alone	(1,9)	6.8251	Significant
Addition of X_2,X_3,X_4	(3,5)	8.8642	Significant
Due to X_2 alone	(1,9)	5.5145	Significant
Addition of X_1,X_3,X_4	(3,5)	10.4653	Significant
Due to X_3 alone	(1,9)	5.5031	Significant
Addition of X_1,X_2,X_4	(3,5)	6.3328	Significant
Due to X_4 alone	(1,9)	3.3362	Not significant
Addition of X_1,X_2,X_3	(3,5)	5.1153	Significant

A correlation matrix based on the determinants ($Y : X_1, X_2, X_3, X_4$) is calculated to analyse the effect of multi collinearity.

	Y	X_1	X_2	X_3	X_4
Y	1				
X_1	0.2722	1			
	(0.80010)				
X_2	0.2229	0.8229	1		
	(0.6407)	(4.096)			
X_3	0.2248	0.8225*	0.9995*	1	
	(0.6525)	(4.0902)	(89.408)		
X_4	0.2034	0.7204*	0.6484*	0.6495*	1
	(0.5876)	(2.9379)	(2.4090)	(2.416)	

Note : The values in the parenthesis are corresponding t-values .

* Significant at 5% level

Table 3: 2.4 Summary of results based on model 15

Simple Regression				
Estimates	:$\hat{b}_1$ = 0.0531	$\hat{b}_2$=0.0387	$\hat{b}$3=0389	$\hat{b}$4=0.0833
Least squares				
Estimates	:$\hat{\beta}_1$=0.0522	$\hat{\beta}_2$=—0.3239	$\hat{\beta}_3$=3319	$\hat{\beta}_4$=0.004
t-values	: 2.7112*	2.4412*	2.4345*	1.8265
F-values	: 6.8251*	5.5145*	5.5031*	3.3362
Multiple Correlation Coefficient			:R^2=0.6842*	
Adjusted multiple correlation coefficient			:$\bar{R}^2$=0.6113*	
Autocorrelation coefficient		: $\hat{\rho}$=-0.1246	d=1.8875	
Existance of multi Collinearity		: Exists between x_2 and x_3		

* Significant at 5% level

From above study, it is clear that the profits of the previous year had least impact on Y. The people are not doing this for profit but to make both ends meet. This industry does not have external support so it continue to remain as a poor industry. Proportionate increase of income is not attained after depleying more resources. The effectiveness of the workforce does not multiply in respect of increasing men and materials. Thus, the diminishing returns is a law to be accepted. Since the untrained, unsystamatic non-scientific methods of management are used, the production leads to the law of diminishing returns.

The percentage contribution of X_1, X_2, X_3 and X_4 are respecting 32 percent 27 percent 26 percent and 15 percen only.

Here the contribution of X_1 is high because of the following reasons. The Raw-materials are not available. The transportation of raw-materials are high even if the resource is cheaply available. The pests affecting the coconut trees need considerable amount of investment to eradicate them. The fluctuations in the market rate of the copra is also important.

Neglecting the insignificant contribution of X_4, by applying stepwise regression techniques with determinants ($Y:X_1, X_2, Xs_3$), the study was carried out and results are drawn

Table 3:2.5: Summary of results based on the model 16

Simple Regression			
Estimates	: $\hat{b}_1 = 0.1232$	$\hat{b}_2$=0.0123	$\hat{b}_3$=0.4842
Least squares			
Estimates	: $\hat{\beta}_1$=0.1102	$\hat{\beta}_2$=– 0.0925	$\hat{\beta}_3$=0.4412
t-values	: 2.3115*	2.1081	2.5820*
F-values	: 8.4632*	4.4425	6.6642*
Multiple Correlation coefficient		: R^2= 0.6464*	
Adjusted multiple correlation coefficient		: $\bar{R}^2$ = 0.6242*	
Autocorrelation coefficient		: $\hat{\rho}$=–0.1162 d=1.9512	

* Significant at 5% level

From table the following conclusions are drawn. In the event of getting low salary the labourers are not interested to come forward to work in this industry. Moreover they have no job security. They are not protected by labour law. If the labourer works in the field he gets a better salary compared to that in the coir industry. Since the entrepreneur is getting low profit he is not able to give fair salary to the labourer. It is also considered a small scale industry. This industry also meets problems of labour.

In ($Y : X_1, X_2, X_3$) study the effect of X_2 is verified as insignificant. This is evident with application of t of F - test.

These three factors alone explain 64.65% of variation in production of coir. This is evident from R^2. The auto correlation coefficient is least and negative and had no significant effect on estimatiors.

Table 3:2.6: Summary of results based on the model 17

Simple Regression Estimates	: $\hat{b}_1 = 0.3315$	$\hat{b}_3$=0.6568
Least squares Estimates	: $\hat{\beta}_1$=0.2231	$\hat{\beta}_2$=0.5612
t-values	: 3.1512*	4.4652*
F-values	: 10.4481*	18.6648*
Multiple Correlation coefficient		: R^2=0.6115*
Adjusted multiple correlation coefficient		: $\bar{R}^2$=0.5990*
Autocorrelation Coefficient	: $\hat{\rho} = -0.1120$; d=1.995	

* Significant at 5% level

Following conclusion are drawn from above studies.

In this studies X_1 and X_3 had significant contribution on Y . The maintenance of Coconut trees and getting yield from them does not involve much extra investment or effort. The cost of production of Coconut is insignificant because they are mostly grown in the bunds of fields, no special efforts is taken to water them and they mostly withstand the natural disasters like cyclone and food. Thus the planting alone is the most significant work and the further growth is more or less natural and automatic. Thus the cost of production of Coconut trees in Thiruvaiyaru taluk is insignificant.

3.3: A study based on production of coir from the data collected from Thiruvaiyaru:

In 1977 the Thiruvaiyaru taluk was given birth with 89 villages which are mainly dependent on agriculture paddy cultivation and banana plantation. As the land is a delta area the soil is ideally suitable for the above said purposes. This religious pocket has many po;ular temples and the people have culture according to it one of the consequences of dependance on agriculture is coconut plantation. All the parts of there trees are made use of by these agriculturists especially when they are away from paddy sowing and harvesting. Thus till date five Coir industries have come up in this region.

Table 3:3.1 Data relating to production of coir at Thiruvaiyaru Taluk

Year	Production (in Tons)	Cost of Production (in Rs.)	No. of Labours	No of Man hours	Profit (in Rs.)
1992	119.20	401248	27	54,000	92208
1993	126.68	435767	31	62,000	109722
1994	127.74	448136	33	66,000	108219
1995	129.44	465713	33	66,000	110908
1996	130.60	474880	35	70,000	81125
1997	131.88	488023	35	70,000	119366
1998	133.12	505048	36	72,000	121603
1999	133.80	523767	38	76,000	123373
2000	137.06	553446	39	78,000	127196

Source : Primary Data

In order to observe brown fibre coir production pattern in this taluk, Cobb-Douglas production functions is fitted into the collected data. The estimated models are

$$Y=0.7978\ X_1^{0.0196}\ X_2^{-0.1362}\ X_3^{0.4943}\ X_4^{-0.016}\ e^E \quad ....18$$

$$Y=0.8234\ X_1^{0.082}\ X_2^{-0.0845}\ X_3^{0.5152}\ e^E \quad ....19$$

and

$$Y=0.9915\ X_2^{0.8586}\ X_3^{0.6614}\ .\ e^E \quad ....20$$

To study the objectives analysis of variance techniques and stepwise regression methods are used; t-tests and F-tests are suitably applied and results are presented in tables :

Table 3:3.2 : ANOVA based on the determinants (Y:X_1,X_2,X_3,X_4)

SV	df	SS	MSS	F
Due to x_1,x_2,x_3,x_4	4	0.002360	0.00059	29.50
Residual	4	0.000080	0.00002	
Total	8	0.002444		

Here the calculated value of F is 29.50. The table value of F for (4,4) df at 5% level of significance is 6.39. On comparison it can be concluded that there is significant variation in production of Coir due to explanatory factors.

Table 3:3.3 : Relating to combined and individual contributions of X_i towards Y

Factors	df	F-calculated value	Significant/ Not significant
Due to X_1,X_2,X_3,X_4	(4,4)	29.5000	Significant
Due toX_1 alone	(1,8)	08.8123	Significant
Addition of X_2,X_3,X_4	(3,5)	12.2228	Significant
Due to X_2 alone	(1,8)	20.1212	Significant
Addition of X_1,X_3,X_4	(3,5)	10.5560	Significant
Due to X_3 alone	(1,8)	18.4652	Significant
Addition of X_1,X_2,X_4	(3,5)	08.4141	Significant
Due to X_4 alone	(1,8)	04.4611	Not significant
Addition of X_1,X_2,X_3	(3,5)	13.4664	Significant

To study the effect of multicollinearity, the correlation matrix based on ($Y : X_1, X_2, X_3, X_4$) is calculated and necessary conclusion are drawn from it:

Table 3:3.4: Correlation matrix based on ($Y : X_1, X_2, X_3, X_4$)

	Y	X_1	X_2	X_3	X_4
Y	1				
X_1	0.9662*	1			
	(9.9164)				
X_2	0.9853*	0.9772*	1		
	(15.2599)	(12.1772)			
X_3	0.9842*	0.977*	0.9998*	1	
	(14.7068)	(12.2049)	(132.2702)		
X_4	0.7241*	0.7169*	0.7641*	0.7651*	1
	(2.7778)	(2.7207)	(3.1339)	(3.1438)	

Note : Values in Parenthesis are corresponding t-value

* Significant at 5% level

Table 3:3.5 : Summary of results based on the model 18

Simple Regression				
Estimates	: $\hat{b}_1 = 0.4465$	$\hat{b}_2$=0.3543	$\hat{b}_3$=0.3541	$\hat{b}_4$=0.1681
Least squares				
Estimates	: $\hat{\beta}_1$=0.0196	$\hat{\beta}_2$=-0.1362	$\hat{\beta}_3$=0.4943	$\hat{\beta}_4$= -0.016
t-values	: 2.9770*	4.5050*	4.3022*	2.1122
F-values	:8.8123*	20.1212*	18.4652*	4.4611
Multiple correlation coefficient			: R^2=0.7851*	
Adjusted multiple correlation coefficient			:$\bar{R}^2$ =0.6995*	
Auto correlation coefficient			: $\hat{\rho}$=— 0.7876 d=3.3835	
Existance of multicollinearity			: Exists	

* Significant at 5% level

Thus regarding Thiruvaiyaru Taluk, the opinions based on the table are :

Thiruvaiyaru taluk mainly concentrates or paddy and banana plantation because of irrigation facilities from Grand Anaicut. Secondly coconut trees need little space which makes possible to plant them in the bunds of fields. Thirdly the farmers prefer to sell tender coconuts instead of allowing them to become mature coconuts suitable for oil extraction and selling in the market for cooking purposes.

Creating awareness among the farmers about the benefits of coconut production which can go upto the level of export of first quality fibre to other countries is essential at this stage.

The percentage contribution of X_1,X_2,X_3 and X_4 are 17 percent 39 percent 35 percent and 9 percent respectively, X_2 contribution is high and X_4 contribution is low.

In most of the rural areas, the labourers are engaged in field work during the seasons of paddy and banana cultivation. During the rest of the time they are employed, by the landlords either on humanitarian grounds or on business motive, in the coir industry run by them. It solves the unemployment problem in any particular season eventhough round the year engagement may not be as profitable as it should be to the worker.

Table 3:3.6: Summary of results based on the model 19

Simple Regression			
Estimates	: $\hat{b}_1 = 0.4842$	$\hat{b}_2$=0.4041	$\hat{b}_3$=0.3992
Least squares Estimates	: $\hat{\beta}_1$=0.082	$\hat{\beta}_2$=-0.00845	$\hat{\beta}_3$=0.5152
t-values	: 2.1810	3.5570*	3.2483*
F-values	: 4.7562	12.6518*	10.5512*
Multiple correlation coefficient		: $R^2 = 0.7725$*	
Adjusted multiple correlation coefficient		: $\overline{R}^2$=0.6882*	
Autocorrelation coefficient		: $\hat{\rho} = -0.7474$ d=3.4022	
Existance of multicollinearity		: Exists	

* Significant at 5% level

From the above table the cost of production (X_1) is insignificant because of availability of labour and less hours needed for the tending of the coconut trees. Compared to the requirement of labours, man hours, the cost of production is very low. Raw materials are available in their own coconut trees which are located in the same area. So, there is no transportation cost of raw-materials. The entrepreneurs use their agricultural labourers for production of coir fibre also. They are not paid any extra remunaration for involving there in the process of coir production. Thus the cost of production is relatively insignificant.

Table 3:3.7 : Summary of results based on the model 20

Simple Regression Estimates	: $\hat{b}_2$=0.5512	$\hat{b}_3$=0.4346
Least squares estimates	: $\hat{\beta}_2$=0.8586	$\hat{\beta}_3$=0.6614
t-values	: 4.0441*	3.8270*
F-values	: 16.3545*	14.6462*
Multiple correlation coefficient		: R^2=0.7472*
Adjusted multiple correlation coefficient		: $\bar{R}^2$=0.6513*
Autocorrelation coefficient	: $\hat{\rho} = -0.7271$ d = −3.5014	

* Significant at 5% level

3.7 A Study based on production of Coir from the data Collected from Peravurani Taluk.

The Peravurani area stands as the most fertile one as far as coconut cultivation is concerned. The ideal climatic condition and of favourable soil are the reasons behind the heavy prodution of coconut. But the coconuts are sold without separating the husk. So the coir industry gets only a little material for the production of coir. Thus only 12 coir industries are in existence in Peravurani area. This has been so for the past 10 years. The husk of the coconuts sold to other areas are separated and used as fuel. True to the maxim that finished articles are more profitable than selling raw materials the Peravurani stands to lose much profit. Thus the level of income is low.

Table 3:4.1 Data relating to production of coir at Peravurani Taluk

Year	Production in Tons	Cost of Production Rs.	No. of Labours	No of Man hours	Profit Rs.
1991	124.15	380501	80	60,000	116971
1992	127.99	407596	32	64,000	117722
1993	129.30	415308	34	68,000	120231
1994	130.60	432072	35	70,000	121608
1995	131.50	448256	36	72,000	124833
1996	132.34	461170	38	76,000	127555
1997	133.40	481415	37	74,000	129458
1998	133.55	489524	38	76,000	131248
1999	134.67	508545	39	78,000	133496
2000	136.57	527526	40	80,000	135411

Source : Primary Data

Based on the data collected for 10 years, the es imated production models are

$$Y = 72.1107\ X_1^{0.2754}\ X_2^{0.169}\ X_3^{-0.0244}\ X_4^{-0.2833}\ e^E \quad ....21$$

$$Y = 74.265\ X_1^{0.1512}\ X_2^{0.4664}\ X_3^{-0.0121}\ e^E \quad ....22$$

$$Y = 76.885\ X_2^{1.2342}\ X_3^{0.1154}\ e^E \quad ....23$$

The objectives are analysed with the help of suitable statistical techniques.

Table 3:4.2 : ANOVA based on the determinants

($Y : X_1, X_2, X_3, X_4$)

SV	df	SS	MSS	F
Due to X_1, X_2, X_3, X_4	4	0.00125	0.0003125	65.1042
Residual	5	0.000024	0.0000048	
Total	9	0.001274		

The calculated value of F is 65.1042. The table value of F for (4,5) df at 5% level of significance is 5.19. Since calculated value is greater than table value, it can be confirmed that there is significant variation in the brown fibre coir production.

Table 3:4.3: individual and combined contributions of X_i on Y

Factors	df	f-calculated values	Significant/ Not significant
Due to X_1, X_2, X_3, X_4	(4,5)	65.1042	Significant
Due to X_1 alone	(1,9)	12.4652	Significant
Addition of X_2, X_3, X_4	(3,5)	10.1132	Significant
Due to X_2 alone	(1,9)	22.3850	Significant
Addition of X_1, X_3, X_4	(3,5)	07.2581	Significant
Due to X_3 alone	(1,9)	16.4646	Significant
Addition of X_1, X_2, X_4	(3,5)	08.8932	Significant
Due to X_4 alone	(1,9)	04.1232	Not significant
Addition of X_1, X_2, X_3	(3,5)	10.5656	Significant

The correlation matrix based on $(Y:X_1,X_2,X_3,X_4)$ is calculated to verify the effect of multicollinearity and based on this necessary conclusion are drawn.

Table 3:4.4: Correlation Matrix

	Y	X_1	X_2	X_3	X_4
Y	1				
X_1	0.9776*	1			
	(13.1374)				
X_2	0.9845*	0.9656*	1		
	(15.8769)	(10.5029)			
X_3	0.9803*	0.9564*	0.9950*	1	
	(14.0379)	(9.2621)	(28.1778)		
X_4	0.9510*	0.9903*	0.9415*	0.9256*	1
	(8.6995)	(20.1587)	(7.9016)	(6.9166)	

Note : The values in paranthesis are corresponding t-values

* Significant at 5% level

Table 3:4.5: Summary of results based on the model 21

Simple Regression				
Estimates	: $\hat{b}_1$=0.2562	$\hat{b}_2$=0.2951	$\hat{b}_3$=0.2923	$\hat{b}_4$=0.4920
Least squares				
Estimates	: $\hat{b}_1$=0.2754	$\hat{b}_2$=0.1698	$\hat{b}_3$=-0.0244	$\hat{b}_4$=-0.2833
t-values	: 3.5656*	4.7313*	4.0580*	2.0305
F-values	:12.4652*	22.385*	16.4646*	4.1232
Multiple correlation coefficient				: R^2=0.8923
Adjusted multiple correlation coefficient				: $\bar{R}^2$ =0.7885
Auto correlation coefficient			: $\hat{\rho}$ = — 0.7276	d= — 3.3835
Existance of multicollinearity : Exists				

* Significant at 5% level

Following conclusions are drawn from table 3:4.5

In Peravurani coir fibre production is a traditional industry with less amount of investment. The workers are engaged all round the year by the landlords for the purposes like making thatches even. The capital invested by the entrepreneurs is Rs. 19,15,000 whereas the bank loan availed is Rs. 7,40,000 and the subsidy for the same is Rs. 6,15,000 provided by the Coir Board. So the total investment is Rs. 32,70,000 for 12 industries in the Peravurani Taluk.

On comparison of the data one finds that the profit in the coir industry is gradually decreasing in the Peravurani Taluk. Entrepreneurs and workers get directed from coir fibre production by the whole-sale selling of coconut without separating the husk.

Here the contribution of X_1,X_2,X_3 and X_4 are 23 percent 40 percent 29 percent and 8 percent, x_2 contribution is high and X_4 contribution is low.

While the cast of labour is high the number of working hours is less and eventually the profit is considerably low. Almost all the labourers under a particular landlord are tied to his system of business to prevent searching of employment elsewhere. So the cost of labour is high because of the above said considerations besides the moral responsibility of the landlord. There it is invesely proportional to the previous year profit which is low.

Neglecting the insignificant effect of X_4 ar analysis is made with the factors (Y : X_1,X_2,X_3)

Table 3:4.6: Summary of results based on the model 22

Simple Regression			
Estimates	: $\hat{b}_1$=0.3113	$\hat{b}_2$=0.3021	$\hat{b}_3$=0.2686
Least squares Estimates	: $\hat{\beta}_1$=0.1512	$\hat{\beta}_2$=0.4664	$\hat{\beta}_3$=– 0.0121
t-values	: 2.118	3.5571*	3.4008*
F-values	: 4.4848	12.6532*	11.5652*
Multiple correlation coefficient	: R^2=0.8824*		
Adjusted multiple correlation coefficient	: $\overline{R}^2$=0.7676*		
Autocorrelation coefficient	: $\hat{\rho}$= – 0.8524 d=– 3.4546		

* Significant at 5% level

In the study of factors X_1, X_2 and X_3 it is verified that X_1 had insignificant impact on y. Cost of production is cheap in Peravurani Taluk because of availability of workers, low wages and thirdly no chance of transportation of raw materials as they are available in their own coconut trees. Thus the 'Y' - production of coir fibre is done without much exercise for body and mind ie. casually.

