1.1 INTRODUCTION

The economic advancement of a country is measured on the basis of its industrialization. Small industrial sector including the village and cottage industries functions as a powerful instrument for rapid and diversified growth of a country like India. Match industries are of utmost necessity in the everyday life of human beings. The origin of the match industry dates back to new stone-age (10,000 B.C. to 5,000 years). Match industry has mass production and provides employment opportunities to the society. It plays a vital role in building up the economic structure of the society. Safety matches are a century old in India. It was in 1894, Amrith Match factory at Bilapur and Gujarat match factory at Ahmedabad were set up with the technical assistance from Sweden. A family venture has been behind the growth of the match industries in Kovilpatti town of Thoothukudi district. For the effective regulation of the match industry in India and for the levy of excise duty, the Government of India classified the various match units under the classes, namely, A, B, C and D. This classification was made on the basis of the methods of production. Match industry is a flourishing, established and secured industry. The market for the industry is commendable for its prosperous growth. Sale on credit has become an established mode of business
trend. Sweden is the famous and oldest manufacturer of match industry. The major market areas are Delhi, Gujarat and Rajasthan.

1.2 MATCH INDUSTRIES – AN OVERVIEW

The origin of the safety match industry in India goes back to the beginning of this century. Around 1910 immigrant Japanese families who settled in Calcutta began making matches with simple hand and power-operated matches. Local people soon learned the necessary skills and a number of small match factories sprang up in and around Calcutta.

These small match factories could not meet the total requirements of the country however, and India began to import matches from Sweden and Japan. During the First World War, when Swedish matches could not be imported, the Indian market was fed mainly by imported matches from Japan and by the locally made ones which followed the Japanese pattern introduced in Calcutta.

After the war, factories in Calcutta were unable to compete with imports, and handmade match production shifted to southern India, especially the Ramanathapuram and Tirunelveli districts of Tamil Nadu state. This shift was due to the pioneering efforts of P. Iya Nadar and A. Shanmuga Nadar who went to Calcutta to learn the process from Purna Chandra Ray, a local businessman, who had learned the trade in Germany. The Nadars set up a number of manual match
production units in the extremely poor regions of Tamil Nadu, where a combination of the dry climate, cheap labour and availability of raw materials from nearby Kerala created ideal conditions for match production. The first sulphur match that would burn when brought into contact with a rough surface was produced in South India in 1923, and the first safety match, in the form known today, in 1932.

Mechanization came to the Indian match industry in 1924 when M/s. Wimco Ltd (Wimco), started operations in 1924 as a unit of the multinational Swedish Match Company, Wimco is still the only representative of the large scale sector in wooden match manufacturing and is the only fully mechanized match factory in the country.

During the past three decades, the Indian match industry grew rapidly. Government policies protected Indian matches by placing protective tariffs on imported products and specifically favoured the expansion of the handmade, small-scale sector through the use of differential excise taxes. There are now 12,000 units in the small-scale, non-mechanized sector, of which 75 per cent to 90 per cent are situated in Southern India.

Indian government policies have played an important role in the development of the match industry as a whole and in the encouragement and protection of the small-scale sector for the last fifty years. Protective tariffs,
differential excise duties and sales tax exemption are some of the mechanisms used by central and state governments to develop the industry.

Government assistance was first expressed in 1922 through the imposition of a high rate (Rs.1.50 per gross of boxes) of import tax on foreign matches. This tax was later confirmed as a protective tariff in 1928, and attracted a number of new entrepreneurs, with both semi-mechanized and handmade factories, to the industry. Imports dropped by 50 per cent with a five year period.

In 1934, excise duty was first levied on matches at a rate of Rs.1.50 per gross, as a revenue measure to compensate for the fall in the government’s income through the customs tariff in the wake of the sharp decline in imports. This was doubled to Rs.3.00 per gross in 1940 and stayed at that level until 1942. During this 8-year period, the excise duty was uniformly applied to all manufacturers of matches.

In 1943 a major change in policy was introduced with the differential excise levy. The rate remained unchanged at Rs.3.00 per gross for units producing over 100 gross per day while it was lowered to Rs.2.87 per gross for units producing less than 100 gross per day. Over the next ten years further classification resulted in 5 levels of production with progressive concessions to smaller units. In 1967 the basis for differentiation was expanded to include the mode of production as well as the volume produced. This decision further
strengthened the small-scale enterprises and remains as a main plank of government policies in the present. In 1979 an even more dramatic spread in excise duties was mandated, raising the duties of the mechanised sector and lowering those in the handmade sector. Most recently, production limits on the middle and cottage sectors have been removed with an excise duty of Rs.3.50 per gross established on both. The objectives of these decisions were to:

a. to ensure the acceleration in the share of the cottage sector at the expense of the mechanized sector and the larger non-mechanized handmade sector;

b. to increase employment, particularly in rural areas;

c. to minimize the impact of match price increases on the consumer.