Table 3:4.7: Summary of results based on the model 23

Simple Regression Estimates	: $\hat{b}_2$=0.3385	$\hat{b}_3$=0.3021
Least squares Estimates	: $\hat{\beta}_2$=1.2342	$\hat{\beta}_3$=0.1154
t-values	: 3.9912*	3.7522*
F-values	: 15.8562*	13.2311*
Multiple correlation coefficient		: R^2=0.8622*
Adjusted multiple correlation coefficient		: $\bar{R}^2$=0.7575*
Autocorrelation coefficient	: $\hat{\rho}$ =−0.8812 d=3.5512	

* Significant at 5% level

From above discussion, following conclusion are drawn:

Any agricultural work depends mainly upon the availability of labour. If they are earnest the work result will be satisfactory. Thus the number of hours they spend on work is also related to the result (Y). In the Peravurani area the workers are mostly a homogenous unit and their actual working hours are uniformly maintained by the landlord. Hence X_2 and X_3 have significant contribution on Y.

3.8: Study based on production of Coir from the data Collected from Thanjavur Taluk.

The Coir industry in Thanjavur taluk is moderate in success. The villages from nearby villages enter Thanjavur city to seek employment in coir and other industries. So the labour problem is not acute. At the same time many finished products are made from coir and sold mainly in the local markets. Thus the coir industry survives due to availability of labour but does not perform in the peak level.

Table 3:5.1 Data relating to production of coir at Thanjavur Taluk

Year	Production in Tons	Cost of Production in Rs.	No. of Labours	No of Man hours	Profit in Rs.
1994	110.30	358018	24	48,000	112867
1995	111.10	367579	25	50,000	115544
1996	111.51	382887	26	52,000	116592
1997	111.61	392096	27	54,000	118474
1998	112.30	405077	27	54,000	122931
1999	113.20	417817	27	54,000	122231
2000	115.00	436458	28	56,000	104586

Source : Primary Data

Based on the data collected from 1994 tc 2000 ie for 7 years Cobb-Douglas models postulated for dc tailed study are:

$$Y = 12.023\ X_1^{0.2638}\ X_2^{-0.0028}\ X_3^{-0.0901}\ x_4^{-0.0152}\ e^E \quad ....24$$

$$Y = 13.1164\ X_1^{0.3132}\ X_2^{-0.0030}\ X_3\ e^E \text{ and} \quad ....25$$

$$Y = 13.665\ X_1^{0.3646}\ X_2^{0.1142}\ e^E \quad ....26$$

The objectives of the research are analysed with the application of statistical techniques.

Table 3: 5.2:ANOVA based on the determinants (Y: X_1,X_2,X_3,X_4)

SV	df	SS	MSS	F
Due to X_1,X_2,X_3,X_4	4	0.0002	0.00005	5.000
Residual	2	0.00002	0.00001	
Total	6	0.00022		

As the calculated value of F is less than table value, one can conclude that there is no significant variation in the production of coir in this study unit.

Table 3:5.3 : individual andCombined contributions of X_i by using step wise Regression techniques

Factors	df	f-calculated values	Significant/ Not significant
Due to X_1,X_2,X_3,X_4	(4,2)	5.00	Not Significant
Due to X_1 alone	(1,5)	7.7642	Significant
Addition of X_2,X_3,X_4	(3,2)	6.8441	Significant
Due to X_2 alone	(1,5)	6.6844	Significant
Addition of X_1,X_3,X_4	(3,2)	5.5225	Not Significant
Due to X_3 alone	(1,5)	6.6432	Significant
Addition of X_1,X_2,X_4	(3,2)	4.8185	Not Significant
Due to X_4 alone	(1,5)	4.4164	Not significant
Addition of X_1,X_2,X_3	(3,2)	5.5253	Not Significant

The Correlation matrix based on $(Y:X_1,X_2,X_3,X_4)$ is estimatted to identify the effect of multicollinearity and necessary conclusions are drawn.

Table 3:5.4 Correlation Matrix based on ($Y:X_1,X_2,X_3,X_4$)

	Y	X_1	X_2	X_3	X_4
Y	1				
X_1	0.9557*	1			
	(7.2604)				
X_2	0.8501*	0.9404*	1		
	(3.6096)	(0.1835)			
X_3	0.8486*	0.9385*	0.9992*	1	
	(3.5868)	(6.0779)	(55.8690)		
X_4	0.9197*	0.9033*	0.9305*	0.9372*	1
	(5.2380)	(4.7082)	(5.6804)	(6.0084)	

Note : The values in the parenthesis are corresponding t-values.

* Significant at 5% level

Table 3:5.5: Summary of results based on the model 24

Simple Regression				
Estimates	: $\hat{b}_1$=0.187	$\hat{b}_2$=0.2207	$\hat{b}_3$=0.2211	$\hat{b}_4$=0.1937
Least squares				
Estimates	: $\hat{\beta}_1$=0.2638	$\hat{\beta}_2$=-0.0028	$\hat{\beta}_3$=-0.0901	$\hat{\beta}_4$=-0.0152
t-values	: 2.7864*	2.5862*	2.4815*	2.1112
F-values	: 7.7642 *	6.6844*	6.6432*	4.4164
Multiple correlation coefficient				:R^2=0.6632*
Adjusted multiple correlation coefficient				: $\bar{R}^2$=0.5918*
Autocorrelation coefficient		: $\hat{\rho}$=-0.0534	d=2.093	
Existance of multi collinearity		: Exists		

From the above summary of results, in Thanjavur Taluk the previous year profits are insignificant due to the consumers therefore have been shifting from coir prodicts to other synthetic and more expensive products . The decline in the demand for coir is more the result of an income effect than price effect. The coir fibre is an inferior commodity than the other synthetic commodities. So the previous year profits are insignificant.

The contribution of X_1,X_2,X_3,X_4 towards are 37,27,25 and 11 percents respectively, cost of production is having high contribution and the previous year profit is having low contribution. The number of coconut trees

in Thanjavur taluk is quite few as the lands are mainly used for paddy cultivation. So naturally the coconut husk is transported from areas like pattukkottai, Peravurani and Orathanad which is about 50 Kms away from the Coir factories located in Thanjavur city. Moreover the site value is high as Thanjavur is the District headquartres which restricts starting of new factories. Then the spectrum of job opportunities for illiterate and migrant labourers is high. So they go for higher wages which they can get in service sector. Moreover the paddy cultivation draws workers away industries like coir. As per the table X_1 has high contribution of 37% and X_4 has low contribution of only 11%.

Neglecting the insignificant effect of X_4 on Y_1 a similar analysis was carried out with the factors $Y : X_1, X_2, X_3$ and results are furnished below.

Table 3:5.6: Summary of results based on the model 25

Simple Regression			
Estimates	: $\hat{b}_1$=0.2232	$\hat{b}_2$=0.1185	$\hat{b}_3$=0.0702
Least squares Estimates	: $\hat{b}_1$=0.3132	$\hat{b}_2$=–0.0030	$\hat{b}_3$=– 0.0801
t-values	: 2.8562*	2.5542*	1.1932
F-values	: 8.5615*	7.6645*	3.3231
Multiple correlation coefficient		: R^2=0.6464*	
Adjusted multiple correlation coefficient		: $\overline{R}^2$=0.5812*	
Autocorrelation coefficient		: $\hat{\rho}$= – 0.0423 d=2.1142	

* Significant at 5% level

From the table 3:5.6 the following conclusions are drawn, though cost of labour (X_2) is high X_3 is not qualitatively high. Involvement in the coir work is low because of low wages. Then they go for more profitable and sophisticated works. Thus the residue workers come to fibre work only as a stepping stone. As they are not motivated they show poor performance. Thus X_3 is not effective. Among three explanatory factors the contribution of X_3 is verified least.

Table 3:5.7: Summary of results based on the model 26

Simple Regression Estimates	: $\hat{b}_1$=0.3314	$\hat{b}_2$=0.2231
Least squares Estimates	: $\hat{\beta}_1$=0.3646	$\hat{\beta}_2$=0.1142
t-values	: 3.1152*	2.8581*
F-values	: 10.4285*	8.8841*
Multiple correlation coefficient	: R^2=0.6362*	
Adjusted multiple correlation coefficient	: $\bar{R}^2$=0.5771*	
Autocorrelation coefficient	: $\hat{\rho}$=–0.0325	d=2.2241

* Significant at 5% level

Factors under study / STUDY AREA	Cost of production = x_1	No of labours = x_2	No of Man hours = x_3	Profit of Previous year = x_4
1. ORATHANAD (10 years data; 10 units)	Significant	Significant	---	---
2. PATTUKKOTTAI (10 years data 65 units)	Significant	---	Significant	---
3. PERAVURANI (10 years data for 12 industries)	---	Significant	Significant	---
4. THIRUVAIYARU (9year data 5 units)	---	Significant	Significant	---
5. THANJAVUR (7 years data with 8 units)	Significant	Significant	---	---

% Contribution of Factors / STUDY AREA	X_1	X_2	X_3	X_4	Ho: All factors had uniform effect on y :	
					x^2 - value :	Conclusion
(i) ORATHANAD	36	30	24	10	14.88	Reject NH
(ii) PATTUKKOTTAI	36	21	30	13	12.24	Reject NH
(iii) PERAVURANI	23	40	29	8	21.36	Reject NH
(iv) THIRUVAIYARU	17	39	35	9	24.64	Reject NH
(v) THANJAVUR	37	27	25	11	13.76	Reject NH

FINANCIAL MANAGEMENT IN COIR INDUSTRY

CHAPTER - IV

FINANCIAL MANAGEMENT IN COIR INDUSTRIES

Financial Management is one of the most serious problems of every industry and growing organisation. Even small establishments are to deal with financial management.

Finance functions and financial management is drawing increasingly more and more attention of all those who are responsible for running financial administration and establishments. It is because financial resources are always limited and programmes are always expanding and ambitions also are increasing.

Finance is concerned with cash and as such under finance everything that takes place in an enterprise is covered because without cash there cannot be any transaction in any enterprise. Finance function deals with procurement of funds and their effective utilisation in the business.

Financial functions in a good business establishment cover, financial planning, forecasting the sources of income and expenditure, the method of raising funds, control cover the finances and responsibility for bringing performance closer to targets.

In every establishment there are bound to be finance functions and non-finance functionss. The non-finance function

In every establishment there are bound to be finance functions and non-finance functionss. The non-finance function include the problems connected with the participation of labour in management, the procedure of recruitment, laying down qualification for different categories of persons needed for the establishments, matters dealing with advertisement techniques and so on.

Finance functions can be classified into executive finance functions and incidental finance functions. The executive finance function may decide about the extent to which assets of the industry are to be locked up. It should keep a watch over financial performance. The incidental finance function is responsible for implementation of decisions taken by the executive.

Financial Management

It is that managerial activity which is concerned with the planning and controlling of the firms financial resources. Three important activities of the business industries are : Finance, Production and Marketing. The firm acquires funds from the sources called investors. The funds so secured, when invested are called investments.

The firm expects to recover returns on investments overtime and periodically distributes returns to investors.[1]

The main aim of business is to maximise the owner's economic welfare.[2] Capital required for a business can be classified under two main categories viz., fixed capital and working capital.

Every business needs funds for two purposes for its establishment and to carry out its day to day operations. Long term funds are required to create production facilities through purchases of fixed assets such as plant, machinery, land, building, furniture etc., Investments in these assets represent that part of firms capital which is blocked on a permanent or fixed basis and is called fixed capital.[3] Funds are also needed for short-term purposes for the purchase of raw-materials payment of wages and other day-to-day expenses. These funds are known as working capital.

In this study, the Coir Industries raise their long-term funds through own investments and borrowing funds from Nationalised Banks. The Coir Board is also provide subsidies, some industries raise their funds from partners.

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1. Financial Management - I.M. Pande p-1
2. Financial Management - S.K. Guptha & R.K. Sharma p-1.10
3. Ibid p- 1.14

Fixed Capital which is used in only once, when the entrepreneurs decide to start a business they may invest the huge amount for purchasing of Land (most of the entrepreneurs they use their own land (ie) unfertile lands) buildings construction of loomsheds and purchasing of machineries. They invest 80% of the total amount of investment to fixed capital.

Once invested in the fixed capital, there is no need to invest subsequently. It is a fixed one. The Coir Industries of Thanjavur district are maintained in all the capitals. The researcher consider only five taluks of Thanjavur District, respectively Thanjavur, Pattukkottai, Orathanad, Peravurani and Thiruvaiyaru Taluks.

An entrepreneur of Coir Industries can decide to start a Coir Industry. He must invest minimum 5 lakhs for all the expenses such as purchasing of Land, construction of loom sheds, erection of machineries. Along with these three expenditure of power also will be included.

In the very begining they invest their own capital for all the requirements. Nearly 50% of the entrepreneurs having their own lands. Most of the lands are not helpful to the landlords so they can decide to start a coir industry. In this district, 75% of the entrepreneurs

borrowing funds from nearest Nationalised Banks through the District Industrial Centre, which is located in the Headquaarters of District. Nationalised Banks help the Coir Industries for purchasing of machineries. The following 3 machines are needed for the production of brown fibre namely firster, Turbo and filing press. Sometimes the banks provide loans for purchasing of Tractors which is reduced for transportation cost of husks.

After construction of loomsheds and erection of machinery the Coir Board inspect the industries then sanction nearly 25 percentage of subsidies to the entrepreneurs.

The Coir board has given a detailed distribution of amount of assistance and has directed the entrepreneurs to avail the subsidy for new units. The following are the allotment of assistance for different processes.

1. Fibre extraction unit	Rs. 1,50,000
2. Rope Making Unit	Rs. 40,000
3. Corridor Mat/Frame Unit	Rs. 40,000
4. Mats and Matting Unit	Rs. 60,000
5. Spinning Unit (Traditional Unit)	Rs 40,000

6. Motorised ratt coir yarn spinning unit (minimum 10 ratts)	1,00,000
7. Mechanized (Automatic) yarn spinning unit	1,50,000
8. Curling Unit	1,00,000
9. Rubberised Coir Unit	1,50,000
10. Semi automatic loom unit	1,50,000
11. Powerloom matting unit	1,50,000
12. Coir pith processing unit	1,00,000
13. Rubber backing / edging unit	1,50,000
14. Foam/latex backing unit	1,50,000
15. Power generator set/diesel engine	50,000
16. Coir ply/matting board unit	1,50,000
17. Needled felt unit	1,50,000

The entrepreneur should get a clearance from Coir Board for starting a new unit. For getting this clearance he has to prepare the following documents in three copies and approach the General Manager, District Industries Centre.

1. Coir Board Foam II - Statement of entrepreneur in tending to set up a new unit in the brown fibre sector.

2. Form - II Registration of Industrial Establishment with R & L Rule 1950.
3. Postal order for Rs. 1/- Drawn in favour of Secretary, Coir Board, Kochi.
4. Document in proof of ownership of and (copy) attested by a Notary Public. (in English version).
5. Copy of SSI registration Certificate.
6. Quotation of Machinery.
7. Plan and estimate of the building.

Two copies of the above documents have to be submitted to the General Manager, District industrial Centres, for forwarding to Coir Board with recommendations. Simultaneously the entrepreneur has to send a copy to Coir Board directly. The General Manager may forward one copy to the Regional Officer after scrutiny, keeping one copy in their file. After the receipt of this paper at the Regional office, Bangalore, the paper will be scrutinised and clearance will be issued to the entrepreneurs with a copy to General Manager, District Industrial Centre, instructing the unit holder to start the work and commissioning of the machinery and report to Regional Officer for conducting a joint inspection of the unit.[4]

After the receipt of the paper from the entrepreneur for joint inspection, the Regional Officer will conduct a joint inspection with a team consisting of Regional Coir Development

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4. Special Report - published by Regional Coir Officer-Pollachi. p-1,2

Officer, Extension Service Officer and an Officer not below the Rank of an Assistant Director from the District Industries Centre. During the time of joint inspection the machinery and building will be inspected according to the specifications of Coir Board and the checklist will be prepared for the sanction of financial assistance from coir board to the concerned eligible unit.

The coir board has given a detailed distribution of amount of assistance and has directed the entrepreneurs to avail the subsidy for existing unit. The following are the allotment of assistance for different processes.

Amount of Assistance:

1.	Fibre Extraction unit	50,000
2.	Rope Unit	20,000
3.	Corridor mat unit/Frame mat unit	20,000
4.	Mats&Matting unit	30,000
5.	Spinning unit(Traditional ratt)	20,000
6.	Motorised ratt coir yarn spinning unit (minimum 10 ratts)	50,000
7.	Mechanized(automatic) yarn spinning unit	50,000
8.	Curling unit	50,000
9.	Rubberised Coir unit	50,000
10.	Semi automatic loom unit	50,000
11.	Powerloom matting unit	50,000

12.	Coir pith processing unit	50,000
13.	Rubber backing / edging unit	50,000
14.	Foam/latex backing unit	50,000
15.	Coir ply/matting board unit	50,000
16.	Needle felt unit	50,000

The unit should have valid Coir Board Registration. The procedure for adopting assistance will be same as detailed in the assistance for new unit in which/instead of form II, he has to apply in form I and need not apply for Coir Board registration again. Additions will be incorporated in the existing Registration Certificate Book. Renovation assistance under this scheme is available to the units who are replacing the old machinaries with new one.[5]

Working capital is the life blood and nerve centre of a business. No business can be run successfully without an adequate amount of working capital. Working capital refers to that part of a firm's capital which is employted for short-term operations. i.e. purchase of raw-materials, and for meeting the day-to-day expenditure on salaries, wages, rents and advertising cost etc., Adequate working capital ensures regular supply of raw-materials, continuous production and effective utilisation of fixed assets. The concern is able to

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5. Ibid p-3,4

generate more profits and ensure higher return to its owners. Every business concern should have adequate working capital for its smooth functioning.

In Thanjavur district, all the coir industries are maintain the gross working capital. In a broad sense, the term working capital refers to the gross working capital. This represents the amount of funds invested in current assets. Under the gross concept. The working capital is equal to total current assets.[6] In this chapter, the researcher analyses, the relationship between the working capital and profit. Working capital is relevant to the profit.

When current asset is properly utilised, the firm can achieve their goals. In Pattukkottai taluk, the entrepreneurs face so many problems, because of very high land value in this taluk. The cost of labour is also high. Some time recuritment of personnel is a difficult as most of the agricultural labourers are not interested to work in coir industry. The few who are interested to work in the coir industries demand more wages for their work. In the viewpoint of the employees the wages of coir industries is lower than the agricultural labour cost.

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6. Management accounting - R. Ramachandran, R. Srinivasan p - 149.

In Peravurani taluk also faces the same problems as the working men prefer fishing in the sea as it is a coastal area. Despite the fact that husk for coir industries is available at a cheap rate, the entrepreneur's need much working capital to attract the men who go for fishing. But in other areas which are under the study the management of working capital is easily done as the workers are economically backward.

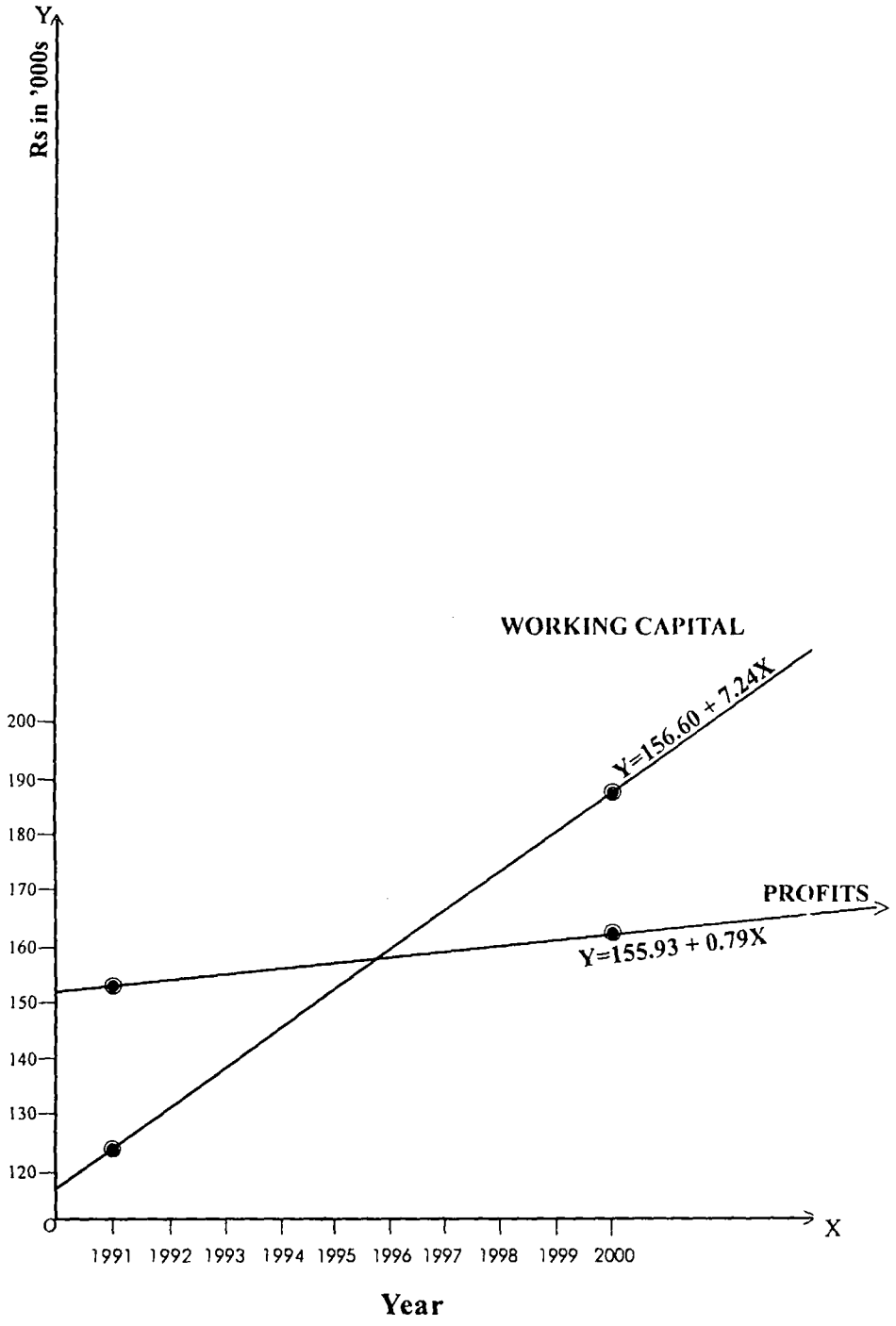
The researcher understands that the proper management of working capital is easily done through effective handling of wages, raw-materials, transport cost, etc... This is so in most of the areas under study. The following tables and charts cleary indicate the relationship between profits and working capital.

Table 4.1 Working Capital & Profits of Coir Industries in Pattukkottai Taluk

Year	Working Capital in Rs. '000 (Average)	Profits in Rs. '000(Average)
1991	115.454	152.871
1992	123.979	153.748
1993	141.675	154.206
1994	156.911	154.953
1995	156.989	155.728
1996	165.899	156.709
1997	171.112	151.302
1998	174.210	158.758
1999	175.555	159.859
2000	184.210	161.166

Source: Primary Data

TREND LINE SHOWING WORKING CAPITAL AND PROFITS OF COIR INDUSTRIES IN PATTUKKOTTAI TALUK



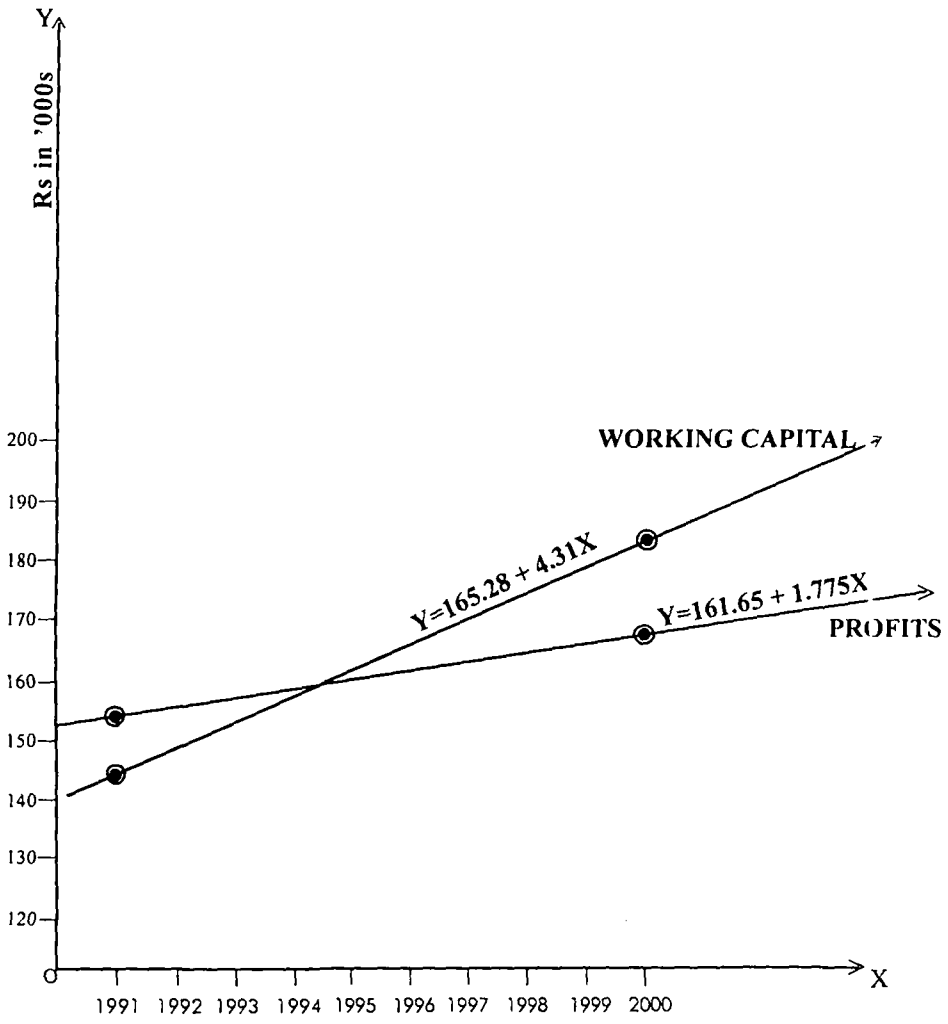
In Pattukkottai Taluk 65 Coir firm are functioning. The working capital requirements of all there industries are increasing very rapidly. The diagram shows years in X axis and amount (in '000s) in Y axis. The percentage increase in working capital is significant one in many ways. In 1991, the working capital requirement was Rs. 1,15,454. But, in 2000 Rs. 1,84,210 was the working capital. In the ten year, the working capital was increased Rs. 68,754. Meantime, between 1995 and 1996, the profit and working capital were equal. These firm have earned almost a fixed rate profit every year. There was not significant increase in profit in 1991 and 2000. Hearby competitive may be the reason for this fact. It is sure that if the same thing continues further, survival will be a threat to these firm.

Table 4.2 Working Capital & Profits of Coir Industries in Orathanad Taluk

Year	Working Capital in Rs. '000 (Average)	Profits in Rs. '000(Average)
1991	147.741	153.513
1992	148.911	155.206
1993	151.294	157.627
1994	157.711	159.381
1995	165.947	160.989
1996	168.005	162.249
1997	171.411	163.685
1998	180.245	166.138
1999	179.271	167.711
2000	182.281	170.047

Source : Primary Data

TREND LINE SHOWING WORKING CAPITAL AND PROFITS OF COIR INDUSTRIES IN ORATHANAD TALUK



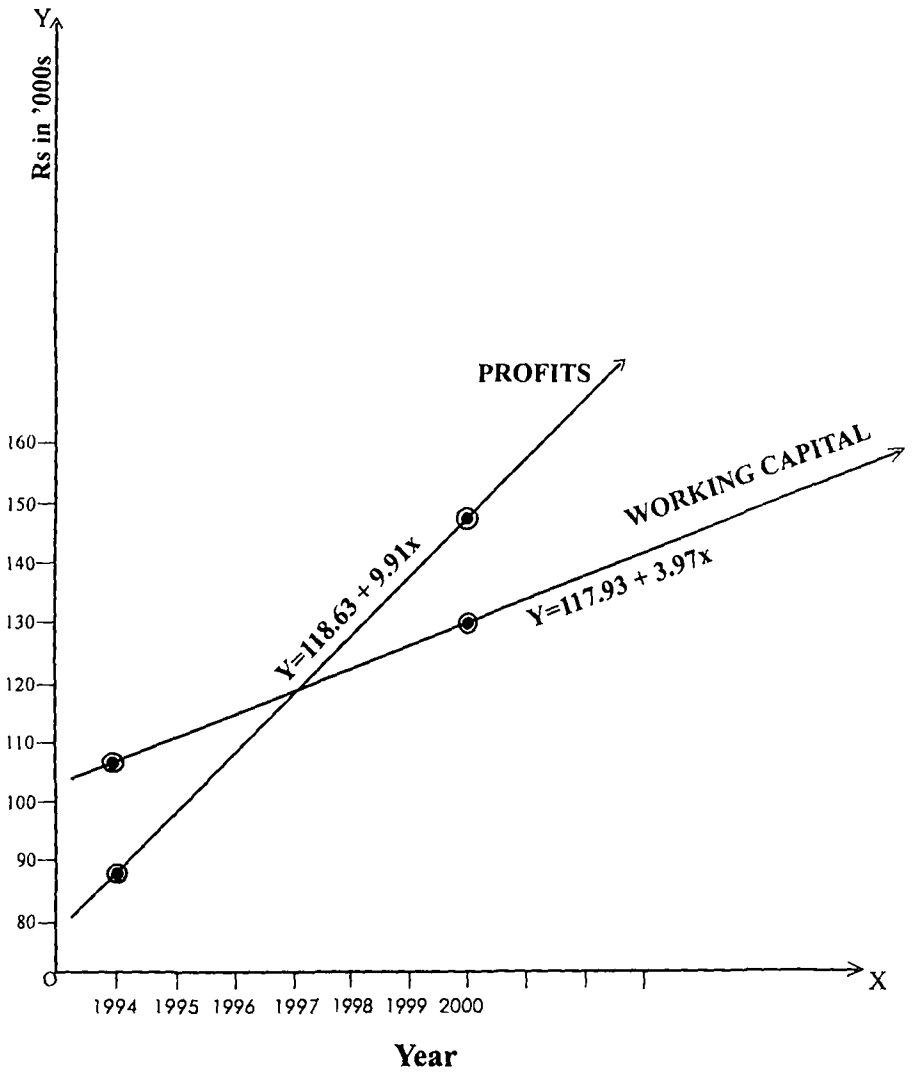
Trends of working capital and profits of Coir units in Orathanad Taluk are drawn as trend lives in the above diagram. From the diagram, it is clear that these firms have sally, the amount of working capital and profits are very close to each other. After 1994, working capital requirement are more than the amount of profit. This tendency disclosen the poor management of working capital of these industries. Very low profit margin was kept by these firm. So, the firm can not get maximum profit in these human.

Table 4.3 Working Capital & Profits of Coir Industries in Thanjavur Taluk

Year	Working Capital (Rs. in '000-Average)	Profits Rs. in '000(Average)
1994	101.749	112.867
1995	111.845	115.543
1996	115.411	116.592
1997	121.749	118.474
1998	121.975	120.431
1999	124.840	121.935
2000	127.945	124.586

Source : Primary Data

TREND LINE SHOWING WORKING CAPITAL AND PROFITS OF COIR INDUSTRIES IN THANJAVUR TALUK



The above diagram shows trend lines for working capital and profit of coir industries in Thanjavur Taluk. X axis shows 7 years (1994-2000) and the amount (in 000s) is placed in Y axis. The diagram clearly explains the increasing tendency of working capital and profit.

In the case of working capital, its rate of increase is less while comparing the rate of increase of profit. The requirement for working capital has increased every year slowly. Cost of raw materials, wages, electricity changes, administrative expenses, transportation expenses etc., are the main items in working capital. In 1994, the total amount of working capital of all coir industries was Rs. 1,01,749 and in 2000, Rs. 1,27,945. This increase is normal in all industries. Efficient working capital management may check the further requirement in future.

On the other hand, the rate of increase in profit in significant one. In 1994, the total profit of all coir industries in Thanjavur Taluk was Rs. 1,12,867. In 2000, the profit was Rs. 1,24,586.

But, in 1999, the amount of working capital is equal to the profit, upto this level the performance of coir units are not so satisfactory. Less profit margin kept the profit under the working capital. Later, the profit was greater than the working capital. This is the rate condition to the coir industries.

Table 4.4 Working Capital & Profits of Coir Industries in Peravurani Taluk

Year	Working Capital Rs. in '000 (Average)	Profits Rs. in '000(Average)
1991	94.000	100.843
1992	97.000	121.241
1993	98.745	123.445
1994	99.955	125.983
1995	102.754	128.616
1996	104.810	131.305
1997	107.175	132.956
1998	111.415	133.544
1999	113.575	137.121
2000	115.749	138.946

Source: Primary Data.

Peravurani Taluk has coir units. Their working capital requirements and profit are shown in the above daigram in the form of trend lines. From this table and chart, it is understood that the requirement of working capital is under the control of the industries. Every year the need for working capital has increased slightly due to increase in price level. In 1991, the working capital was Rs. 94,000 and in 2000it was Rs. 1,15,749. There is Rs. 21,749 increase in working capital. This is a slight increase. So, it is clear that the coir industries have managed the working capital very efficiently. Likewise , the firm have a slow and steady increase in profit margin. Each and every year, profit has increased considerably. This increase protects the firms in the competitive market. These units are in a late position aid in safe conditions.

TREND LINE SHOWING WORKING CAPITAL AND PROFITS OF COIR INDUSTRIES IN PERAVURANI TALUK

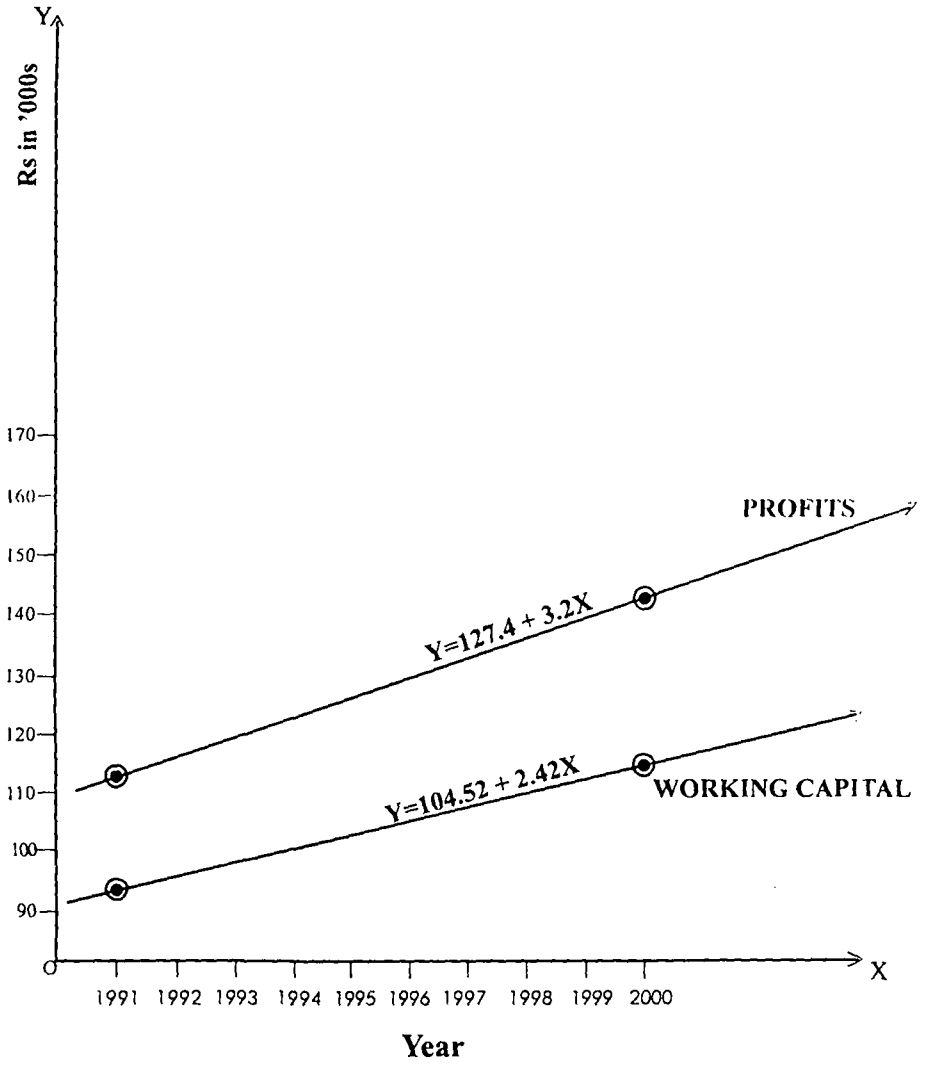
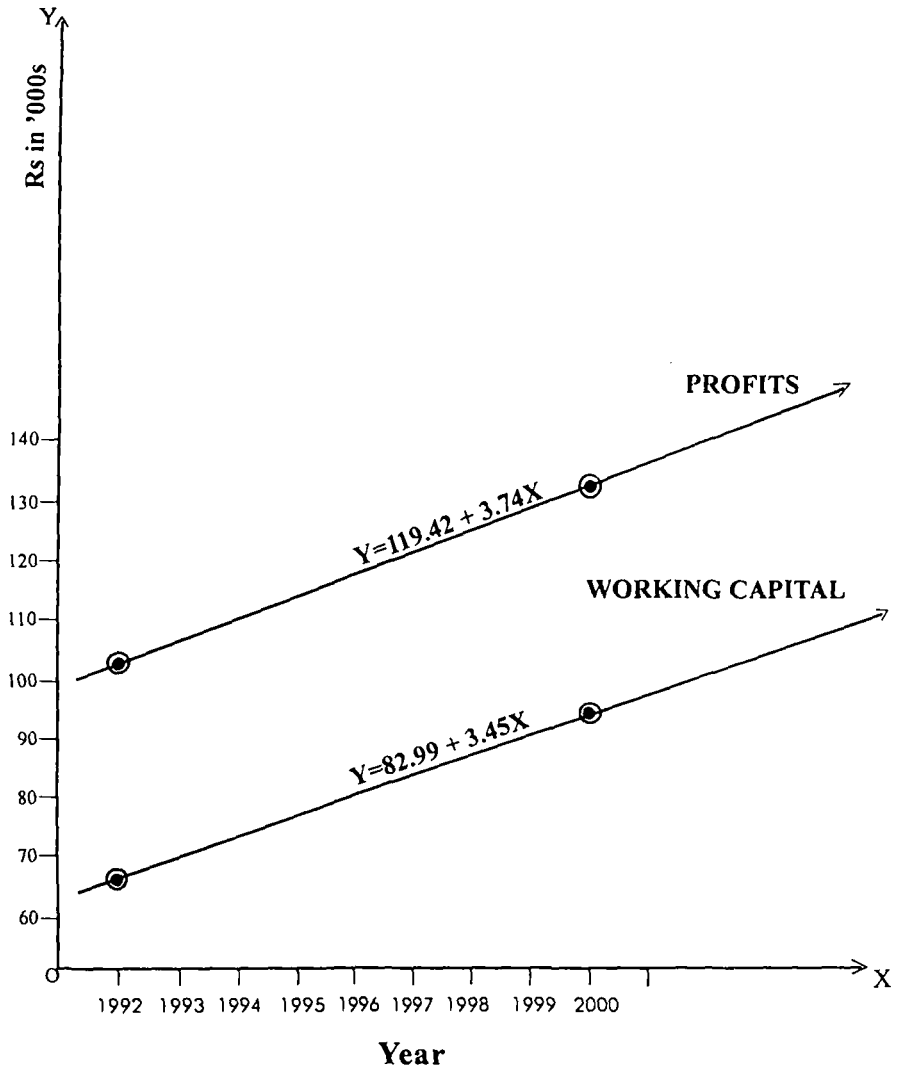


Table 4.5 Working Capital & Profits of Coir Industries in Thiruvaiyaru Taluk

Year	Working Capital Rs. in '000 (Average)	Profits Rs. in '000(Average)
1992	65.000	92.208
1993	74.000	106.868
1994	75.750	108.219
1995	80.245	110.908
1996	84.345	115.027
1997	87.245	119.366
1998	90.145	121.603
1999	91.240	123.373
2000	94.990	127.196

Source: Primary Data.