The differential levies in force in 1981-2000 and 2000-2012 are illustrated in Table 1.1.
### TABLE 1.1

**EXCISE DUTY STRUCTURE FOR A BOX OF 50 STICKS**

<table>
<thead>
<tr>
<th></th>
<th>1981 to 2000</th>
<th>2000 to 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wood</td>
<td>Cardboard</td>
</tr>
<tr>
<td>I. Mechanized</td>
<td>7.20</td>
<td>6.60</td>
</tr>
<tr>
<td>II. Semi-mechanized</td>
<td>4.90</td>
<td>4.15</td>
</tr>
<tr>
<td>III. Handmade</td>
<td>4.50</td>
<td>3.50</td>
</tr>
<tr>
<td>IV. Cottage / Tiny</td>
<td>4.50</td>
<td>1.60</td>
</tr>
</tbody>
</table>


To further insure that the hand-made sector continues to expand the central government has frozen the capacity of Wimco, the only large-scale mechanized match producer, at 695,000 cases (1 case = 7200 match boxes).

#### 1.2.1. Impact of Government Policies

As a result of the policy measures described above the Indian match industry boomed. Between 1926-28 and 1949 the number of factories increased from 27 to 192. Since that time there has been a continuous expansion of the hand-made sector whose share of the market has shot up from 22 per cent in 1949-50 to 50 per cent in 1969-70 and now constitutes 82 per cent. With Wimco’s production level frozen and growing population fueling an increase in demand estimated at 6 per cent per annum, the handmade sector will clearly
increase even further in the future. The cottage sector under the co-ordination of the Khadi Village and Industries Commission (KVIC) has been selected to be the major growth sector in the future.

The government is aware that the policy of differential excise levels acts as a positive disincentive for small units to expand their production and even encourages some bigger units to go in for deliberate fragmentation. No satisfactory solution which would strike a balance between the legitimate interests of the small sector and prevention of abuse of official policy has been developed. There are a number of match producers who have fragmented their units to get the benefit of concessions, but at the same time there is a growing trend towards centralized ownership of many smaller units. In the two major southern match centres, Sivakasi and Kovilpatti, 18 families, known as the “Match Kings of India”, now control almost 67 per cent of the total match production in the country.

Another result of government policies has been to severely limit the activities of Wimco in the mechanized sector. The increase in excise duties initially proposed in 1979 represented seven times the company’s profits in 1977.
1.2.2. The Industry Today

Per capita consumption of matches in India increased steadily from 2.45 sticks per capita in 1970 to 4.25 in 1985. There are wide fluctuations in the annual growth rate in the consumption of matches varying from as low as 3 per cent (before 1970) to as high as 28 per cent (from 1977 to 1983). The rising levels of income in relation to which prices of matches have shown remarkable stability over the years, growing urbanization, swelling numbers of smokers, and changes in fuel consumption patterns indicate that the future rate of growth could be higher than the 6 per cent as supported by past trends.

Consumption of matches in 1977 was 1,965,138 cases (one case = 7,200 boxes). If this is taken as the base and demand is projected at 6 per cent per annum, the estimated requirement for matches in 2010 will be 31,191,663 cases.

It will be upto the three major layers of the match industry: the mechanized sector, the semi-scale, hand-made, middle level sector, and the cottage sector to meet these demands. Each sector has special characteristics and constraints.

The substitution of wooden match boxes by cardboard, pioneered by Wimco, has introduced a definite technological and material improvement in the industry. But along with this change, a degree of semi-mechanization of
operations has also been introduced. Cardboard skillets used mainly for manufacturing outer box match manufacture are printed in central, automated printing machines and are purchased by small match manufacturers. This innovation has naturally resulted in lowering the employment rate, much against the planned concept of promoting employment-oriented technologies.

Another approach to the raw material problem is to substitute wax instead of wood for the match splints themselves. A lead in this direction has been taken by Wimco and several small units are also producing wax matches now. The splints are made from a special type of wax paper. The production of wax matches has so far remained restricted due to the high cost of wax paper, about Rs.20,000 per tonne at present, and the very high ad valorem excise on wax paper of 31.5 per cent. If wood shortages continue to be a severe as projected, the problem can be partially solved through government rebates in excise levied on wax paper to encourage the production of wax matches. Wax is, however, a petroleum byproduct and it is unlikely to become readily available in sufficient quantities to replace wood in match splints.

1.2.3 Issues and Constraints in Match Industries

The Indian match industry is a vigorous FBSSE which has succeeded in expanding at a relatively small-scale, hand-made, and labour-intensive level.
There are, however, a number of important issues and major constraints that confront the industry. These include:

- shortages of raw materials, particularly match quality soft woods, but also chemicals, match wax and wax paper;
- geographical distribution of the industry in one region and resulting labour shortages;
- the monopoly of the 18 “Match Kings”;
- exploitation of women and child labour by these monopolists;
- the failure of the cottage sector;
- the introduction of new technology in the hand made sector;
- and the unique problems of the veneer and splint making industry.

The increasing demand for matches coupled with declining wood resources is the major bottle-neck faced by the entire match industry in India, including the ancillary splint and veneer industry in Kerala. In order to meet the demand for matches of 3.51 million cases in 1990, projected by the Development Committee on Matchwood in 1979, the total matchwood required would be 879,000 CMH (692,000 m³). At that time the estimate of total matchwood available was 500,000 CMH (394,000 m³). Although estimates of availability are unreliable it is doubtful whether substantial increases have been made. In fact the government has projected a shortfall of 900,000 m³ in the year 2000. Veneer quality wood for
match boxes, which accounts for 44% of matchwood used, is in particularly short supply. Through policy decisions the government has also raised the royalty on wood many times over. There has been a virtual scramble to take whatever wood and ready splints are available between the mechanized and the handmade sectors.