TREND LINE SHOWING WORKING CAPITAL AND PROFITS OF COIR INDUSTRIES IN THIRUVAIYARU TALUK



The above diagram shows trend lines for working capital and profit of coir industries in Thiruvaiyaru Taluk. In X axis, years are shown and in Y axis rupees (in '000s) are disclosed. Nine years (1992-2000) are taken into consideration for this research/analysis.

From this diagram, it is clear that the requirement for working capital and quantum of profit increase every year. The percentage increase in working capital and profit are the importent points in this regard.

Every year price level increases. So, the coir industries have to sepend more amount for operating expenses cost of raw materials, labour charges, electricity expenses, transportation costs etc., are the major items in working capital. The coir industries allocate a certain amount for thin purpose every year.

In the case of profit position, increasing tendency of profit shows success of coir industries in Thiruvaiyaru Taluk. The industries have a wide marketing network in this district. So, they are in a better position in their business.

In 1992, the total profits earned by these industries were Rs. 92,208. In 2000, the profits were Rs. 1,27,196. Increasing the profit every year make the industries as successful firms.

Table 4.6 Showing Subsidies from Coir Board

List of Taluks	Number of coir industries	Total Subsidies (Rs. in '000)
Pattukkottai	65	3996.00
Orathanad	10	290.00
Peravurani	12	615.00
Thiruvaiyaru	5	135.00
Thanjavur	8	182.50
Total	100	5318.50

Source : Secondary data from coir board, Thanjavur.

This survey was taken from 1991 to 2000, five taluks from eight of Thanajvur District are taken in to account for our analysis. The eight taluks are Thanjavur, Thiruvaiyaru, Orathanad, Pattukkottai, Peravurani, Kumbakonam, Papanasam and Thiruvidaimaruthur. The last three are left out as, these areas concentrate on Paddy production and their participation in coir production is negligible. The table 4.6 shows the amount of subsidies from the coir board to the entrepreneurs. In Pattukkottai taluk there are 65 coir industries. They have received Rs.39,96,000 as subsidy from the coir board. But Orathanad, Peravurani, Thiruvaiyaru and Thanjavur Taluks have obtained only Rs.13,22,500 compared with Pattukkottai Taluk the amount is very low. The reason is that due to heavy coconut production in Pattukkottai Taluk, there are 65 coir fibre production units are well functioning, whereas in other four taluks namely Orathanad, Peravurani, Thiruvaiyuar and Thanjavur Taluk, put together we have only 35 coir fibre production units.

Table: 4.7 Showing Sources of Investment in Thanjavur District

List of Taluks	Own Capital including subsidy from coir board (Rs. in '000s)	Loans from Nationalised Banks (Rs. in '000s)	Total Rs in '000s
Pattukkottai	18405.00 (82%)	3996(18%)	22401.00
Orathanad	1590.00 (81%)	370(19%)	1960.00
Peravurani	2530.00 (77%)	740(23%)	3270.00
Thiruvaiyaru	615.00 (75%)	205(25%)	820.00
Thanjavur	957.50 (69%)	435(31%)	1392.50
Total	24097.50	5746.00	29843.50

Source: Primary Data.

The table 4.7 is showing the sources of investment in Thanjavur District according to the survey taken from 1991 to 2000. Among the five taluks in Thanjavur District, Pattukkotai taluk stands first in entrepreneur's capital investment (Rs.1,84,05,000) since the copra sales are high, they are investing huge amount as the percentage of capital is 82 where as loans from nationalised anks only 18% (Rs.39,96,000), this table figure clearly shows that the entrepreneur's are more interest in copra production and sales. Orathanad taluk is also nearly following the same investments at getting the loans from nationalised banks (19%) so, this taluks entrepreneur's

are also having much interest in the copra production and sales. When we consider about the third taluk Peravurani, the investment of entrepreneur's stands in third rank wereas the nationalised banks loans is high than the previours two taluks.

Thiruvaiyaru and Thanjavur taluks are getting low investment than the previous taluks whereas the bank loan is highest percentage in these two taluks than the previous three taluks, this is because these two taluks are in the cauvery basin. The entrepreneurs are not only doing the copra business, but also interested in agriculture especially Paddy production, Sugarcane production and Banana plants production. We can understand clearly that these examples are showing the entrepreneur's are doing two industry in these areas. Even we can say they were concentrating Paddy production previously. Since Thanjavur is in the headquarters the bank loan is in highest percentage (31%).

Table: 4.8 Showing Contribution of total investment of Coir Industries in Thanjavur District

List of Taluks	Total Number of Industries	Total investment (Rs. in '000)
Pattukkottai	65	22401.00(75%)
Orathanad	10	1960.00(6.5%)
Peravurani	12	3270.00(11%)
Thiruvaiyaru	5	820.00(2.75%)
Thanjavur	8	1392.50(4.75%)

Source : Primary Data

The table number 4.8 is showing contribution of total investment of coir industries in Thanjavur District. The survey was taken between 1991 and 2000. The total investment of coir industries in Pattukkottai taluk is Rs.2,24,01,000 the percentage of investment is 75 from the total investment (Rs.2,98,43,500) of 100 coir industries, the number of coir industries are 65 in Pattukkottai Taluk.

In orathanad taluk the total investment of coir industries is Rs.19,60,000 the percentage of total investment is 6.5 of 100 coir industries. When we compare the coir industries in Pattukkottai to Orathanad, this taluk has only 10 industries , the number is low because the farmers in Orathanad taluk are not more interested than the Pattukkottai taluk farmers. They are also doing this industries as herititary business. The Pattukkottai taluk farmers are economically sound than the Orathanad taluk farmers.

The investment of Peravurani taluk is Rs.32,70,000, the percentage of total investment is 11. The table shows Peravurani has got 12 industries, it is higher than the Orathand. In this taluk the land value is higher than Orathand.

In Thiruvaiyaru taluk the total investment is Rs.8,00,000 the percentage of total investment is only 2.75%. This taluk has got only 5 industries. As we already quoated

in the table 4.7 that the farmers are not concentrating in coir industry than agriculture. The reason is that they are in the cauvery basin.

Thanjavur taluk has got 8 industries, the total investment of this taluk is Rs.13,92,500, the percentage of total investment is 4.75 we can say this is higher than the Thiruvaiyaru Taluk. The farmers in Thanjavur taluk are concentrating not only in agriculture but also in coir industry. This table shows clearly the difference.

Table: 4.9 Showing distribution of Total investment in Thanjavur District.

List of Taluks	Land value (Rs. in '000)	Building value (Rs. in '000	Machineries value (Rs. in '000)	Total (Rs in '000)
Pattukkottai	3876	3250	15275.00	22401.00
Orathanad	470	550	940.00	1960.00
Peravurani	1090	495	1685.00	3270.00
Thiruvaiyaru	210	374	236 .00	820.00
Thanjavur	320	471	601.50	392.50
Total	5966	5140	18737.50	29843.50

The table number 4.9 shows the distribution of total investments in Thanjaur District. The survey was taken between 1991 and 2000. According to this table the land value among the five taluks, the land value of Pattukkottai taluk is the highest (Rs38,76,000) Peravurani is in the second rank, Orathanad, is in the Third rank and Thanjavur and Thiruvaiyaru are in the fourth and fifth rank respectively.

The building value among the five taluks Pattukkottai taluk stands first, Orathanad taluk second, Peravurani taluk third, Thanjavur taluk fourth and Thiruvaiyaru taluk is the fifth and last.

As regarding the machinery value Pattukkottai taluk stand first, Peravurani taluk is the second, orathanad taluk is the third, Thanjavur is the fourth and Thiruvaiyaru taluk is the last.

The land value and the building value in Pattukkottai and Peravurani taluks are higher than the other taluks. This is because the coir industries are higher than the other taluks.

The Orathanad taluk, Thanjavur taluk and Thiruvaiyaru taluks have low land value and building value than the other two taluks, because the coir industries are not flourishing in these taluks and also we can say that the farmers in Thanjavur and Thiruvaiyaru taluks are concentrating in two industries, the coir and agriculture respectively.

PERSONNEL MANAGEMENT OF COIR INDUSTRY

CHAPTER - V

PERSONNEL MANAGEMENT OF COIR INDUSTRIES

Human resource utilisation cannot be put in a formula of output versus input as the individual highly complex and inter-personnel relationship still more complex besides the group dynamics and organisational ideology.[1]

Personnel management is a comparatively new and rapidly growing profession in India. Employees 'on the job' inter personal relations is the primary concern of the personnel management. The main objective of an efficient personnel department should be supportive to the growth of an organisation. A manager achieves results through the people by the people and for the people. According to this statement, every manager in the organisation is a personnel man and his objectives, aspirations, interests, fears, decisions, intelligence, creativity, innovation, loyalty, devotion, needs and the zeal to work in the organisation determine the ultimate success or failure of an organisation. Motivating employees, cultivating the desired habits, development of internal drive, inspiration, encouragement among the people are the job of personnel executives. Personnel management is that part of the management which is concerned with the human

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1. Personnel Management - K.K. Ahuja p-5.
   Kalyani Publishers, New Delhi.

constituents of an organisation. Personnel management is a science and art, which control labour and is also known by various names such as labour management, man-management, personnel administration, industrial relations or industrial management.[2]

Personnel management calls for indepth study of various subjects like Man power, Planning, Recruitment, Training and Development, Incentives and Reward systems, Labour Laws, Industrial Safety, Behavioural science, Group Dynamics, Wage and Salary Administration, Management of change. Impact of Environment of Personnel Policies, Grievance Handling, Participative Management, Problems in Labour Management Relations including disciplinary measures, Trade Unions, Collective Bargaining, Labour Legislation, Labour welfare and social security etc.,

The aim of Personnel Management is to make the optimum use of Personnel Power of the employees and to get co-operation from one and all. Personnel Management is an approach an established system, a technique and a philosophy of management.

E.F.H. Breech defines, "Personnel Management is that part of Management process which is primarily concerned with the human constituents of an organisation".

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2. Ibid p-7.

The importance of harmonious labour relations for the success of modern industries need not be over emphasized. The term 'labour-management relations or 'labour relations' has been variously defined by different writers to suit their own needs and circumstances, in each country. Dale yoder defines it as "relationship between managements and employees and their organizations, that characterize or grow out of employment".[4]

The importance of labour relations has greatly increased in recent years with the change in the concepts of 'labour' and 'labour relations'. It is a co-operative venture and service to the community is its ultimate end. Each agent of production capital, management or labour contributed in its own towards its success. Capital and management without labour would be sterile, and labour without capital management world be disorganized, illequiped and ineffective. However, of all the factors of productions, 'labour' is the most important factor and utilization of other factors, largely, depends on the proper utilization of time and energy on the part of workers. In fact workers are human beings capable of shouldering responsibilities, extending co-operation and achieving objectives. They have their own attributes and aspirations, which, if properly handled, lead to the success of each and every labour in Coir

4. Dale Yoder, Personnel Management and Industrial Relations, Prentice Hall (P) Ltd., New Delhi, 1972, p-5-6

Industries. Again, labour is no more an unorganized mass of ignorant and unconscious workers ready to obey the arbitrary and discretionary dictates of the employers/managements.

The labour should be given all possible facilities, both with and outside the Coir Industries. In the early days of industrialization provision of those amenities was not considered important or essential. But with the formation of trade Unions and emergency of leadership, pressure was brought on the employers every now and then to provide all possible amenities. "In our industrial centers nothing is cheaper than human life, nothing dearer than good living and sanitary conditions".[5]

Since the majority of the workers are unskilled, illiterate and undemanding and possess only weak bargaining power due to this unorganized sector, no adequate consideration is paid to the issue pertaining to their health, education, etc., though the coir industrial workers get remunerations substantially lower than the agriculture workers, they are not able to show high productivity efficiency because of several factors like unhealthy surroundings, insanitary conditions, unhelpful attitude of employees etc. These factors can be removed only by providing better welfare measures.

The major objectives of the Coir Industries are to promote rapid economic growth and achieve self-reliance in

5. Chirayil, T.J., workers Involvement in the Management of Public Enterprises, centre for public sector studies, New Delhi, 1984, p-97.

nation building, to generate surplus resources through efficient methods of production and productivity for further investment, to bring the fruits of Science and Technology to the people and keep abreast of the advances, vital for nation building, though we have achieved many advancements in the field of technology like Industrial Technology and all, it is in the hands of the entrepreneurs to make use of the labourers and let them use such technologies in a way of useful manner to the people and the coir industry because using innovation is ingenius for every industry, the gestation period of which is long and justice and equitable distribution of wealth through employment, appropriate wages and eencouragement to labours through welfare benefits.

This chapter is a detailed study on the Personnel Management of Coir Industry. An attempt has been made to analyse the labour relations in Coir Industries. The findings of the study would certainly benefit those who desire to become executives and who are interested in "how to get and keep good people working for them".

In order to avoid these pitfalls, this study highlights the need for creation and maintenance of good relations between the workers and the management and which is the very basis for the development of Coir Industries in Thanjavur District. As a result of this, inturn, it seeks to gain co-operation among

the labourers and the entrepreneurs in the field of promoting a higher level production and sale of coir products. "Industrial Relations is the designation of a whole field of relationships that exist because of the necessary collaboration of men and women in the employment process of industry".[6]

The main aspects of industrial relations are Development of healthy labour-management relations, Maintenance of industrial peace and avoidance of industrial strike and Development and growth of Industrial democracy.[7]

Wage and Salary administration refers to the establishment implementation of sound policies and practices of employee compensation. "Wage and salary administration having its aim to attempt to harmonise the various elements in wages. In its attempts, it must consider the interests of employer, employees, unions, various publics and government, and in arriving at specific wages, it must make sure that consideration has been given to psychological, social and ethical as well as economic elements in such wages".[8] The central concepts relating to financial inducements to work for the business enterprise falls into three categories i) Pay

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6. Yoder, Dale, Personnel Management and Industrial Relations, Prentice Hall (p) Ltd., New Delhi, 1972, p-5.
7. Mamoria, C.B., Personnel Management, Himalaya Publishing House, Bombay, 1982, p-759.
8. Belcher, David W, Wage and Salary Administration, Prentice-Hall, INC, 1962, p-16.

Policies, systems and procedures, ii) Compensation of salaried employees and iii) Compensation of hourly employees.[9]

Worker's participation in Management was one of the principal methods by which social justice could be secured for workers, peace ensured in industry, and productivity increased. But in this coir industries they are not following these schemes. Because most of the owners of coir industries are not doing the same in a large scale level. They'll aim at minimum labourers and maximum production. So, it is not needful for them to have a co-operation or full participation of the labourer with the management.

The Industrial Disputes Act, 1947, sec 2(k) defines the term industrial dispute as "any dispute or difference between employers and employers or between employers and workmen, or between workemen and workmen, which is connected with the employment or with the conditions of labour of any person".[10]

Therefore, the differences of opinion between employees and workmen in regard to employment, non-employment, terms of employment with the conditions of labour where the contesting parties are directly and substantially interested in maintaining their respective conditions constitute the subject-matter of an industrial dispute.

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9. McFarland, Dalton E., Personnel Management Theory and Practice. The Macmillan Company Collier-Macmillan Ltd., London, 1968, p-587.
10. Ahuja, K.K Advanced Personnel Management, Kalyani Publishers, New Delhi, 1988, p-296

Thus, the machinery for settlement of industrial disputes provides the parties scope and means for satisfactory disposal of disputes by peaceful means.

Labour Unionism is the result of the growth of modern industrial establishments involving the employment of a large number of workers in conditions which make them helpless in bargaining individually for their terms of contract. But in coir industries this kind of unionism is not operated and for the entrepreneurs it isn't must as they got a tendency to change their attitude day by day.

Though this kind of unionism is not in practice in Coir Industries, it'll be useful in one way or other to the labourers indirectly. Trade Unions are association of workers against emploitation by the employers and also to improve the conditions of workers.

Trade unions play a very important role in Industrial relations. Trade unions try to secure better wages for the workers in keeping with the prevailing standards and the cost of living in the country. It strives for better working conditions for the workers by procuring shorter work hours, leave with pay, social security benefits and other welfare facilities. Trade unions fight tooth and nail against retrenchment and rationalization of plans. It often takes up welfare measures such as guiding, counseling and helping the workers in their difficulties.

To meet its basic obligation to employees, management must compensate them equitably for their contribution to the success of the organization. To ensure this, there are several fundamental elements which must be met, other than just strict adherence to the legal requirement. Management must ensure an equitable internal wage and salary structure. This implies that the duties and responsibilities of each job within a plant or company are correctly compared with the others and that employees are paid accordingly. An equitable external structure must also be ensured which means that compensations should be competititve with the pay for similar jobs in other companies in the same industry or geographical area. Equally as important, a wage and salary structure should be constructed in such a manner that it provides incentive to motivate employees. If a compensation programme is built around these key ingredients, the needs of employees management if applicable will be met.

It should be evident by now that the installation or maintenance of a justifiable wage and salary programme within a coir industry is based upon a complexity of differing factors.

A sound wage policy is to adopt a job evaluation programme in order to establish fair differentials in wages based upon differences in job contents. Besides the basis

factors provided by a job description and job evaluation, those that are usually taken into consideration for wage and salary administration are:

Coir Industries that have good sales and therefore, high profits tend to pay higher wages than those which running at a loss or earning low profits because of the high cost of production or low sales. Marginal firms and non-profit organization pay relatively low wages because of low or no profits.

The labour market conditions or supply and demand force operate at the national, regional and local levels, and determining organizational wage structure and level. And that too in Thanjavur District, because of the agricultural and building works, the labourers are getting high level wages regularly. So, there is a chance for a high demand of labour.

The cost of living pay criterion is usually regarded as an automatic minimum equity pay criterion. This criterion calls for pay adjustments based on increases or decreases in an acceptable cost of living index. When the cost of living increases, workers and trade unions demand adjusted wages to off-set the erosen of real wages. This criterion means that wages paid should be adequate to enable an employee to maintain himself and his family at a reasonable level of existence.