There are a number of reasons explaining the critical shortage of suitable matchwood in India. These include:

a. Over-harvesting of matchwood during the last two decades all over the country;

b. The submersion of forest areas bearing matchwood under hydro-electric reservoirs, and clear felling for irrigation canals;

c. Conversion of large chunks of forest land bearing matchwood for resettlement and state farms, army cantonments and other development activities;

d. Failure of natural regeneration of the main matchwood species, semul.

e. Lack of adequate tending of existing matchwood plantations; and

f. Competing claims for matchwood from other soft wood-based industries like tea chest plywood, packaging, pencils and shoe heel.

Geographical factors have played an important part in wood shortages for the match industry. Almost 82 per cent of the entire production of matches in the handmade sector is located in Tamil Nadu in areas with minimal forest resources.
Wood has had to be transported from out of state. Fortunately there is a thriving veneer and splint industry in neighboring Kerala, where over 400 processing units supply nearly 90 per cent of the wood used in Tamil Nadu. However, Kerala is also experiencing growing timber shortages. Wood shortages in the location of the Wimco at Bareilly and Bombay have resulted in transportation of ready-made splints from the Andaman Islands, over 2,000 kilometers away, involving sea, rail and road travel and incurring heavy losses and delays. Other basic raw materials are chemicals and other materials for match head composition which are also becoming scarce and high priced all over India.

1.2.3.1. Shortages and High Prices of Chemicals

Despite production of 12,000 tons of potassium chlorate a year within the country, there is still a shortage of this chemical compound. The steep rise in prices since 1979 (from Rs 400 to Rs 1,200 per 50 kg) is blamed on the shortage of power which is needed for the production of the chemical. To cope with the problem, the manufacturers lower the quality of the matches by reducing the prescribed quantity of the chemical formula for the match head, thereby affecting the consumer.

All the other chemicals needed by the industry have either become rare or expensive during the past ten years as well, resulting in growing shortages of these materials for the small and non-mechanized match making units.
1.2.3.2. Geographical Concentration and Labour Shortages

As mentioned above, 82 per cent of India’s match production is located in south India in one geographical region. This not only serves as a drain on neighboring wood resources but carries with it additional problems of transportation and distribution. Until recently labour was plentiful in the region. In fact the steady supply of extremely inexpensive labour was one of the major reasons why the industry grew in the area. The labour equation is changing in the traditional areas of Shivakasi, Sattur and Kovilpatti where, in addition to handmade matches, India’s largest fireworks and printing industries are now located. There is now an acute shortage of available manpower in the traditional match making areas. Because of the labour shortage, many units in these areas are unable to utilize their installed capacities fully. In some cases, production levels are as low as 40% of capacity.

The fact that 18 families currently control 67 per cent of India’s match production, even though their operating units are individually designated as small-scale, is surely at odds with the government’s desire to see the match industry remain as decentralized as possible in order to distribute income and employment to the poorest groups in society.
1.2.3.3. Exploitation of Women and Child Labourers

Linked to the control of the industry by the 18 “Match Kings” and its location in a very impoverished part of the country are allegations that women and children are being exploited, paid low wages, provided poor working conditions and given few benefits. While the industry has definitely been economically beneficial to the region, and very few cases of labour unrest have been reported, the low-wage structure in the handmade sector enables it to manufacture its product at lower cost. In the middle level sector a large number of children below the age of 10 are employed, in spite of the national minimum age of 14.

This problem extends to the cottage sector where the bulk of the labour force in KVIC match units is made up of female workers in the 15-20 age group. In contrast, daily earnings in the mechanized sector at Wimco average Rs 35. This is an extremely important issue. All too often in low value-added FBSSEs women and their family members are relegated to the lowest rung on the income ladder. This is partly a result of the piece-work system, whereby families are paid by the number of boxes made in their homes, and so the entire family is put to work.

1.2.3.4. The Failure of the Cottage Sector

In spite of a full-fledged, government funded programme, the KVIC sponsored cottage sector has been unable to realize its potential as a major contributor to the match market. Poor preparation resulted in the distribution of
funds before the appropriate infrastructure was in place. This resulted in the sanctioning of grants to many new units, often in non-traditional areas where raw materials were scarce and training unavailable. New factories were often started in unsuitable working spaces, often sheds in home courtyards, with insufficient storage facilities for raw materials and finished products. Inferior species of wood and poor quality chemicals were often utilized and there was no system of quality control. Funds and materials were diverted and misused. This failure raises questions about the need for better planning, for the development of infrastructure and training. But it also raises the issue of size. How small is too small? When is small preferable to large or vice versa?

The substitution of wooden match boxes by cardboard, pioneered by Wimco, has introduced a definite technological and material improvement in the industry. But along with this change, a degree of semi-mechanization of operations has also been introduced. Cardboard skillets used mainly for manufacturing outer box match manufacture are printed in central, automated printing machines and are purchased by small match manufacturers. This innovation has naturally resulted in lowering the employment rate, much against the planned concept of promoting employment-oriented technologies.\(^1\)

\(^1\) http://www.fao.org/docrep/x5860e/x5860e04.htm
1.2.3.5. Additional Constraints of the Ancillary Industries

In addition to raw material shortages the ancillary veneer and splint industry faces a number of constraints including:

a. inadequate supply of electric power;
b. lack of training facilities for skilled workers;
c. lack of research and development facilities to undertake systematic development of rubber wood; and
d. lack of marketing and institutional support.2

1.2.4 Match Industries in India

In this section an attempt has been made to trace the history and development of the match industry in global level and India level. It also analyses the history and growth of the match industry, modern matches and its development, India as a match making country, production of mid-fifties, origin and growth of the match industry in India and state-wise distribution of match industries in India.