This is another criterion, and is measured in terms of output per man-hour. It is not due to labour efforts alone. Technological improvements, better organization and management.

The development or better methods of production by labour and management. The development or better methods of production by labour and management, greater ingenuity and skill by labour are all responsible for the increase in productivity.

In the earlier days of industrialization the wage rates in fact depended on demand and supply principle. With an increase in the number of personnel even from the rural economy seeking employment in our industry, the demand for labour became much less than its supply. Labour thus began to be exploited and low levels of wages prevailed. Later, the advant of trade unionism helped to improve the working conditions, until the second world war, even the government adopted a laissez-fair policy in this regard.

The coir industries provide the following benefits to their employees:

a. Revision of pay structure and
b. Allowance to workers
c. Fringe benefits
d. Bonus and incentive payments
e. Rationalization of leave facilities.

Normally, the coir industries provide increments to their employees, Annual increment will be drawn in the time scale on completion of one year's satisfactory service. It shall ordinarily be drawn as a matter of course unless withheld by a specific order in writing to that effect.

As Thanjavur district is known for its agriculture and farm works, it is usual for work of labourers for other works like coir industries and all. Now-a-days the cultivating area is diminishing by means of developing the plots for living. Secondly there is only poor payment for the labourers though the government is ordering the entrepreneurs to pay PF, the employees are not ready to pay. Then, there is no job security at all in the industries. Because according to the season the owners of coir industries can get more labourers.

For example if it is winter the labourers will go in for agricultural works but in the summer season there will be less number of workers will get agricultural work and others got to turn in to such industries like COIR. For their permanent livelihood the labourer has to accept their kind of conditions without any hesitation. In some areas like Pattukkottai, the coir industry work will be the only thing which is very much helpful for their 'bread-winning'. And there may be a chance for the labourers to loose their job by means of bare-hands though the central government is ready to offer training for the people who are ready to work or start a coir industry, because of the dispute between the state and central government, the central government is not ready to give training for the same. So, it is also an ultimate failure or loss in the case of the labourers.

Coir workers in the state are mainly engaged in defibiring of husk, ratting/beating, yarn spinning, rope making, weaving and curling. The spinning sector accounts for 79 of the workers, fibre production sector accounts for 4286 workers, rope making sector 191 workers, weaving sector 121 workers, curling sector 158 workers and rubberised coir 54 workers in Thanjavur District.[11]

Coir industry in the state provides employment to people in the economically backward classes in the rural areas. According to the present survey, total number of workers-full time and part time, employed in the coir industry in Thanjavur was estimated at 4889. The composition of employment shows that women workers constitute 2946 of the total employment in the industry men workers 1340. Nearly 2475 workers belong to unorganised sector. Nearly 3493 of coir workers are full time workers and 1396 are part time workers.

11. 38th Annual Report of Coir Board, Cochin-1988-89. p 66

Table : 5:1 Shows the total number of employees available in the study area.

Taluk	Number of Employees						Total
	Men		Women		Child		
	in No	in %	in No	in %	in No	in %	
Pattukkottai	1435	65	780	35	-	-	2215
Orathanad	279	60	181	40	-	-	460
Peravurani	232	48	244	52	-	-	476
Thiruvaiyaru	102	52	93	48	-	-	195
Thanjavur	110	48	118	52	-	-	228
Total	2158	60	1416	40	-	-	3574

Source : Primary data collected from 100 Coir Industries in Thanjavur District.

As per the table number 5.1, in Thanjavur District, totally one hundred coir industries have under taken research in five taluks. In this hundred, some workers work in the field. The field workers (i.e make the fibre from the husk then dry it and make it as 35 kg bundles) In the five taluks there are 2158 male and 1416 female total 3574 labours works. This is 83% of 141 coir industries in 8 taluks total workers of 4,286. The remaining 17% workers are in 41 industries in Kumbakonam, Thiruvidaimaruthur and Papanasam taluks. There partially work. Since 1991 though the child labours work directly in the coir industries one or two years, it is 0% in the year 1999 - 2000.

Among sixty five industries in Pattukkottai taluk, there are 2215 workers in this field. In this, there are 65% male (1435) workers and women 35% (780). The women workers do not work full involvement in this field, because they work 6 am to 11 am and they earn full salary in the agriculture field and they must do the house hold work to their husband and children mostly. The unmarried women do not like to work in the traditional works. The educational awareness among the parents they like to send their children to schols and colleges. Even in other taluks (except Peravurani and Thanjavur) have the same situation, in Thiruvaiyaru and Orathanadu taluks the percentage of women workers 48, 40 respectively. Which is lesser than other taluks. But in Peravurani and Thanjavur, male workers are 48% and women workers are 52%. The reason is most of the male workers like doing coconut business in Peravurani Taluk. Because which is located in seashore. But the Thanjavur Taluk people do the cultivation in full swim and also it is a town so the people do other business.

Table : 5:2 Shows the availability of employees in Pattukkottai Taluk

Year	Number of Employees						Total
	Men		Women		Child		
	in No	in %	in No	in %	in No	in %	
1991	884	55	695	43	29	2	1608
1992	917	54	743	44	31	2	1691
1993	1044	59	702	40	9	1	1755
1994	1112	61	702	39	-	-	1814
1995	1121	59	749	40	22	1	1892
1996	1139	58	807	41	16	1	1962
1997	1154	57	848	42	14	1	2016
1998	1171	57	874	42	18	1	2063
1999	1248	59	875	41	-	-	2123
2000	1435	65	780	35	-	-	2215

Source : Primary data collected from 65 Coir industries in Pattukottai Taluk.

The table 5.2 shows that the sixty five coir industries' report since 1991 to 2000, in Pattukkottai taluk. As per the report, the labours number increases 1608 to 2215 (i.e. one fourth increases). At the same time male labours increases every year from 884. But women labours do not show any interest in coir industry in the year 1993, 1994 and 2000. But they show more interest in the year 1995 - 1999. The

percentage of child labours are only 2% in the year 1991,92 and in 93 it is 1%. In the year 1994 which is nil then it is 1% in the year 1995, 96, 97 and 98 respectively. But in the year 1999-2000 they have indirect participation in coir industry. Because the fast growth in education the Government provides noon meals with egg, free education upto Higher secondary level, free bus facilities, insuficiency in agriculture and opportunity in abrod among all these the most important thing is child labours act are the causes to get them indirect contribution in coir industry. In the year 1991 there are 1608 labours in this work but in 2000 the total number of labours are 2215 which shows the people's interest in coir industry.

Table : 5:3 Shows the availability of employees in Orathanad Taluk

Year	Number of Employees						Total
	Men		Women		Child		
	in No	in %	in No	in %	in No	in %	
1991	170	49	167	48	8	3	345
1992	174	48	176	49	9	3	359
1993	182	48	185	49	7	3	374
1994	194	50	187	49	4	1	385
1995	195	49	199	49	5	2	399
1996	204	50	202	49	4	1	410
1997	211	49	216	50	3	1	430
1998	222	51	208	48	5	1	435
1999	241	54	206	46	-	-	447
2000	279	61	181	39	-	-	460

Source : Primary data collected from 10 Coir Industries in Orathanad Taluk.

Table number 5.3 shows the availability of workers in Orathanad taluk. According to the census taken in Orathanad taluk from 1991 the male workers are steep in increase than the women and child. And with the men workers the women also competing with utmost gut and proved that they are not gutless to work and toil in the filed of coir industry.

The very reason for the msuhrooming in number of employees both in men and women right from 1991 to 2000 is nothing but the derizens of Orathanad are mostly lead their life with the help of agricultural products. Even the child laboureres are to some extent maintaining their percentage though they are shunted from working in industries.

People now a days have began to realise that they should not believe on only one business like agriculture because it is based on rain. If rain fails thats all their life will be at stake. They had experienced all these things in the past and to have a clear dawn in their life they have determined to select this coir industries as their morning star of their life.

Table : 5:4 Shows the availability of employees in Peravurani Taluk

Year	Number of Employees						Total
	Men		Women		Child		
	in No	in %	in No	in %	in No	in %	
1991	164	54	134	45	4	1	302
1992	171	43	220	56	3	1	391
1993	181	45	219	54	4	1	404
1994	190	46	218	53	5	1	413
1995	190	44	231	55	4	1	425
1996	194	44	240	55	4	1	438
1997	197	44	244	55	3	1	444
1998	204	44	256	56	22	-	462
1999	215	46	253	54	1	-	469
2000	232	48	244	52	1	-	476

Source : Primary data collected from 12 Coir Industries in Peravurani Taluk.

This table 5.4 gives the availability of employees in Peravurani taluk. In the statistics taken on the availability of employees inthe Peravurani taluk, right from 1991 to the year 2000 both the men and women workers are increasing in number. The main reason for the steep increase in the availability of employees for coir industries is nothing but people got a special liking for this field. And in this industry according to their education level and skill they can be appointed as supervisors, managers, overseers, casual labourers etc., Right from top to bottom, the haves and have nots can be availed work in this coir industry alone.

And particularly Pattukkottai and Peravurani are fame for their coconut groves. So according to the number of industries the workers also are appointed without any rejection. So that only people begin to select this position as their option to earn their living.

Table : 5:5 Shows the availability of employees in Thiruvaiyaru Taluk

Year	Number of Employees						Total
	Men		Women		Child		
	in No	in %	in No	in %	in No	in %	
1992	41	49	40	49	2	2	83
1993	74	47	78	50	4	3	156
1994	84	51	76	46	4	3	164
1995	81	49	80	49	2	2	163
1996	80	46	91	52	3	2	174
1997	91	51	86	48	2	1	179
1998	93	50	90	50	1	-	184
1999	97	51	94	49	-	-	191
2000	102	52	93	48	-	-	195

Source : Primary data collected from 5 Coir Industries in Thiruvaiyaru Taluk.

In the year 1991 , the coir industry, in Thiruvaiyaru taluk, was only house hold industry because the coconut form owners sold it as tender coconut in large scale, so that there was raw-material demand also there was no proper awarness about coconut forming and they sold less amount of cocnuts with husk. This was caused demand inthis

about coir industry profit and functions then they started coir industry in this taluk. In the same year the percentage of male labours in coir industry was 49% (41) women labours was 49% (40) and child labours 2% (2). Later, in the year 1999-2000 by the act and counselling of Government of Tamil Nadu, the child labours were not allowed to work, which came to nil position. in the year 1992-93, the coir industry labours increased to 87% respectively (83-156). After 1994-2000 the percentage of labours gradually increased except in the year 1995. The percentage of male labours growth has a falling in the year 1995-96, later which was increased till to 2000. Women labours, in coir industry, growth varied every year. But, in the year 2000 the women labours were 4% lesser than male labours because they were doing other agricultural works like petal leaf plantain form and paddy field.

Table : 5:6 Shows the availability of employees in Thanjavur Taluk

Year	Number of Employees						Total
	Men		Women		Child		
	in No	in %	in No	in %	in No	in %	
1994	92	47	99	52	2	1	193
1995	95	48	99	50	4	2	198
1996	99	48	102	49	7	3	208
1997	102	48	108	50	4	2	214
1998	104	48	109	51	3	1	216
1999	107	48	116	52	-	-	223
2000	110	48	118	52	-	-	228

Source : Primary data collected from 8 Coir Industries

Table 5.6 shows clearly on the availability of employees in the Thanjavur Taluk. With regard to the staistics taken in Thanjavur taluk the availability of men workers are increasing year by year and women workers percentage also increasing in a steep way. But the chile labourers are less in number because the Government of Tamil Nadu put a restriction for child labourers. And they are being watched very keenly. So that only there is not an improvement in the percentage of child labourers. But in general the coir workers are very much interested in the field. So that only year by year the percentage of employees both in male and female are ascending gradually.

Table : 5:7 Shows an overall view of the Educational level of men Employees in the study area.

Taluk	Educational level of employees						Total
	Below SSLC		**Below HSC**		**Degree Holders**		
	in No	in %	in No	in %	in No	in %	
Pattukkottai	315	22	1051	73	69	5	1435
Orathanad	59	21	206	74	14	5	279
Peravurani	56	24	158	68	18	8	232
Thiruvaiyaru	26	25	70	68	6	6	102
Thanjavur	11	10	75	69	24	21	110
Total	467	22	1560	72	131	6	2158

Source : Primary data collected from 100 Coir Industries in Thanjavur District.

According to the table 5.7 in the census taken as taluk viz, people who were educated below tenth standard level, upto Higher secondary level, Degree holders are more than any other taluk. And the percentage of the degree holders alone 21%, and that too as Thanjavur taluk is brimmed with educational institutions and now a days it is growing as are centre of education 75% of the people are degree holders. Among this 75%, 44% of them go for further studies and the remaining 31% of them go for various job opportunities. So, according to the census ratio in Thanjavur taluk coir industries, among the 110 people who are working in 8 coir industries 21% of them i.e 24 people are degree holders, 69% of them are edcated upto Higher secondary level, 10% of them are educated upto secondary school level. All are working as managers, mechanics and drivers for lorries and tracters. Even degree holders are working as drivers and doing all kinds of jobs.

In Pattukkottai in the total number of 65 coir industries 22% of the workers are completed their secondary school level, 73% of them are completed their highersecondary and 5% of them are degree holders. The reason for the less number of educated people is nothing but they have no interest in education because of the unemployment problem. And the villages in and around Pattukkottai are brimmed with agriculturists.

In the statistics taken in Orathanad Taluk, among the 10 coir industries, the total number of workers are 279. Among this 59 of them i.e 74% are Highersecondary level and 14 workers (5%) of them are degree holders. AS this area also surrounded with villages and people are living hand to mouth, they won't show any interest in education.

In the census taken in Peravurani in 12 coir industries, the total number of workers are 232. Among this 56 workers are below SSLC level. (24%), 158 of them are below Higher Secondary level (68%), 18 of them are degree holders (8%). Here also the level of educated people is less in number. Because most of the workers are belonged to agriculture family. As their life based on agriculture, they cannot concentrate on their studies.

According to the statistics taken in Thirvaiyaru taluk in the total numbers of 5 coir industries, there are 102 workers. Among these 102,26 of them are below S.S.L.C level i.e 25%, 70 of them are below HSC level i.e 68% and 6 only are degree holders i.e 6% alone. The cause for the low rate of educated people in this area is nothing but as they are having banana production in massive areas people send their children to the banana plantation. That is the main cause for their low level of educated wrokers district, So totally in and arround of Tanjore we can come to know that the educated people percentage is more them the Illiterate.

Table : 5:8 Shows an overall view of the Educational level of women employees in the study area.

Taluk	Educational level of employees						Total
	Below SSLC		**Below HSC**		**Degree**		
	in No	in %	in No	in %	in No	in %	
Pattukkottai	203	26	577	74	-	-	780
Orathanad	61	34	120	66	-	-	181
Peravurani	85	35	159	65	-	-	244
Thiruvaiyaru	39	42	54	58	-	-	93
Thanjavur	57	48	61	52	-	-	118
Total	445	31	971	69	-	-	1416

Source : Primary data collected from 100 Coir Industries in Thanjavur District.

Table 5.8 reveals vividly on the educational status of the female workers in the various Coir industries of Thanjavur district. In Pattukottai area among the total number of employees of 780, 203 of them are below S.S.L.C level and 577 of them are below higher secondary level. Degree holders are not coming for Coir industries. In Orathanad among the 181 of the total 61 of them are below S.S.LC level 120 of them are below higher secondary level. Here also no degree holders are coming for coir industries. In Peravurani taluk among the 244, 85 of them are below S.S.L.C and 159 of them are below higher secondary. In Thiruvaiyaru taluk among the total 93 employees 39 of them are below S.S.L.C level and 54 of them are below higher secondary.

In Thanjavur taluk among the total number of workers of 118, 57 of them are below S.S.L.C level and 61 of them are below higher secondary. The primary reason for the women employees not educated more than higher secondary level is nothing but Thanjavur district is an educationally backward one. And the feminine are mostly indulged in agriculture work. So that only no degree holders is there in the coir industry and that too because of the free education provided by the goverment of TamilNadu upto higher secondary level only get them educated upto this level.

Table : 5:9 Shows an overall view of the Training Position of men employees in the study area.

Taluk	Training Position				Untrained		Total
	Trained from						
	Coir Board		**Field**				
	in No	in %	in No	in %	in No	in %	
Pattukkottai	158	11	976	68	301	21	1435
Orathanad	28	10	189	67	62	23	279
Peravurani	28	12	146	63	58	25	232
Thiruvaiyaru	16	16	74	73	12	11	102
Thanjavur	27	25	64	58	19	17	110
Total	257	12	1449	67	452	21	2158

Source : Primary data collected from 100 Coir Industries in Thanjavur District.

In the table 5.9 reveals an overall view of the training positions of men employees. According to the data collected in Pattukottai Taluk the trained members in coir board are 11% in the total of 1435, the members trained from the field are 68% and untrained are 21%. In Orathanad taluk the members trained from coir board are 10%. Trained from the field are 67% and untrained are 23% in the total of 279 workers.

In Peravurani area among the total of 232, 12% of them trained from coir board, 63% of them are trained from the field and untrained are 25%. In Thiruvaiyaru taluk among the total number of 102 workers 16% of them are trained from coir board 73% are trained from the field and 11% are untrained workers.

In the census taken in the area of Thanjavur among the 110 total workers 25% of them are trained from coirboard, 58% of them are trained from field and the remaining 17% of them are untrained workers.

So in the global total number of workers in the area of trained and untrained, from this study it is sufficient that most of them are get trained in the field alone and more than the coir board trained people untrained are more in number because the coir industry cannot provide any training facility for all.

Table : 5:10 Shows an overall view of the Training Position of women employees in the study area.

Taluk	Training Position				Untrained		Total
	Trained from						
	Coir Board		**Field**				
	in No	in %	in No	in %	in No	in %	
Pattukkottai	94	12	442	56	244	32	780
Orathanad	25	14	55	30	101	56	181
Peravurani	32	13	91	37	121	50	244
Thiruvaiyaru	11	12	38	41	44	47	93
Thanjavur	14	12	63	53	41	35	118
Total	176	12	689	49	551	39	1416

Source : Primary data collected from 100 Coir Industries in Thanjavur District.

The table 5.10 reveals clearly of the overall view of the training position of women employes in the in and around of Thanjavur District. If we take Pattukkottai taluk the trained women from the coir board are 94 in number and the workers trained from the field are 442, the untrained are 244 among the total of 780. In Orathanad among the total number of 181 employees, trained from coir board are 25, women trained from the field are 55 and the untrained are 10%. In the Peravurani taluk among the total number of 244 women employees, the trained workers from coir board are 32 in number, trained from the field are 91 in number and untrained are 121 in number.

In Thiruvaiyaru among the 93 of the total number of employees, the people who got trained from coir board are 11, the people trained from the field are 38 and the untrained are 44. In Thanjavur taluk among the 118 workers the trained workers through coirboard are 14, from the field are 63 and the untrained are 41. So finally according to the census taken in the above cited areas, the field trained and untrained workers are more in number. Because of the lack of literacy level in women employees and lack of facilities in the coir board to give training for the employees also is one the reasons.

Table : 5:11 Shows Literacy Chart of men Employees in the taluks under study.

Taluk	Educated		Uneducated		Total
	in No	in %	in No	in %	
Pattukkottai	961	67	474	33	1435
Orathanad	192	69	87	31	279
Peravurani	164	71	68	29	232
Thiruvaiyaru	57	56	45	44	102
Thanjavur	77	70	33	30	110
Total	1451	67	707	33	2158

Source : Primary data collected from 100 Coir Industries in Thanjavur District.