1.2.4.1. History and Development of Match Industry

Match manufacturing is best suited to the cottage sector. Being labour intensive it creates employment opportunities on a substantial scale for village people of skilled and unskilled men and women. Being a light manufacturing activity, the physically handicapped and the old people can also be easily absorbed and no education is needed to learn this job. Thus, this industry has a great socio-economic significance in bringing the livelihood to the peoples door steps without their resorting to migration. Gandhiji has very well emphasized this point years back.

Where a fully equipped automatic factory employs one man, a village unit making 1 to 10 gross match boxes a day will employ 10 men. If all the matches were made by cottage match industry it could employ 10 times more people. The whole of our match consumption, it must be remembered, can be met by cottage manufacturers.

Safety matches are one of the most important necessaries for human life. Safety matches, which are found today, have undergone so many changes. Technically and otherwise, people first learnt to produce fire by striking stones with each other. It will be interesting here to refer to the development of matches in the beginning and its growth later. The pocket fire carrier containing sulphuric acid for the dipping match was the earliest form of matches. The method adopted
for the generation of fire in the pocket fire carrier was very simple. When the match sticks, the tips of all of which have been coated in potassium chlorate (an exidying agent) is dipped into sulphuric acid they get readily ignited. This type of match was invented in 1805. It was from the ‘Lucifer matches’ later the safety matches are evolved.3

When the Tierra del Fuegans, a primitive people living in the inhospitable southern tip of south America, were first discovered by Europeans, they had no knowledge of how to start a fire. They simply waited for nature to produce it and then kept it going for years. Israelites in the old testament were rubbing sticks together to produce fire. The ancient Greeks gave us the word “Match”, which is derived from their word for dried fungus, which was saved up to ignite by flint-produced sparks. Archimedes started fires by directing the suns rays through a lens. Things developed rather slowly for the next 2000 years. By the early 1800s, the tinderbox was a standard ingredient in every home and in every gentleman’s pocket. But, as Charles Dickens once complained, with luck, one might get a fire from a tinderbox in half an hour on a damp day.

In 1827, however, a French chemistry student, Charles Sauria, discovered the principle of the phosphorus match. After watching a demonstration of the reaction of sulphur mixed with chlorate of potash, Sauria eventually experimented

3www.anjac.org.
by rubbing the prepared end of his match on a wall where there was some phosphorous. His match immediately ignited, and so did the development of the match industry. The first phosphorous friction matches were manufactured in the United States in 1836.

By 1850, there were 60 match industries in the entire country. In that same year, the first such industry opened in California, New York, with 18, was far ahead in both number and production. Connecticut was second with nine, and Massachusetts was third with eight. By 1860, the number of plans had increased to 75. The industry then employed 604 men and 648 women, many working part-time or at home.

By 1880, the number of match manufacturers dropped from 79 to 37. As the larger companies had become mechanized, smaller business that used older, less efficient machines had been pushed to the edge of failure. Many had been forced to shut down after the stock market crash of 1873 led to a deep depression. To make matters worse, the nation’s two largest match companies were deadlocked in a ruinous price war.

Swift and Courthey and Beecher, a consolidation of three match makers, had entered St. Louis and the Midwest from the east coast. Accordingly, O.C. Barber built a factory in Philadelphia and cut prices even further. Swift and Courtney and Beecher struck back by introducing new and cheaper brands.
Between 1878 and 1880, Barber’s company lost about $90,000. He and William Swift, president of swift and Courtney and Beecher, finally agreed that they were each cutting their own throats and that a merger would be best for every one. The two great giants of the industry, and ten other companies, merged to form the Diamond match company of Connecticut in December, 1880, although production did not begin until early 1881. With the formation of Diamond, and its purchases of the rights to Joshua Pussey’s match book in 1894, the American match industry was born.

Although worldwide, the 20th century industry was dominated by Swedish match here at home the domestic industry was ruled by the big five. Diamond, universal, lion, ohio, and D.D. Bean. The American match industry reached its height in the 1940s and 1950s. It should be noted, however, that D.D. Bean’s “slice” of the industry was basically vending machine matches. Its match books were cheap, poorly made and usually disdained by collectors. In 1991, though, after acquiring new four colour printing equipment, D.D. Bean introduced the first Joe camel cigarette set. Since then, their cigarette advertising covers, at least, have been slick and attractive.

By the mid-1980s the industry had collapsed here in the United States. It just could not compete any longer with foreign imports. Most of the previous great companies were gone. Today there are only four major manufacturers left in
north America, all in the United States. They are Diamond (which only makes boxes), Bradley industries (which owns Atlantis match), Atlas Match Corp (both Atlantis and Atlas produce basically all of the small business match books), and D.D. Bean (which still has the resale / vending market).\(^4\)

1.2.4.2. Modern Match Industry and its Development

In early days everywhere certain appliances in some form or other were devised to cause friction and generate heat to produce fire. Africans had their Bow Drill. Americans devised a fire Brace, the people of Arctic region used their cord and Drill. Britons adopted two pieces of woods, the Chilean and Argentine people used Pyrites and stones. The people of Hindustan got fire sparks by striking flint against Flint. All these appliances were based practically on the same principle and though the contrivances may now be thought quite primitive and ugly, these were in fact the predecessors of the modern matches.