According to the table 5.11 of the literacy levelof workers in male side in Pattukkottai among the total number of workers of 1435, 961 of them are educated 474 are uneducated and in Orathanad in the total number of workers 192 of them are educated, 87 of them are uneducated and in Peravurani inthe total number of 232 workers 164 of them are educated 68 of them are uneducated. In Thiruvaiyaru taluk in the total number of workers of 102, 57 of them are educated, 45 of them are uneducated. In Thanjavur in the total number of workers of 110, 77 of them are educated 33 of them are

uneducated.So totally in and around of the Thanjavur district in the total number of workers of the coir industries more number of workers are educated than the uneducated artisans.

Table : 5:12 Shows Literacy Chart of Women Employees in the taluks under study.

Taluk	Educated		Uneducated		Total
	in No	in %	in No	in %	
Pattukkottai	421	54	359	46	780
Orathanad	103	57	78	43	181
Peravurani	156	64	88	36	244
Thiruvaiyaru	56	60	37	40	93
Thanjavur	67	57	51	43	118
Total	803	57	613	43	1416

Source : Primary data collected from 100 Coir Industries in Thanjavur District.

Table 5.12 shows the literacy level of women employees in the Thanjavur District. On seeing the ratio of Pattukkottai the educated percentage is 54 and the uneducated is 46% among the total of 780 numbers.

In orathanad among the 181 of the total 57% of them are educated and 43% of them are uneducated. In

Peravurani among the total of 244, 44% of them are educated and 36% of them are uneducated. In Thiruvaiyaru among the 93 number of workers, the 60% of them are educated, and 40% of them are uneducated. In Thanjavur taluk among the total number of workers are 118 and in that 57% of them are educated and 43% of them are uneducated. So totally the literacy rate of women employees are more in number than the uneducated. The literate employees are 14% more than the illiterate.

Table : 5:13 Shows Skill Chart in the Taluks under study

Taluk	Skilled Employees		Unskilled Employees		Total
	in No	in %	in No	in %	
Pattukkottai	1329	60	886	40	2215
Orathanad	285	62	175	38	460
Peravurani	304	64	172	36	476
Thiruvaiyaru	119	61	76	39	195
Thanjavur	144	63	84	37	228
Total	2181	61	1393	39	3574

Source : Primary data collected from 100 Coir Industries in Thanjavur District.

Table 5.13 vividly reveals the veteran and non-veterans in the field of coir industries. According to the census taken in the areas, the Pattukkottai taluk consists of 1329 skilled employees and 886 unskilled employees in the total of 2215 in number. Orathanad taluk consists of 285 (62%) of workers are skilled and 175 (38%) of them are unskilled in the total of 480. Peravurani taluk consists of 304 (64%) skilled employees and 172 (36%) in the total number of 476 employees. In Thiruvaiyaru, 119 i.e 61 in percentage of skilled and 76 i.e. 39% as unskilled employees in the total number of 195.

In Thanjavur taluk 144 i.e 63% of employees are skilled and 84 i.e. 37% are unskilled in the total number of 228 employees in the field of coir industries. So finally we can determine that skilled employees are more in percentage than the unskilled people. Because of the interest and unemployment problem, the people are very much interested to get trained in the field of coir industry. So there will be a bright future for the same than any other field in this industrially backward and agriculturally forward area.

Table : 5:14 Shows the Migration level in the Taluks under study

Taluk	Employees from								Total
	Own				Other				
	Taluk		District		Districts		States		
	in No	in %	in No	in %	in No	in %	in No	in %	
Pattukkottai	1816	82	355	16	44	2	-	-	2215
Orathanad	359	78	87	19	14	3	-	-	460
Peravurani	352	74	95	20	19	4	10	2	476
Thiruvaiyaru	135	69	29	15	29	15	2	1	195
Thanjavur	133	58	33	15	41	18	21	9	228
Total	2795	78	599	17	147	4	33	1	3574

Source : Primary data

This table 5.14 shows the migration level of the employees of the coir industries on taking census among the 100 coir industries the total number of workers 2795 among the grand total of 3574 i.e. 78% belongs to their own native taluks. They used to work at their home village itself for various convenience. The women employees can look after their children and the men employees can earn more and look after their personal work and all. Some people used to migrate to other the employer who belongs to the same village and they will think because of this teir respect will be spoiled.

The neighbour districts people like, Thiruvarur, Nagapattinam, Pudukkottai etc are less in number. And the districts were seperated for the sake of convenience of the government rule it. And the remaining 1% of the people alone are working from Pondicherry. And that too the granary of Tamil Nadu, Thanjavur District is known for its hospitality and respect for others. So that only people from varios parts of Tamil Nadu are migrating and get settled permanently here.

MARKETING MANAGEMENT OF COIR INDUSTRY

CHAPTER - VI

MARKETING MANAGEMENT OF COIR INDUSTRIES

Marketing has been delegated the mission of performing those business tasks leading to customer satisfactions and resulting corporate profits. Such tasks are the identification of the needs and wants of customers, guidance and delivery of a flow of want satisfying goods and services from producer to consumer and maintenance and expansion of customer markets for this flow, Marketing thus is a multivarieties process whose inputs and output reflect the tangible and intangible influences of society and the business enterprise as a whole. "Marketing refers to the activities involved in the flow of goods and services from Producers"[1]

A manufacturing company could easily make profits by concentrating on production efficiency. Soon scientific discoveries and technological progress led to large scale operations. As, production increased competition became more intense. Increased output levels required increased levels of consumption. These factors combined to produce major social changes such as the more from agriculture to industry, the provision of greater educational opportunities the raising of living standards, the removal of barriers of distance, the extension of the average

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1. American Marketing Association - definition

life span and the population explosion. These, changes in the economic, social political and technological conditions resulted in thedisappearance of a seller's market. This brought about in many industries a complete re orientation of business philosophy. These industries have adopted or are in the process of adopting the marketing concept.

Marketing has assumed considerable importance in modern times. The relative cost of performing the marketing functions and the rising proportions of people engaged in the activities of trade, commerce and transport indicate the importance of marketing.

· Marketing is the key economic activity for industrial growth and expansion in a developing economy "Marketing might by itself go far towards changing the entire economic tone of the existing system without any change in methods of production, distribution of population or of income".[2]

In a developing economy the market is narrow and increase in its size results in economic growth large markets are essential to absorb mass production. Enlarged markets reduce costs, avoid wastage and facilitate the growth of communication, transport and other services.

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2. Peter Drucker definition

Marketing converts latent demand into effect five demand and by channelising all the purchasing power in the desired directions it sets a high level of economic activity. High level of economic activity leads to full employment or near full employment. It creates opportunities for the entrepreneur and the stumules for the development of professional management. The entrepreneur and manager can cause economic development.

Marketing ensures the deveopment of standards for products and services in developing economy. It strives to satisfy the customer and in this process brings about improvement in the standards of goods and services. Marketing also contributes to higher living standards. In short, marketing has an important role to play in the improvement of the economic, Psychological and social well being of a developing economy.

Industrial marketing is concerned with goods and services which are sold to companies and business organisations. Usually through a professional purchasing department. These goods and services are bought by manufacturers, distributors for their own use rather than for resale.

Products and services are purchased by industrial buyers because they are required in the production process and for making of profit. The industrial buyer is concerned

with finding the material that performs the function at the least cost. If the products, price and service offered by suppliers are substantially similar the industrial buyer has less basis for rational choice.

If there are strongly marked differences among the competing vendors and products, the buyer is held more accountable for his choice. The buyer pays more attention to rational factors.

In industrial purchasing, often, several persons participate in some way in the purchasing decision process. A careful assessment of the customer buying organisation, influences and procedures is necessary to reach the influencial parties in a most effective way.

An analysis of the industrial market is made easier when industrial users are seperated into groups. This can be done on the basis of kind of business, geographical location of the user, usual purchasing procedure and size of the user.

All places of business are classified into one of the many divisions covering the entire field of economic activity. Each of these division is in turn broken down into several 'major groups' responsenting specific kinds of business. Again each of these major groups is divided into more specific kinds of business

India has a virtual monopoly in the supply of spun yarn and manufactured product to the world market. The export of coir and coir goods have however, been steadily going down during the last 2 decades. It has been declining interms of quantity through interms of money value it has been on the increase an account of higher unit value realised Marketing of coir involves four stages namely marketing of raw husk, retted husk, fibre, yarn and coir products. The village dealers, large, scale dealers, and co-operatives are actively engaged in the distributions of raw husk.

The village husk dealers collect the husk from house to house and also from the coconut merchants. They sell them to the small scale retters or the large scale husk dealers.

The large scale dealers employ agents all over their area to purchase husk from the village farms. They sell the husk to large scale retters and husk co-operations. The co-operative societies also deal in husk. They supply raw husk to the producers at reasonable prices.

Different intermediaries are being employed in the marketing of retted husk. Small scale, retters, large scale retters and husk co-operatives are the three major agencies involved in this business.

In the area of marketing of coir fibre and yarn, intermediaries such as village traders wholesale dealers, commission agents and exporting agencies, such as shippers, brokers, forwarders etc., are found. They help in the distribution of fibre and yarn from the spinning centres to the manufacturers of mats and mattings and such other consumers and to the foreign markets.

Co-operatives play an important role in the coir marketing. They supply the retted husk to the producers and buy yarn from them and forward it to the coir federation which arranges for marketing. The main purpose of the emergence of co-operatives for marketing was to eliminate the middleman and to share the profits from marketing among the producers and consumers for protecting the interacts of the producers in the Indian Coir Industry from the exploitation of middle men many expert committies were appointed by the Government of India. Reports of all these committies stressed the need for the development of coir co-operatives.

But at the same time, the industry was not having a smooth sailing. The industry from its very inception has passed through crisis after crisis mainly because of its overdependance on the export market. There were also other operational problems. Right from the cultivation of coconut palms, from the processing of coconut husks upto the production

of coir yarn, coir products etc., and of marketing the same, the coir industry had to face innumerable problems. The cost factors in production, the techniques adopted in fibre extraction, the investment in various assets, the employment of cheap labour, the agencies involved in procuring raw materials and in marketing the coir products, the appraisal of financial results of investment and the like are the various issues to be examined in connection with the coir industry in Thanjavur district.

The coir industrial units in Thanjavur district, come under the unorganised sector. The various issues connected with coir units thus far seen were also threatening the units in the Thanjavur region. Moreover the organisational structure, capital investment, earnings, etc., of the industrial units of the Thanjavur region were not clearly maintained except in those units registered with the coir board and district industrial centre.

The export is expected to increase from Rs. 66 crores to Rs. 100 crores. Compared with other small scale industries the expected contribution of the coir industry looks satisfied.

Traditionally coir industry is an export oriented industry and till 1960's exports accounted for over 70 percent of the total production in the country. But exports have started declining.[3]

3. Survey Report from Regional Coir Board, Pollachi 2000. p-27

The main products of the coir industry that are exported are coir fibre, coir yarn, coir mats, coir mattings, rugs, carpets and coir ropes. India exports very little quantity of coir fibre. Initially the decline was mainly in respect of coir yarn. The export of coir mats and mattings however did not suffer such a serious setback.

The decline has only been in quantitative terms. The value of coir goods exported from India has been steadily rising due to increases in the minimum export price administered by the board and the devaluation of the Indian rupee against important hard currencies. India exports 25 percent of its coir yarn and the rest is consumed locally. The export of coir yarn, coir mats and coir matting has been increasing every year. The export trade in coir is dominated by private merchants and manufacturers who control over 90 percent of the export trade.

In Tamilnadu only Ammandivilai TAC floor company is exporting coir goods. For exporting of coir goods, much headway has to be made in Tamil Nadu, where there is a vast potential for the development of coir industries. Co-operative effort is lacking and a "cooptex" form of organisation must be mooted for marketing and export of coir and coir products.[4]

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4. Department of Economics and Statistics, Chennai - 1998-99. Report p-71

Tamil Nadu had proposed to install a modern rubberised coir factory and needle felt plant with a marketing federation to diversify the brown fibre processing activities. It was started at Panayakkottai near Orathanadu, in Thanjavur District.

The Government of Tamil Nadu have also organised the following three societies inclusively for marketing of coir products in Tamil Nadu.

1. Kanyakumari District central coir industrial co-operative marketing society, Nagercoil.

2. The Salem central coir marketing industrial co-operative society, Saslem.

3. The Tamil Nadu state coir industrial co-operative marketing society at Chennai is an apex federation extending marketing support to coir co-operative societies which are its members.

In 1954 the central coir board was set up ir Cochin with head quarters at Cochin. It is functioning through 2 regional offices at Bangalore Visakapattinam and Pollachi 2 research institutes at Kalavoor and Bangalore and 4 regional coir training and coir development centres at Thanjavur (Tamil Nadu), Arsikere (Karnataka), Bhubaneswar (Orissa) and Rajamundry (Andhra Pradesh) to strengthen the credit and

marketing facilities. The Indian coir board, through its retail show rooms and the coir federation through its 51 show rooms make coir and coir products available in all parts of the country. There are a number of private traders also engaged in the inland marketing.[5]

In international markets, Coir exports from India face competition. Grass mats originating from China and South East Asian countries offer serious competition to Indian coir products. Synthetic products are sold at half the price of the coir products. Grass mats are priced at about 1/3 price of coir products. The labour intensive nature of the traditional coir industry concentrated in Kerala and the low productivity of the manufacturing technique of coir extraction and further processing of fibre into yarn and products have stood in the way of manufacturing coir products at reduced cost. There is an apprehension of displacement of labour on a large state by the adoption of power based but more productive and efficient methods which have stalled the progress of the traditional coir industry.

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5. 38th Annual Report of Coir Board, Cochin 1988-89. p-66

Table 6.1 Shows the international market of Coir products (exports)

(Quantity in tons)

Year	Fibre	Yarn	Mats	Mattings	Rope	Others	Total
1991-92	5	15266	11163	4247	131	179	30991
1992-93	12	11442	13786	5904	68	1141	32353
1993-94	21	12743	15411	6711	72	1241	36199
1994-95	31	14745	16787	7124	84	1379	40150
1995-96	34	15499	17124	8133	101	2110	43001
1996-97	44	17101	18199	9878	99	3101	48422
1997-98	40	16341	19211	9910	109	3334	48945
1998-99	54	18111	19784	8755	104	4114	50922
1999-00	74	21017	20012	7101	111	3782	52097
Total	315	1,42,265	1,51,477	67763	879	20381	3,83,080

Source : Coir News, June 2001, p-29

The table 6.1 shows the international market of coir products. On seeing the export quality coir products the quantity has been increasing from 1991 to 2000. Though it has been increasing it is not sufficient to the level of production compared to other countries. In the production of fibre it is ascending steeply in beginning and raises slowly in the middle and then again there is a raise, in the year 1991-1994 the increase of the product is not less than 10 tones but after that i.e in the year 1995-1998. There is fall of about 4 formes and in the year 1998-2000 again there is a hike in the products.

Very little coir fibre was being exported from India and almost the entire production of fibre was converted into coir yard, which was widely used in India for agricultural purposes, fishing, fethering animals fencing and housing. On a rough estimate, around 20 percent of coir yarn was utilised in this fashion. In sharp contrast. There was virtually no demand for coir floor coverings within India. These products were merely based on Europeon innovations and were manufactured in India for export to the West, where on account of their durability and cheapness, they were popular as furnishings in working class and poorer households.

The coir yarn exported to foreign countries was also used for two purposes in particular in agriculture (particular hop cultivations) and in the western coir wearing industries. A flourishing coir weaving industry developed in continental Europe under the protection or tariffs, through differential

freight rates for yarn and fabrics and based on superior technologies.

As coir floor coverings are eminently suited for damp monsoon climate of India it is puzzling that there was no such indigenous product innovation within India or that the market for coir fabrics remained under developed in the region, the traditional home of coir. Both anthropological and economic factors may been responsible for this. Finally if we see the total product it is so-so when thinking of the affluency of raw materials and availability of labourers and other economic and related problems of coir industries in India.

If we compare the products of yarn, mats, matting, rope & other products the total value is to some extent satisfied one. In the year 1991-1992 the total tonnes of coir production is 30991, then upto the year 1995. There is a slow increase in the marketing. And then from 1996-2000 there is a steep increase in marketing and the total formes of marketing 3,83,080 is an average only. We cannot admit it is an adventurous achievement in the field of coir industry.

Mass poverty severely limited the market not only for coir floor coverings but also for other industrial products. Moreover, even the richer section of the population took to coir floor coverings only gradually, perhaps because malayalees do not bring foot wear in to the house. So that the rough coir fabrics may not have been an attractive domostic floor covering. Hence the coir industry continued to depend upon foreign demand involving exposure to the in evitable export fluctuations and control by exporters.

Table 6.2 Shows the National Level Market of Coir products

(Quantity in tons)

Year	Fibre	Yarn	Mats	Mattings	Rope	Others	Total
1991-92	125	1633	558	212	14	24	2566
1992-93	140	1411	560	222	18	45	2396
1993-94	139	1345	565	241	20	71	2381
1994-95	145	2431	610	259	27	81	3553
1995-96	160	4011	634	266	38	94	5203
1996-97	171	3976	643	281	44	104	5219
1997-98	180	3989	672	290	59	113	5303
1998-99	180	4095	681	295	71	117	5439
1999-00	190	4590	690	311	89	124	5994
Total	1430	27481	5613	2377	380	773	38054

Source: Department of Economics and Statistics survey report - 2000 p-101

Table 6.2 shows the national level market of coir products. In the marketing of coir fibre in the year 1991-1992 the quantity is 125 tonnes, it is less than the marketing of yarn and mat. But the total increase in the marketing right from 1991 shows the steep development of coir products in India. Right from 1991-2000 there is an increase and decrease in the products of fibre, yarn, mats, matting, rope and other products. In the total products, the marketing of mats is more than any other products.

This dependence of coir production on the export market made the industry suscestible to competition on the coir produced (under different conditions) in other regions and from substitute products. The consequent compulsions for technological change in the production process, however, could be at variance with the requirements of the internal factor endowments. This is an important aspect of the industry that has to be borne in mind.

In the total marketing too the production of mats is more than the any other coir production from this we should bear the economic condition too in our mind. And rope is used for the purpose of agriculture with the anticipations of agriculture and farm labourers only this field of coir industry has its flag fly high.

Table 6.3 Shows Marketing Pattern of Coir Fibre in Tamil Nadu

Type of Marketing	Quantity (in tonnes)	Value (Rs. in Lakhs)
Sold to Local Market	9,411	469.37
Inter State Market	3,852	192.11
Sold to Societies	1,319	65.78
Used for Curling	1,378	68.72
Used for Yarn-making	6,485	323.44
Used for Rope-making	19,546	974.85
Used for mat and mattings	275	13.71
Stock	193	9.63
Total	42,459	2117.61

Source : Data Collected from regional Coir Board, Pollachi.

Table 6.3 shows the marketing pattern of coir fibre in Tamil Nadu. This data was collected under the Co-operation of the workers in the Regional coir board, Pollachi from this table it is sufficient that the quantity of coir marketed for rope-making is more than anything else. And then the interstate marketing is 3,852 tonnes, valued rupees 192.11 lakhs. The stock position of 193 tonnes shows that the coir products are at any cause will never stay without being sold off or cleaned by the consumers. The most advantageous consumers of the coir products are the farmers only. Because they are the ultimate users of the rope and other coir products for their earing purpose. That is why the coir product used for rope making is higherer than any other marketing service i.e in forms it is 19,546 and in rupees it is 974 lakhs. The products sold for local market also is to some extent so-so because in buying mats and other products our people are very much interesting and showing much eagerness. It is an unavoidable one in the household of Indians. That's the primary reason for that.