Further scientific investigations were conducted with chemical composition, combining both the principles of creation of a fire traceable in nature. e.g. friction and chemical energy finding expression in thunder and volcano.

In the year 1827 the first friction match chemical composition head at the tip of a wood splint was produced by J. Walker. These were non-phosphorus

\(^4\)www.fao.org
matches. Savaresse and Markel also attempted the same with a composition prepared to chlorate of potash, Minimum, Antimony sulphide, sulphur, pumice and Gum. Its introduction consequently proved a great success at the time. This improvement was first made in 1831 by Dr. Sauria. Romar (1937) substituted lead peroxide for chlorate of potash.

Bettger (1842-43) recommended a mixture of minimum and Saltpetre or lead Peroxide and lead Nitrate as a substitute of Chlorate of Potash.

Wagner (1855) recommended less phosphorus and experimented with Barium Nitrate and Bichromate of Potash. He also tried with lead Dioxide. But they proved costly.

Elimination of the phosphorus was all that was particularly needed to make Matches non poisonous. In Hochstattor’s non-poisonous Matches, oxygen compounds used were chlorate of potash, bichromate of potash, lead dioxide and the like. And phosphorus was replaced by a mixture of antimony oxy-sulphide and flowers of sulphur. The oxidisable ingredients of canonils composition consisted or sulphur, iron pyrites and various cyanogen compounds. Bals tried a fused mixture of sulphur and phosphorus while pascher introduced phosphorus sulphide instead of phosphorus but found few followers.

Sesqui-sulphide of phosphorus or tetraphosphorus tri-sulphide discovered early in 1864 by Lemoine could not, most unfortunately, command a wide-spread
use for a long time, possibly due to stubborn conservatism of the manufacturers and consumers. Yellow phosphorus was expensive and being spontaneously combustible on exposure to air it entailed great fire tasks and above all when phosphorus poisoning cases were becoming very common amongst the labourers of the match industries.

Thus from 1831 onward till the close of the 19th Century the strike any where matches, commonly called lucifers, formerly made with yellow phosphorus and later on with sesqui – sulphide of phosphorus, held the ground to the entire satisfaction of the consumers.⁵

1.2.5. Match Industries in Tamilnadu

Tamilnadu produces a major share of the total all India production. In Tamilnadu, Thoothukudi district is the leading Match producing centre next to Virudhunagar district. Really it is Kovilpatti, which is the second birth place of match industry in Tamilnadu.⁶ In 1920s, a number of small and semi-automatic


industries were established in south India. Of them, the small scale hand made match industries are mainly concentrated in Tamilnadu state in south India.

The enthusiasm, tenacity, ingenuity entrepreneurship and foresight of Mr. P. Iyya Nadar and Mr. A. Shanmuga Nadar of Sivakasi town in Virudhunagar district (in Tamilnadu state) culminated in the gradual growth and organized development of this industry in the southern districts of Tamilnadu especially in Virudhunagar, Tirunelveli and Thoothukudi districts to a large extent and to a certain extent in other districts of Tamilnadu.

The hand made match industry as a whole registered an increase in market share from 50 percent in 1968 to 82 percent in 1984. Within this sector a ‘middle level’ of small scale match production industries has emerged as the dominant production centre in the country. Located in Tamilnadu state this middle level is the product of the first industries begun here by the Nadar family. This sector accounts for 67 per cent of the match market and it continues to be dominated by 18 closely related families, often referred to as the “Match kings of south India”. These families each own more than one industry and control a number of cottage level industries through sub contracting. They have a virtual monopoly over more than two thirds of the match industry.


8Ibid, pp.10-11.
The ascendancy of the “Match kings” was clearly not the intended outcome of the central government’s 1979 policy introducing massive relief in excise duties to the cottage and small scale sector. The benefits were intended to go to smaller scale, village level entrepreneurs and cooperatives registered with the Khadi and Village Industries Commission. Although this continues to be the policy goal, it is now obvious that the major benefits and opportunities for future growth of the match industry, much to the dismay of government policy makers, will go to these 18 families.

Irrespective of the beneficiaries, this middle sector is a force to reckon with in the industry. It has helped the growth of ancillary industries for the manufacture of splints and veneers. Potassium chlorate, and industries producing glue and paper. The hand made sector also produces non-glowing deluxe matches, book or strip matches and wax matches. It has taken the lead in adopting Indian standards specifications for matches and is just beginning to develop overseas markets. Table 1.2 shows the “Match Kings” and their number of industries owned by them.
TABLE 1.2
MATCH KINGS AND THEIR NUMBER OF INDUSTRIES

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of Group</th>
<th>Number of Industries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pioneer group</td>
<td>17</td>
</tr>
<tr>
<td>2</td>
<td>Arasan group</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>Ayyanadar group</td>
<td>17</td>
</tr>
<tr>
<td>4</td>
<td>Sundaravel group</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Hind/standard group</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Pope the King / East India group</td>
<td>7</td>
</tr>
<tr>
<td>7</td>
<td>New Jyothi group</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>St. Joseph group</td>
<td>6</td>
</tr>
<tr>
<td>9</td>
<td>Meenakshi group</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>Comorin group</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>National group</td>
<td>8</td>
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<td>12</td>
<td>Modern group</td>
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<td>Jupiter group</td>
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<td>Premier group</td>
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<tr>
<td>15</td>
<td>Anja group</td>
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</tr>
<tr>
<td>16</td>
<td>Kadiiriya group</td>
<td>3</td>
</tr>
<tr>
<td>17</td>
<td>Coronation group</td>
<td>5</td>
</tr>
<tr>
<td>18</td>
<td>Everest group</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>141</td>
</tr>
</tbody>
</table>

Source: www.thehindu.com

It could be seen from Table 1.2 that the handmade, middle sector is presently confident that the entire requirement of safety Matches for the nation can be met by them in the near future. They lobby vigorously for the total exclusion of WIMCO from match production and complain about excises duties levied on cottage level industries. The sector asserts that its technology of using labour is as good as WIMCO’s, if not better. Since the development of major fireworks industry in the Sivakasi region, labour is presently not as easily available as it once was. Moreover thirty percent of these middle level industries
now use cardboard boxes, so these are actually semi-mechanized relying on power-driven machinery to form these boxes.

Finally, operating in an extremely poor region, the “Match kings” are frequently accused of exploiting women and child labourers, paying extremely low wages under poor working conditions.⁹

In general, though agriculture is the main occupation of the people, due to failure of monsoon, people have turned to non-agricultural sectors in almost all the blocks of the Thoothukudi district. Thoothukudi district is naturally having dry climate and such a climate is essential for the production of safety matches. Easy availability of labour and cheap availability of lands facilitate the growth of this industry. In the match industry of Tamil Nadu, the market share of Kovilpatti match industry, which stood at 40 percent in 2001-02 has increased to 55 percent in 2006-07.

1.2.6 Match Industry in Thoothukudi District

Thoothukudi District is a drought-prone area. It has no cultivation for six months in a year. The remaining half of the year does not have good cultivation. So the farmers could not earn their daily bread very easily. At that time, two

⁹www.thehindu.com
business enthusiastic men went to Calcutta to study the production techniques of the match industries. After that, they set up a few match industries in Sivakasi. They were successful in running their business. Their successes helped to spread match industries in Virudhunagar, Sattur, Vembakottai, Kovilpatti and Srivilliputhur and the like. Thoothukudi District occupies the highest position in match production. It is worth mentioning here that, 60 per cent of the total production of non-mechanized sectors is from Thoothukudi district.

Kovilpatti town alone produces 1.25 lakh gross Match boxes per day. Out of India’s total turnover of Matches of Rs. 160 crores, the share of turnover of Matches of Kovilpatti and the small and tiny sector accounted for Rs. 105 crores in 2006-07. At the end of March 2008, Tamilnadu accounted for 90 per cent of the Matches production in India.

The large quantities of the Match boxes that light the rural kitchens come from Virudhunagar and Thoothukudi districts of Tamilnadu. It has become a traditional household industry in the rural homes of Sivakasi, Sattur and Kovilpatti taluks of Tamilnadu.

The growth of Match industries is a boon from the blue sky for the dejected population of Thoothukudi district. The match industry concentrated in around
Thoothukudi district provides means and ways of employment for the rural masses who are dejected by the failure of agriculture in the drought prone area.\textsuperscript{10}

1.2.7 Raw material required for manufacturing the Match products

The major raw materials used in the production of safety Matches are soft woods used to make the Match sticks (also known as “splints”) and boxes, and chemicals for the Match heads and the friction surface of the boxes. With the exception of sulphur, all the basic raw materials are produced within India. A full appreciation of the employment potential of the Match industry should also consider the workers involved in the production of all of these raw materials.

Raw materials used for manufacturing of safety Matches include splints, veneers, wax, chlorate, sulphur, Bichromate of potassium, rosin, Manganese (red/black), glass powder, glue, phosphorous, copper sulphate, carbon black, gelatine, antimony, topioca flour, blue match paper, kraft paper, bandle sheet and fuel.

1.2.8 Classification of Match Industries

On the basis of production processes, the whole match industries in India are classified into a). mechanized sector and b). non-mechanized sector or

handmade sector. The mechanized sector is classified into two, fully mechanized and semi-mechanised. Of the total production of Matches in India, 27 percent is shared by the mechanized sector and the remaining 73 percent is shared by the hand made or non-mechanised sector.\textsuperscript{11}

1.2.9 \textbf{Types of Matches}

A variety of Matches are being made now a days throughout the world. The various types of Matches produced are given below.

1. Book Matches
2. Household or Kitchen or standard Matches
3. Pyrotechnic Matches.
4. Vesta Matches
5. Wind proof matches
6. Wax Matches
7. Double dip or Bird’s eye Matches.
8. Water proof Matches

\textsuperscript{11}\textsuperscript{11}Madasamy, V., \textit{“A Study of the Problem of Production in Cottage Match Industrial Units in Kamarajar District”}, Unpublished research thesis, Madurai Kamaraj University, Madurai, 1994.
(a) Book Matches

This type of matches was trade by stapling a comb of wood or card board Matches inside a cardboard cover. The method of burning is same as in the standard Match. Wooden combs are more popular in European Countries while card board combs are used in united Kingdom. Book Matches are used as an advertising Medium, especially in United States and the Popularity of the book Match stems entirely due to its suitability for this purpose.

(b) Household or Kitchen or Standard Matches

This type of Matches is very popular and widely usable for the household consumption. It consists of the ignition head, tinder and a handle.