In the total comsunption of coir products the rupee value is not more than the coir products the rupee valve is not more because the product is very cheap and as it is available in local market there is no chance of selling the product for higher prices.

Table 6.4 Shows Talukwise Marketing Pattern of Coir Fibre

(Quantity in tonnes)

Taluk	Sold to Own Dist.	Sold to Other Dist.	Sold to Other Dist.	Stock	Total
Pattukkottai	7571	874	594	126	9165
Orathanad	974	337	381	19	1711
Peravurani	888	641	86	23	1638
Thiruvaiyaru	541	117	18	9	685
Thanjavur	723	94	87	16	920
Total	10697	2063	1166	193	14119

Source : Primary data collected from 100 Coir industries in Thanjavur District.

Table 6.4 reveals clearly the taluk wise marketing pattern of coir fibre. On getting the statistics in and around of Tanjavur district the sales in formes is more than anything else in the own district. This has an important reason. As the producer of the coir product get the raw-materials and other things in local market itself, there is no need for him to spend more on the production. That is why sold for even other district also costs less than the products sold for own district. The same case is prevailing in all other taluks such as Orathanad, Peravurani, Thiruvaiyaru and Thanjavur. Compared to all other taluks, the sales percentage is less in Thanjavur taluk. But it seems that the products sold to own district is more in tonnes than to the sales of other states and districts.

Anyway the discrepaneies and all other structures of life will not control anyone from using the coir products because of its economical prize.

Even in Peravurani, where coconut production is abundant when compared to other places, the sales in Thanjavur district is more than the Products sold to other states.

Thanjavur too has stood the level of going high in its sales the level of going high in its sales and using of coir products without any problem with regard to cost or with regard to cost or with regard to searcity in production or anything.

RESUME'

CHAPTER - VII

RESUME'

To consolidate the chapterisations according to this research, various areas of coconut production, its value and the importance of the production of coconut for the mushrooming of coir industries. How far it has its significance in producing beverages and the fibre being used as a coir product. Other than this the product is used in oil and soap industries and other toilet items. Even the coconut shell is burnt and afterward it was converted into charcoal. And how these by-pass products and used to produce handicrarft articles and the utilisation and desirable feature of the product are also analysed.

Then in the section Gross Domestic Product, the contribution of the product with regard to the coir industry and coir products were analysed in a detailed and clear manner. And due to the production of coir products how far our country can gain or earn the foreign exchange. Statistics have been taken right from the year 1991 to 2000. In these tabulations a vivid picture of the product and the ascending and descending percentages with regard to the production, export, sales, utility, labour position, need for the important of the industries, how far it provides employment to the people who are mostly based on the agricultural work and all are dealt with.

As an industry which is going hand in hand along with the domestic life of the people, it has its own importances of production. Vinegar is being produced for the houshold use and fermented sweet tender water is being used as vital tonic by all sorts of people in the morning times. And by tapping they used to get toddy as an intoxicant. Through this they're producing Jaggery as a sweet and the fibre and how all the parts of coconut tree is used in thatching and other purposes.

Above all the countries which are indulging in producing coconut and other by-products are also being analysed in a detailed manner. The contribution of different countries in producing various products through coconut how far the fibre is used as a agro-based significant one in the cottage industries.

The production of mats, matting, rugs, coir rope, coir foam and geo-textiles are the very significant products of the cottage industries. And what is the state of coir industry and how far it is suffering by means of various problems and the inabilities and lack of encouragement through all sorts of programmes of the country.

Finally in this chapter the study of the present condition of the coir industries and the pros and cons of the industrial situation as it is in a district with a background of agriculture.

The second chapter is dealt with the history of the coir board and its systematic development. A committee was formed in the beginning and later it was abolished and ICAR took over the administrative control of the central research stations of coconut products sush as Kayankulam and Kasragod.

It is a highly labour-based industry Kerala is playing vital role in the production of coconut. To get the white fibre machinary was come from Britain. Then the service of the board was explained in a detailed manner. The training being given to the people by the coir board. The new schemes also were introduced by the coir board for their workers, it is a self work system, it encourages women workers, the production of coir industries are the most needful one for the foreign people. So,we can get more income through the exportation of coir products. Because of the setting of coir board, it is easy for the people to sell their products.

The Development of Coir industry through the board and the activities such as development of the business, make regulated services in the production and export and registration of the products, collection of statistics . The help of the coir board in economical and scientific ways, quality and inspection, in assisting the industrialist with regard to power, promotion of production and the by products and watching the other subjects intended in this process.

Various units of the head offices are also notified and the services and activities of RCTDC Thanjavur also was explained. RCTDC is a trainning centre which trains the unskilled labourers with the help of Co-operatives belonging the commerce department. Three kinds of training are being given in this centre, the machines like Crusher, Burster, Drilling machine, Twisting machine, Willowing machine are also available to give a very wide training to the labourers. The strategy of a coir board is based on its production and export value per annum. So, it is also substantiated in this chapter.

As the industry grows, the women of the area in which the coir industry situated are also get empowerment with regard to women employment.

The fair growth of coir industry in the district of Thanjavur is analysed with the help of a statistics being taken right from the year 1991 to 2000. And a talukwise details of defibering units also are taken into account. The units of defibering mills are also produced. The yearwise allocation of defibering mills are given.

Pith fertilizers units are being analysed in a detailed manner, the marketing of pith fertilizer and pasteurisation units are analysed. The manufacturing unit such as automatic spinning mill, motorised ratt and the distribution of the same are also given in detail.

The ongoing science and Technology helped in the improvement of the coir industry in a very fast and wide level. Under this the studies on improved weaving, Design development, mechanical extraction of fibre are very much useful through the science and development. Apart from this various welfare measures are taken into account.

The production management of the coir industry in Thanjavur district and taluks in and around the district are taken into account for further statistics. The major taluks such as Thanjavur, Orathanad , Pattukottai, Thiruvaiyaru and Peravurani are taken in to consideration.

Pattukottai taluk is a large scale region to produce coir products when compared to all other taluks. The production of coir with regard to the taluks are analysed year by year from 1991 to 2000. The cost of production, number of labourers, number of total man hours and profit were given in detail.

The total estimation was taken and details are being collected in the above cited taluks are taken investigation of the factors, number of labourers and number of man hours, the porfit being got in the previous year in all the taluks such as Orathanad, Pattukottai, Peravurani, Thiruvaiyaru and Thanjavur were taken as profile study of that areas. And how the factors are contributed for the growth of coir-industry in a uniform effect.

And then in the next chapter the financial management in coir industries. As finance is concerned with the function and mobilisation of the industries with regard to all aspects, nothing can be moved without cash and if we want to function the coir industry with good procurement and how far the establishment of financial planning, forecasting of income and other sources are in need for a coir industry being developed and explained in a vivid manner. The total significance of the function and non- function of finance, the various consequence which are having a tumult or which helps in the growth of the development of coir industry are bring into existence. And infact it is a truth like plain and hard one that to encourage the coconut producers and entrepreneurs finance is a utmost important one.

Then the personal management of coir industries deals with labour and job. The accomodation of labours and the wage problem are the main problems in the coir industries. And that too the area taken for the research is mostly an agro-based one. So the labourers are very much interested in agriculture works than this coir industries. So, technically the system of appointing women labourers and children for coir industries is better when compared to skilled workers.

Labour management includes a personel man, his objectives, intelligence, creativity, fears, decisions, innovations, novel thoughts and loyalty. Motivating employees and cultivating desirable habits and administration is a difficult one.

The ultimate aim of personnel management is to make the optimum use of manpower. The management of human resource is based on a person. So everything is man centred.

Again when comes to the management of coir industries, the marketing management is the important one. When comes to the topic marketing it is a mission mixed with the skills of the people who are managing this field. The activities involved in the field of production of goods and services of products. To make profits it is a must for a entrepreneurs to concentrate on the production efficiency. Because of the scientific developments it is made still easier to improve the methods of selling and buying the products of coir industries.

It is a key economic activity and it has assumed a considerable predominence. The people concentrated with regard to industrial marketing, service, distribution, and competing the day to day vendors of the product are also has a consideration.

So, finally India has a very good access with regard to marketing. Because most of the percentage of foreign money is being drawn from the export of coir based products. Kerala, Tamilnadu and Andra Pradesh are playing a predominant role in gaining marketing of the coir products.

The main objective of this study entitled ***"A study of Coir Industry in Thanjavur District "*** are as follows.

1. To know about the present position of the coir industry.
2. To assess the functions of the coir board.
3. To analyse the production functions faced by the coir industry.
4. To examine the financial position of the coir industry.
5. To study the problem of the availability of labourers.
6. To get to know the marketing problems of the coir industry.
7. To make suggestion for improving the coir industry in Thanjavur District.

To attain the objectives stated above, the information was collected from primary as well as secondary sources. Primary data were collected through a schedule from the entrepreneurs.

In addition to the primary data, secondary data were obtained from the booklets, magazines, annual reports of the coir board, Thanjavur and the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, Chennai.

The Primary data were collected from 1991 to 2000, to study the coir production, marketing and profits from the coir industry.

Out of 141 units a stratified sample of 100 units are taken for the study. Stratification is done in order to ensure that the sample units within each group should be homogeneous.

The statistical tools like Analysis of Variance, Partial, Multiple and Stepwise Regression of techniques are applied to study the variations in the production. To test the significance of independent variables 't', 'F' and Durbin-watson 'd' test are used.

A similar study was conducted to verify the marketing fluctuations in the coir industry by framing a suitable model.

The profit line is drawn by applying "Least-Square's technique" to forecast the marketing study of the coir industry.

The study is co-ordinated in seven chapters.

1. Introduction.
2. Profile of the study.
3. Production management of coir industry.
4. Financial management in coir industry.
5. Personnel management of coir industry.
6. Marketing management of coir industry.
7. Resume'.

Findings

This research is an attempt to present a brief resume' of the Coir Industry in Thanjavur District, its pattern of organisation, production techniques and over-all performance and a detailed analysis is attempted on the data regarding production, sales, profits and productivity.

The Industrial Policy Resolution of 1956 provides the basic framework of the over all industrial policy of the Government of India. The announcement, the Government of India made on 23rd July 1980, marks an important role in the Development of Small Scale Industries in the country. Large, Medium and Small Scale Industries units have been assigned integrated and harmonious raise of the Industrial sector as a whole and to achieve cost reduction and skill. The overall plan, objective of economic growth with social justice has also been kept in view in the overall State of Industrial development.

The vital role towards contribution of higher industrial development like provision of large scale employment opportunities at lower capital costs, dispersal of industries in rural and backward areas have been scrutinised. Considering that Small Scale/Cottage sector with regard to coir industry suffers from several weaknesses and constraints like lack of entrepreneurial background and experience, inability to procure

the necessary raw materials in time, marketing problems, etc., the Government has taken a number of promotional measures for the coir sector including the provision of institutional support and a package of incentives and concessions like concessional finance, marketing support, machinery on hire purchase, technical consultancy services, provision of industrial accommodation and other infrastructural facilities. The package of incentives and concessions is constantly reviewed and modified according to need.

The coir industry provides a major segment of Village and Small Industries Sector in terms of production and employment. The spectrum of industries in our country extends from the organised large and medium scale industries to the modern small scale sector and unorganised traditional industries. The last two, modern small scale industries and unorganised traditional industries known as Village and Small Industry (VSI) presents an important segment of the economy. The Village and Small Industry sector provides maximum employment next only to the agricultural sector and accounts for more than one third of the total exports of the country. In terms of value addition, it contributes about 40 percent of the manufacturing sector. The growth in this sector has a preponderance of self employment, results in wider dispersal of industrial and economic activities and ensures maximum utilisation of local resources both men and material.

The Village and Small Industries Sector has been divided into different sub-sectors for the purpose of administering various assistance programmes. Specialised institutions have been created to look after each of the sub-sectors at the national level.

The importance of this segment can be gauged from its substantial contribution in the Village and Small Industries sector. The traditional Industries such as the coir are mostly rural or semi-urban in character which sustain and create employment opportunities both part and full time, increase income generation and preserve the craftsmanship and heritage of the country.

The Coir Industry is significant in the national context also because of the large volume of employment that it offers in rural areas to the poorest of the poor. And it is agro-based and provides the means of livelihood for about half a million people in the country. Coconut husk, the raw material for coir industry is available in abundance in regions of large scale coconut cultivation.

Coconut is cultivated in many countries of the world situated in the tropics. The world's largest producer of coconuts is the Phillippiness. India occupies the third position in the production of coconuts with an output of about 10,000 million coconuts. Although Phillipines and Indonesia together

account for 45 percent of the world production of coconuts, India and SriLanka, with only about 30 percent of the world coconut production account for nearly 90 percent of the world coir production. The area under coconut cultivation in Tamilnadu is 225.9 in '000 Hectares and production of nuts is 2302.4 million per annum.[1] The coconut cultivation is abundant in the area in and around of the Thanjavur district.

Coir is a natural vegetable fibre extracted from coconut husk. It is one among the industrial hard fibres of great economic importance. Coir is extracted from coconut husks either by the natural retting process or by mechanical extraction. The fibre extracted from green husks by the retting process is termed "White Fibre" and that from husks by mechanical process is "Brown Fibre". Both these methods are adopted in Tamilnadu.

Coir is an inevitable material which finds use in a variety of applications due to the instrinsic characteristic of the fibre. It is a multi-cellular fibre with cellulose and lignin as the major constituents. The high lignin content contributes to the hard and rigid nature of the fibre. It's damp and rot resistant nature, with capacity to absorb and retain colouring material coupled with resilience, makes it so skillfully suited for preferential use in the production of brush mats,

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1. Sample Survey Report of Department of Economics and Statistics , Chennai. p-3

carpets, mattings and floor furnishing materials. The low heat conductivity of coir and its sound modulating characteristics prompt its use in thermal insulation and acoustic control.

India has the distinction of having the monopoly for supply of coir fibre, coir yarn, mats, mattings and carpets of superior quality to world markets. With the advent of synthetics, Indian export of coir and coir product has met with serious setbacks. In International markets, coir exports from India face competition from synthetics. Grass mats originating from China and South East Asian Synthetic products. Grass mats are priced at about 1/3 price of coir products. The labour intensive nature of the traditional coir Industry concentrated in Kerala and the low productivity of the manufacturing technique of coir extraction and further processing of fibre into yarn and products have stood in the way of manufacturing coir products at reduced cost. There is an apprehension of displacement of labour on a large scale by the adoption of power based but more productive and efficient methods which have stalled the progess of the traditional coir industry.

The average yield of coir fibre from one million husks is estimated at 80 tonnes. The world potential for coir fibre is estimated at 3 million tonnes from 33629 million husks. The current world production of coir is about 3,00,00 tonnes which is only 10 percent of total potential.[2]

2. Coir News, Cochin, Jan 2001. p-22.

The production of coir in India is estimated on the basis of export -trends and internal consumption assesed from the quantity of coir and coir products moved by rail, road, etc. from the producing centres located in Kerala, Tamilnadu and Karnataka states, to other places in India, besides these states small quantities of coir are also produced in Andra Pradesh, Orissa, Maharashtra, Goa, West Bengal and Pondicherry which are consumed locally.

Tamilnadu is the largest producer of Coir Fibre after Kerala in India. There are 684 units engaged in the extraction of Coir Fibre. Tamilnadu accounts roughly for 60 percent utilisation of coconut husk, Coir fibre potential in the State is estimated at 65,000 tonnes.

It is interesting to note that India's brown fibre production, largely from Tamil Nadu, has been growing fast from 44,000 tons in 1990-91 to over 1.00 lakh tons in 2000 while the white fibre production has been nearly stagnant over this period. Coconut husk is a renewable agro-waste arising out of extraction of fibre from husk which leaves coir pith or coir dust as waste. Extraction of 1 kilo coir fibre generates 2 kilos of coir pith. Pith is a light flutty material. It occupies large space. It is highly water absorbent. Being dust is blown by wind when it is left on the sides of roads it causes obstruction to transport. When set on fibre it does not burn

completely and emits continuous smoke for several days polluting the environment. Its disposal causes high problem in the coir fibre centres. Coir pith hillocks are a common sight in these areas.

By-products of coconut is not fully utilized in coconut growing areas in our country. By-products such as shel and husk are still mainly used as fuel. Only 25 percent of the husk produced in the country is utilized for the nanufacture of coir products. If by-products are commercially utilized it will ensure additional income to coconut growers the commercial exploitation of husk, shel and mature coconut water has great significance in this context. Thus, considerable emphasis for by-product utilization is essential. This would help the formers for better returns making the coconut more competitive.

The gap in demand and supply is proposed to be bridged by detailing the programmes for coconut development in such a way that considerable increase in the production and productivity of coconut is achieved in future. Besides, development of technologies for product diversification and by-product utilisations infrastructure development for technology adoption and market promotion of coconut products are the major thrust areas during the future plan period for the integrated development of coconut cultivation and industry in the country.

The important functions of the coir board is to impart training in coir processing as part of its developmental activity. Schemes are implemented by the coir board through model coir village programmed for the welfare of the workers engaged in the coir industry. The programmes include quality improvements, better living conditions, educational and medicare.

Another quality of brown coir fibre, twisted fibre, is obtained by 'curling' a mixture of bristle and mattress fibre. After uncurling again this is put into a mould which is subsequently sprayed with latex, dried and vulcanised. The 'rubberised' coir which results from this production method is very resilient, but the production cost is rather high.

The internal problems are those that are inherent in a particular unit and are thus experienced by that unit alone. These problems could possibly be present in other units also, but each unit will have to solve it in its own way. These internal problems are caused by the promotor himself, the product marketed, the infrastructure availablility and the technology adopted. Of the several problems the coir units faced, the most predominent were ineffective marketing, labour problems, inadequate transport facilities, unsatisfactory management performance and inadequate storage facilities.

A business concern is said to be advanced or developed only when it raises its turnover year after year. Coir industrial units are not an exception to this general rule. Looking at the sale of fibre by the 100 private units for a period of 10 years,(from 1991 to 2000) one could very easily understand that there was no improvement or increase in turnover annually except for a marginal increase varying from 1 per cent to 3 per cent. In the case of some units the quantum of turnover had gone down over the period of 10 years. This indicates that the private entrepreneurs have not shown any interest in increasing the quantum of sale of fibre. There was a lack of professionalism in the marketing approach and in product development. The field survey brought to light, that there was acute paucity in working capital that hampered the development of the units. A majority of the entrepreneurs were not knowledge in adoption of marketing strategies in terms of advertisements through several media.

A well knit transport infrastructure is needed to transport the raw material from the farms to the coir units. Collection of husks is a routine work done even daily. Any breakdown in the transport system would affect the movement of raw materials to the coir units. Equally efficient transport arrangements are needed to move the finished products to the market. It could be noted that only 80% of the private units had their

own vehicles. Relying on hired vehicles was always a problem. The tractor was the most popular vehicle for transportation. During times of intensive agricultural operations, hired tractors were in great demand and consequently the coir units suffered much in transport of raw materials.

The private units too lacked a sound transport system. But the need of the co-operatives was restricted to moving the finished products to the markets. They hired private lorries when required.

While entrepreneurial talents are relevant and essential in the establishment of an industry and its development, managerial talents are essential in different departments like finance, marketing, accounts, production, secretarial liaison works and administrations. The management skills have to be acquired through training and experience. It is exactly lack of skill in some of these crucial departments that has directly affected the working of the coir units.

The findings drawn with reference to the two major problems have clearly indicated the nature, the characteristics and the grievances of the problems that the coir units are facing. They call for urgent action from the authorities concerned.