The splints are usually treated with some retardant, such as ammonium phosphate, to prevent after glow when the Match is extinguished. These Matches are made in a wide range of boxes and splint sizes.

(c) Pyrotechnic Matches

These Matches are commonly called “Bengals”. This type of Matches has a tinder substance below the head that is designed to burn with a bright flame tinted with one of the characteristic colours of metallic salts. The splint serves as a handle only.
(d) **Vesta Matches**

These have short sticks. Originally made from wax and are mainly used for making smokers Matches.

(e) **Wind Proof Matches**

These are alien to the Bengals. Matches of this type have the tinder substance spread along the splint below the head which produces a more positive reaction than the combustion of wood and Paraffin wax, with the result that it cannot be extinguished by wind or water spray. Such Matches may be subdivided into fuses in which the tinder substance burns strongly without flame.

(f) **Wax Matches**

This type of matches is popular in European countries. It has ignition head at the end of a short length of wax paper formed from paper or cotton filaments.

(g) **Double Dip or Birds Eye Match**

This belongs to the type of strike anywhere Matches. However these types are restricted to the quality market only. In this type, a bulb of combustible material is interposed between a fast ignition head and the tinder of the stick. These combine high sensitivity with safety in transport. The construction enables
a smaller quantity of igniters to be used. In this type, the safety is high since the igniters are kept away from contracting the adjoining tips by the insensitive bulb below it.

(h) Water Proof Matches

As both the common Match and the striking material are hygroscope, many attempts have been made to make them waterproof. However the higher cost and difficult ignition prohibit the manufacture of such Matches on a commercial basis. These are therefore restricted for use in the armed forces.

1.2.10 Production Process of Matches in Kovilpatti Town

Making of matchsticks is easy, but needs careful handling of materials. Production of matches is not a single process itself. Normally in the Match industry (both on the mechanized and non-mechanised) the various works involved are

1. Box making
2. Frame filing
3. Wax dipping
4. Chemical dipping
5. Box filing
6. Side chemical coating
7. Label and Band roll pasting
8. Bundle packing
The process involved in match industries is carried out with the help of the labour because the technique required in Match production is very simple.

A brief discussion in the process of manufacturing is attempted below.

(a) Box making

The box making is the first process of production of Matches. The box is the container of Match sticks and also used for stick striking. This work can be done in sitting nature. The box making is done by the female workers, children, the aged and even physically handicapped persons. Naturally it is suited to the above class of workers. These workers are paid on piece rate system. Therefore, there is no discrimination in payment of wages between the adult workers and children or the aged. The box making process can be divided into two types.

a. Outer boxes and

b. Inner boxes or Drawer which carries match stick called splints.

(i) Outer box making

The outer box is made of different materials. First one is the wooden veneers skillets, grooved for folding wrapped by blue Match paper, with a trade label pasted on top. The materials required are i). Veneers ii). Wrapping paper, cut to size iii). Topiaca flower paste iv). Trade label readily printed and cut to size.

The second type of outer box is made from card board skillets, readily printed
with label, creased for folding over band rolls and glued at high speed. The veneer skillets should not be allowed to dry for a long time because they may break in the process of box making. Moreover, care should be taken that there is be no moisture.

(ii) Inner box making

The process of inner box making requires four types of raw materials namely i). Veneer skillet rims ii). Veneer skillet piece, iii). Wrapping paper and iv). Paste. The veneer skillets both rims and pieces are treated separately as in the case of the outer box veneer skillets. The wrapper paper is also cut to the required size. The topiaca flour paste is also prepared as in the outer box making. An inner box is made by

1) Folding veneer skillet rims.
2) Pasting the wrapping paper with paste and
3) Veneer skillet piece is placed at the centre of the veneer skillet rims to make the inner box. The finished outer and inner boxes are to be dried. Drying of cardboard boxes is unnecessary but wooden boxes are to be dried well, since Match heads inside will otherwise become damp and useless. The outer and inner boxes have to be dried under controlled conditions. Usually outer boxes are dried at 50°C and inner boxes at 60°C
to maintain good condition. Virudhunagar district is naturally endowed with dry climatic condition which facilitates the drying function easier.

(b) **Frame Filling**

The frame filling process involves filling up of splints into the frames. This work is also done by female workers, children and aged persons and the like. They are paid at piece rate system. The splints are filled manually into frames. This frame consists of a number of long flat pieces of wood, well rounded at edges and polished called “lathes”. Each lath is about 350 millimetre long and 20 millimetre wide with a thickness of 5-7 millimetre. Usually 52 laths contain 52 slots form a frame in Virudhunagar district. Two solid wooden pieces of 350 millimetre length, 20 millimetre width and 20 millimetre thick are placed at each end of the column of the laths, with 2 steel rods to hold all the wooden blocks and the first and is free for clamping devices to hold the second wooden blocks and the other to the wooden laths. To assemble the frame, the bottom wooden block with the steel rod jutting out, is held in vertical position. The laths are placed over it by sliding through the rods one by one using the guide holes at the two ends of the laths.

A frame filler takes a bundle of straightened splints from the leveled splints tray and runs them over the slots among the length of the frame. So splints fall into position inside the slots. Similarly all the laths at the top wooden block is lide
on to the frame which is clamped tight, using spring steel pieces over the rod. This frame is taken to leveler. The frame is now ready for wax dipping.