The development programmes of coconut received more attention after the formation of the Board. The major functions of the Board interalia include adopting measures for the development of coconut industry, recommending measures for developing the sales of coconut and its products, regulating import and export of coconut and its products following measures for assistance coconut growers to get incentive prices for coconut and its products, providing financial and technical assistance for producing processing and marketing of coconut. Fixing grade specification and standards of coconut products etc.,

The coconut development board has been providing financial assistance for wide area of expansion ever since its inception. This programme has also attracted the attention of almost all in a constant demand to increase the quantum of assistance under the scheme in order to achieve the projected production by the area expansion, new planting is to be given more stress in the non-traditional belts where suitable areas are available and where coconut can be a component in various cropping combinations instead of intercroping. Planting of quality seedlings preferably raised from local mother palms are to be given emphasis under area expansion programme in the non-traditional areas.

Another difficulty faced with regard to finance was that the money trickled down as instalments, except in the case of the machinery loan. The money disbursed by the commercial banks was also in instalments. This the units felt was very bad and in very many cases the loans did not serve the purpose. Every registered coir unit located in backward and most backward districts is entitled to subsidies provided by the coir board.

As far as any organisation is concerned, the working is of greatest importance and has to be analysed thoroughly to accomplish so many long term objectives, demand for coconut production, mainly the coir products the training given by the board, its performance etc., have been analysed.

The social objectives is of improving the living conditions of all those engaged in this industry, especially the workers and manufacturers. Their economic objective is of providing employment and encouraging quality products, acceptable to export and domestic market and to ensure reasonable reforms to producers and exporters. Their overall objectives is of creating a self reliant environment for the healthy growth of the industry.

According to the present survey, total number of workers full time and part time, employed in the coir industry in

Tamil Nadu was estimated at 33,553 the composition of employment shows that women workers constitute 16,392 of the total employment in the industry men workers 13,004 and children 4,157 and nearly 20,046 workers belong to unorganised sector, the coir co-operatives and private factories employ 1,328 workers and 12,179 workers respectively. Nearly 28,682 of coir workers are full time workers and 4,871 are part time workers.

Coir workers in the state are mainly engaged in defibring of husk, retting, beating, yarn spinning, rope making, weaving and curling the spinning sector accounts for 4,156 of the workers. Fibre production sector accounts for 19,288 workers, rope making sector 1,659 workers and rubberised coir 266 workers. In Thanjavur District there are 4,296 worker engaged in coir industry.

Distribution of units in the organised sector, according to size of employment is given majority of units have employees between 10 and 19. The board provides that the distribution of house hold units according to the average number of days, worked in a year, majority of units worked about 271 days in a year.

Although the coir industry enjoys many advantages in terms of employment, exports etc., it is also faced with lot

of problems. These problems can be broadly classified into Internal and External Crisis. It is as the direct outcome of these problems that about 10 percent of the total number of units are becoming sick every year. The situation calls for appropriate and timely action.

Mostly coir products, intended for export and domestic market, are producted by small scale manufacturers. There are about 5000 small scale units engaged in the manufacture of coir products. They produce coir fibre, yarn, chemicals, etc., Mainly from private traders and are often exploited.

The decline in coir exports from India in particular, which may either have been the result of the overall decrease of the world demand for coir or of a relative decline in the Indian share vis-a-vis its main competitors, or indeed of a combination of both these factors, will be given particular attention. The problem which this decline instilled, and which gave rise to fierce debates in the country regarding the need for mechnising the coir production so as to regain the lost markets, also needs a proper understanding of the international factors concerned.

The steady decline in coir yarn exports from India reflects the fact that during the 1960's most of the floor covering producers especially in Western Europe discontinued the

production of coir matting. In some cases, they turned into merchants of finised coir floor coverings produced in India.

The sharp decline in the world demand for coir fibre, following the worldwide recession was further compounded by the existence of large carry-over stocks built up in 1974 in the main importing countries, when prices of competing synthetic products were increasing rapidly following the oil price rise. From 1976 onwards, though fibre exports regained some ground both as a result of the recovery of the automobile industry and the need to replenish stocks, they did not achieve the level of the early seventies. During the economic recession of the early eighties, the world demand for coir fibre fell again, due to the availability of synthetic substitutes.

In addition, the impact of the steady increase in freight rates on the cost of coir fibre also affected the consumer. Compared to other hand fibres, the proportion of the freight rate of the f.o.b. value for coir is excessive. The freight rates for coir were between 84 and 97 percent of the total f.o.b. value. While this high percentage may be largely due to the relatively low value of the fibre combined with its bulky nature, it is clear that the margins do not leave any room for price adjustments, if freight rates increase further. To be more

precise, one should note that the price-elasticity of demand in the case of coir fibre is too low, to the extent that a price fall is unlikely to induce a substantial increase in demand, while the same price-elasticity seems to be much higher when a price rise occurs. Any significant increase in coir prices, therefore leads to a sharp decline in world demand.

It is obvious that some form of technological improvement in the Indian coir industry cannot be avoided if India wants to maintain its position in the world market for coir products, might reverse the stagnation in India's coir export markets. India's major competitors, like Sri Lanka in the market for coir yarn and the Netherlands, Portugal and Sri Lanka in the market for coir mats, mechanised their coir processing industries long ago. India may not be able to make up for its present disadvantages if it continues to delay the long-overdue modernisation of its coir industry. The country, furthermore, does not have a particularly good record in trade competition. Recent displays of Indian coir products in international trade fairs in Europe have reinforced this sloppy impression.

Suggestions

The overall suggestions of this inves' igation have been summarised at various points. The active participations of the local people is very evident. The study reveals that 100 units out of the 141 units Surveyed where founded by the people who happen to be native of Thanjavur District. The people from this region who had previous little industrial or commercial background, as compared to other developed regions. Plunged into a totally alien field when suitable preconditions were increased.

The study attempts to show that the entrepreneurship emerging in response to various incentives and facilities extended by the Tamilnadu Government agencies are significantly beneficial to the population. The sample selected for the study is significantly dominated by entrepreneurs. It is generally believed that the Coir Industry entrepreneurship would have a narrow base when certain economics which are helpful to the growth of entrepreneurship are generated by a family. The development of entrepreneurship, it is believed, would be broad based when such economics are generated in the society as a whole. This study reveals that the institutional agencies created by the Government to generate economics to help the prospective entrepreneurs could not widen the base of entrepreneurship.

The early entry into Coir Industry production is also affected by the internal economics generated by the family. It is found that the sons of the business owners and the sons of the officers entered the coir business at an early age as compared to other most of these entrepreneurs also appear to have directly entered into manufacturing without staying into their fields. Most of these entrepreneurs backed upon their fields. Most of these entrepreneurs backed upon their own family resources for their entrepreneurial pursuits. This findings again indicates that irrespective of father's occupational status all those who received help from their family and draw family resources for starting their enterprise established their Coir units at an early age as compared to those who did not receive any help from their families.

In the Indian situation entrepreneurship hardly remains an individual phenomenon and it has to be viewed as an extension of the family aspirations and ambitions which are ultimately realised by an individual. To support this contention the study reveals that 77 percent of the Coir entrepreneurs to have admitted having received family help for building up their occupational career as entrepreneurs. These entrepreneurs also benefited from their families in receiving formal education, inherited property, financial help and the intangible help of family connections.

Financial help from the family and father's occupational status where found to be significantly related. The higher occupational classes helped their prospective entrepreneur progeny to a considerable extent than those in the lower occupational classes. Financial help from the families for establishing the entreprise is not associated with the caste of the entrepreneurs.

The tendency to restrict ownership in family is mainly guided by two different consideration, namely continuing and smooth running of the firms and to represent joint family structure. The ownership structure is also guided mainly by the kith and kin consideration. The rational behind the organisation and ownership structure was not followed by the Coir units surveyed in Thanjavur District in Tamilnadu.

India has the distinction of having the monopoly for supply of Coir fibre, Coir yarn, mats, mattings and carpets of superior quality to world markets.

Coir industry in the State provided employment to people in the economically backward classes in the rural areas.

In Thanjavur District there are 4296 workers engaged in Coir Industry as per the survey in this district. The total quantity of Coir fibre produced in Thanjavur District is

estimated to be 10,671 tons. Out of this fibre, 1,398 tons of yarn, 9 tons of mat and mattings, 995 tons of curled coir and 213 tons of other coir products are produced. The balance quantity of 8,056 tons of fibre are sold as raw material.

Based on the total production, consumption of fibre in the district is only 24.50 percent and the balance of 75.50 percent fibre is sold as raw material.

Intensive research is required to identify the chemical and bio-chemical factors involved in the retting process with a view to ensuring the uniform quality of fibre and to reduce the retting period. The reduction of retting time will facilitates the retting of more husks in a given area and would also result in considerable saving of locked up capital.

On the spot field assistance to advise processors on scientific fibre extraction techniques and further processing of fibre can also improve the quality of fibre extracted. Efforts made by the Coir Board in this connection by setting up field extension services have produced encouraging results and hence must be further strengthened and expanded.

There is need to develop new designs for coir mattings and evolving techniques for weaving new patterns. The possibility of improving the texture of the finished

products by using different raw materials including synthetics must be investigated. This will enable the manufacturers to the latest weaving of mattings in novel designs and would further the export potential of the matting sector. This would also facilitate the export of coir mats fabricated out of mattings.

For the past many years may be characterised as the age of super competition and during this period spectacular development of new products and their introduction has become an increasingly important area of research. It is during the latter half of this period that coir and coir products began to face stiff competition from substitutes.

It is felt that the development agencies usually have a bureaucratic approach in dealing with entrepreneurship development. The entrepreneurs approach and the bureaucratic approach are two contrasting approaches in the sense that whereas the one is characterised by "doing things" in a different way and other is characterised by doing things in a routine way that the State Government shou d ensure an uninterupted power supply for atleast ten hours a day during the normal working hours of the industries. Electric charges should be realised on the basis of actual consumption of electricity. It is strongly suggested that instead of providing subsidies and concessions to the coir industry the Government must

ensure a regular and adequate supply of inputs like materials electricity, finance etc., This will help the coir entrepreneurs to stand on their own feet instead of depending exclusively on the Governmental assistance.

The financial problems of the entrepreneurs in coir industry are: thin equity base of the units, dilatory and cumbersome procedure regarding sanction of the loans, harsh recovery procedure of debts, more stress on furnishing secuirty in place of visualising the viability of the project, high interest rates and other charges and delay in payment by parent units and government of semi-government department. It should be cleared up by the concerned departments of coir industries.

The area in which coir entrepreneurs face the greatest difficulty is that of management. In most of the cases, coir industry entrepreneurs turn into the managers and, therefore, knowledge of various management principles and techniques becomes essential for them. It is therefore, suggested that more and more management training programmes, should be conducted by the Government and its promotional agencies with a view to acquaint the coir industry entrepreneurs with the techniques of management. The commercial bank should play more active role in educating the entrepreneurs in management

fields by providing, counselling material, conducting management training programmes and establish consultancy cells.

The coir pith changed into organic manure is really a valuable biomass. It can be used to make partition boards, briquetted fuel, light weight ferro-cement type beams, activated carbon, organic fertilizer and extraction of organic compounds like lignosulphonates etc, thus the waste can be turned into a money spinner.

The coir board has given much concentration on the promotion of production in connection with improving the skill and knowledge of the workers. Various centres provide services to the workers who excel very well after getting the training. The Board concentrates more on qualitative aspects which help in the Development and improvement of the Board.

Further analysis of the coir products market is necessary to improve the turnover of the product. New technologies can be imported in the manufacture of coir products to attract more customers. Training with deep knowledge and specialisation in the manufacture of the product is essential. So, systmatic training procedure can be planned from time to time to bring worthy changes in the manufacturing process. More and more new products can be innovated which

can gain attraction from different type of customers. Continuous research studies in key areas such as the market for coir products, Technology upgradation, type of training to be given to workers, innovation of new products should be made to bring correlation in so many areas.

Conclusion

By means of using the coconut products for various household and agricultural purposes, the economy of our people is in a bridle of control and also by means of the development and increase in the production with regard to coir industries in and around Thanjavur District will be of no doubt provide employment opportunity, encouragement of entrepreneurship and definitely there will be a steep raise in the standard of living of the denizens of this area.

As the Government and the coconut growers are going hand-in-hand in improving the status of this business, the growth of small scale industries like coir manufacturing units will be mushroomed countless in number of shower its benefits not only to the people but also for the welfare of the nation both in employment and economic fields.

APPENDIX - I

SCHEDULE

A STUDY OF COIR INDUSTRY IN THANJAVUR DIST

1 Taluk ----------

2. Name and address of the Unit ----------

3. Type of Establishment :

a. Proprietorship b. Partnership c. Co-operative

d. Govt. undertaking e. Others (Specify)

4. Capital Investment

a. Land : Rs.

b. Building : Rs.

C. Plant & Machinery : Rs.

d. Total : Rs.

5. Source of finance

a. Own :

b. Bank / Financial Institution :

c. Others (specify) :

6. Manpower Employed

Category	Male	Female	Children	Total
Office Staff				
Workers				
Casual				
Others				
Total				

7. Wages (per day) Male : Rs.

Female : Rs.

Child : Rs.

8. Details of Machinery

Sl. No	Name of Machinery	Installed Capacity	Value Rs.	Total	Capacity Utilisation

9. Raw Materials

Sources of Husks	Quantity (1000's)	Value Rs.	Transportation Charges Rs.	Total Value Rs.
Own Purchased Others (specify)				

10. Stock of Raw Materials :

11. Fibre Production :----------tons.

12. Coir Fibre Marketing Position : ----------tons.

13. Problems :

14. Any Assistance required :

Date :

Place : Signature

APPENDIX - II

APPENDIX - II

List of Coir Industries

Pattukkottai Taluk

1.	Sundara Vinayagar Coir Industry	Thuvarankurichi.
2.	Veeranar Fibres	Alathur.
3.	A.S.M.Fibre Industries	Pattukkottai
4.	S.V. Nathan Coir Industries	Pattukkottai
5.	Venkateswara Fibres,	Pattukkottai
6.	Sri Balaji Fibres,	Pattukkottai
7.	Muthusuba Coir Industries	Pattukkottai
8.	Nadimuthu Coir Industries	Alivalam
9.	Kumaran Coir Thozhilagam	Pattukkottai.
10.	Mohamed Coconut Fibre Industries	Adirampattinam.
11.	Sri Mariamman Coir Industries	Thuvarankurichi.
12.	Royal Fibre Industries	Adirampattinam.
13.	Thuyavalanar Coir Industries	Pattukkottai.
14.	Muthamil Selvi Coir Industries	Pattukkottai.
15.	B.S.V. Fibre Industry	Sengapaduthankadu
16.	Suseela Coir Industry	Pattukkottai.
17.	Sri Veeranar Fibre Industry	Pattukkottai.
18.	Kuntrakudi Kayaru Thozhilsalai	Pattukkottai.
19.	A.C. Coir Industry	Pattukkottai.
20.	Sri Venkateswara Coir Industry	Pattukkottai.
21.	P.A. Fibres	Pattukkottai.
22.	Green Garden Products	Adirampattinam.

23.	Muthujaya Coir Factory	Pattukkottai.
24.	Padma Coir Industry	Pattukkottai.
25.	Thanvanthan Fibres	Pattukkottai.
26.	Infant Jesus Coir Industry	Pattukkottai.
27.	R.P.R. Fibre Mill	Pattukkottai.
28.	P.A.S. Coir Factory	Pattukkottai.
29.	Om Sakthi Vinayagar Coir Industry	Pattukkottai.
30.	Sri Ramu Fibres	Alivalam.
31.	Kuruchi Fibres	Kuruchi.
32.	Kaliyathal Fibre Industry	Alathur
33.	Karpaga Vinayagar Coir Industry	Nattuchalai.
34.	Srimathi Muniyammal Coir Industry	Adirampattinam.
35.	Jayaraj Coir Industry	Pattukkottai.
36.	Sethu Coir Industry	Kurichi
37.	M./S. Pathi Coir Thozhil	Pattukkottai.
38.	Shanmugavel Fibre Industry	Pattukkottai.
39.	Aravind Coir Industry	Pattukkottai.
40.	Sri Aravind Coir Factory	Pattukkottai.
41.	M.M. Coir Fibre	Pattukkottai.
42.	Nadiyamman Coir Industry	Pattukkottai.
43.	Periyar Coir Industry	Alivalam.
44.	Solai Coir Industry	Pattukkottai
45.	Thirumurugan Coir Industry	Pattukkottai.
46.	VJSK Coir Industry	Alivalam.
47.	VJ & CK Coir Factory	Pattukkottai.

48.	Narayanamoorthy Coir Industry	Pattukkottai.
49.	Solai Coir Factory	Pattukkottai.
50.	Arunachalam Coir Factory	Pattukkottai.
51.	Sri Muneeswara Coir Industry	Pattukkottai.
52.	Revathy Coir Industry	Pattukkottai.
53.	Mariammal Coir Factory	Pattukkottai.
54.	VLR Coir Industry	Pattukkottai.
55.	Valliammai Coir Factory	Pattukkottai.
56.	Adirai Fibre & Coir Industry	Adirampattinam.
57.	New Adirai Coir Industry	Adirampattinam.
58.	Mohamed Coir Industry	Adirampattinam.
59.	Ameen Fibre & Coir Industry	Adirampattinam.
60.	A1-Ameen Fibre Industry	Maliakkadu.
61.	Jhana Sakthi Coir Industry	Madukkur.
62.	Aravind Coir Industry	Madukkur.
63.	Praveen Coir Industry	Madukkur.
64.	Viji Coir Industry	Paravakkottai.
65.	Annai Indira Coir Fibre Industry	Madukkur.

Orathanad Taluk

66.	A.K.S. Coir Industry	Orathanad.
67.	Mannan Coir Industry	Pulavankadu.
68.	Praveena Coir Industry	Ambalappattu.
69.	Pulavankadu Coir Industry	Orathanad Taluk.
70.	Vandayar Coir Industry	Pinnaiyur.

71.	Ambal Coir Industry	Venkarai
72.	M.R. Coir Industry	Thiruvonam.
73.	Uranipuram Coir Industry	Uranipuram.
74.	Unnamalai Coir Thozhilagham	Thiruvonam.
75.	Karuvurar Coir Industry	Orathanad.

Peravurani Taluk

76.	Sri Sundaram Coir Industry	Sethubavachatram.
77.	Jansi Fibre Industry	Sethubavachatram.
78.	Sri Ayyappan Fibre Industry	Sethubavachatram.
79.	Sri Venkateswara Coir Industry	Sethubavachatram.
80.	Thuravilakkadu Coir Industry	Pattukkottai.
81.	Sri Vinayaga Fibres	Peravurani.
82.	Subramaniam Coir Industry	Avanam
83.	Vinayaga Fibres	Peravurani.
84.	Eswaran Coirs	Peravurani.
85.	Lakshmi Fibres	Peravurani.
86.	Veerappa Fibres	Peravurani.
87.	Johnsi Fibre Industry	Ottangadu.

Thiruvaiyaru Taluk

88.	Sri Venkateswari Vilas Coirs	Thiruvaiyaru.
89.	Arumugaraj Fibre Unit	Thiruvaiyaru.
90.	R.G. Fibres	Thiruvaiyaru

91.	P.M. Coir Industry	Thiruvaiyaru
92.	Arunachalam Coir Industry	Thiruvaiyaru

Thanjavur Taluk

93.	Thanjai Coir Industry	Vallam
94.	Sukhil Fibres	Thanjavur.
95.	Gold Coir Industry	Thanjavur.
96.	Cauvery Fibre	Thanjavur
97.	Sri Venkateswara Coir Industry	Thanjavur.
98.	Sri Ruthra Neyan Coir Industry	Vallam.
99.	Kamalam Coir Industry	Thanjavur.
100.	Kamatchi Coir Industry	Thanjavur

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