(c) Wax Dipping

It requires hard work and physical stamina. Generally, male adult workers are employed. The payment may be either time rate or piece rate. The wax dipping helps the splints to retain the flame for some time that is to say, the wax coated splints retain the frame till the wax is blown completely. For the purpose of the wax dipping, wax is generally supplied by the government in large scale. Slag wax is brought in the open market in small scale. These are mixed in equal proportion. This mixture is melted and heat is maintained between 135°C and 150°C. It is adequate to dip splints only to a depth of about 15 millimetre for about five to seven seconds depending on the quality of the timber used for splints. Hard and resinous wood require a longer dipping time of seven seconds, while good soft wood needs only five seconds and if the splints are very dry even three seconds are enough. Normally the first 2 seconds of dipping help to boil off the moisture in the wood.

So that actual absorption of the wax starts only after the moisture is dried. Splints are dipped first in molten wax and then they are placed in a hot plate or in a chamber kept at 60°C for at least 10 seconds and again the frame is sent for chemical dipping, the next stage in production process.
(d) Chemical Dipping

Just like the wax dipping process, this process is also of hard work in nature and it requires more stamina. Therefore, male adult workers are naturally fit to do this work. There are three types of employees working in this process namely, foreman, assistant foreman and helper. This process begins with preparation of a mixture of various chemicals with different ratios. The chemical mixture is prepared in two types. The first type is for the head of the matchsticks and second is for the sides of match boxes used for striking match sticks. The manufacturers mix various grades of chemical based on their requirements. The preparation of glue solution is very important because it is used as a binding agent in match production. Glue is mixed with cold water in the ratio 1:3. While adding glue water, the mixture is to be stirred and the mixture is to be soaked for four to eight hours or until glue dissolves in water and it becomes a soft mass or jelly. Then the prepared jelly mass is transferred to a jacketed melting pot and is heated by indirect steaming. While heating, the contents should be stirred. The temperature should not exceed 60°C (140°F) at any time. Overheating will result in the loss of the original property of glue. When glue is melted and formed into homogenous liquid, it is ready for use. Being an organic product, it is important that the utensils used for solutions should be kept clean. The solution prepared should be sufficient only for the particular day’s requirement, because the solution cannot be used the next day. Likewise, it should not be less than the actual
requirement because if it is less, the deficit cannot be prepared immediately. Therefore, the entrepreneurs have to stop their production for want of the solution.

After preparing the glue solution, the mass jelly is poured into the rest of the chemicals and it is grinded and now the head composition for chemical dipping process is ready. The head composition is spread over a hot plate leveled to an exact depth of 5 millimetre depending on the size of the splints used. The plate should be at 34°C to 36°C. The composition temperature should be that of the temperature of the plate. Then the splints filled frame is dipped at a particular level of wax coated part. The chemical dipped frames are placed in racks in a separate room called “Drier Room” until the chemical is completely dried off, because fast drying will result in a brattled head. The Match head should be dried under controlled condition of temperature. Table 1.3 below gives the details of quantity of chemicals required for manufacturing 100 bundles of good quality Matches.
TABLE 1.3
QUANTITY OF CHEMICALS MAINLY REQUIRED FOR MANUFACTURING 100 BUNDLES OF GOOD QUALITY MATCHES

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Name of the Chemical</th>
<th>Required Head Composition</th>
<th>Quantity in Kilograms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Side Coating</td>
</tr>
<tr>
<td>1</td>
<td>Phosphorus</td>
<td>2.500</td>
<td>0.100</td>
</tr>
<tr>
<td>2</td>
<td>Glass powder</td>
<td>0.500</td>
<td>0.050</td>
</tr>
<tr>
<td>3</td>
<td>Bi-chromate</td>
<td>0.100</td>
<td>0.100</td>
</tr>
<tr>
<td>4</td>
<td>Antimony</td>
<td>-</td>
<td>0.025</td>
</tr>
<tr>
<td>5</td>
<td>Glue</td>
<td>1.200</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Black manganese / Red manganese</td>
<td>2.000</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Rosin</td>
<td>0.050</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Sulphur</td>
<td>0.600</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Carbon black</td>
<td>-</td>
<td>0.100</td>
</tr>
<tr>
<td>10</td>
<td>Wax</td>
<td>4.500</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Potassium chlorate</td>
<td>5.500</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Gelatin</td>
<td>-</td>
<td>0.100</td>
</tr>
<tr>
<td>13</td>
<td>Copper sulphate</td>
<td>0.100</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Compiled from oral interviews held with experts of safety match in match industries manufacturing in the study area of Kovilpatti Taluk.

It could be observed from Table 1.3 that the requirement of phosphorus was 2.500 kg, glass power 0.500 km, bi-chromate 0.100 kg, glue 1.200 kg, black manganese/red manganese 2.000 kg, rosin 0.05 kg, sulphur 0.600 kg, wax 4.500 kg, potassium chlorate 5.500 kg and copper sulphate 0.100 kg.

(e) **Box filling**

Box filling is the process by which the dried Match sticks are i). Taken away from the frames, ii). Filled in the inner box and iii). inserted along with the
inner box into the outer box. The box filling process is very easy. As the number of boxes to be filled is more, it is done by sitting in a particular place for hours together. The female workers are mainly doing box filling work and are paid at piece rate. The standard number of sticks that are to be filled in a match box is normally 40 sticks.

(f) Side Chemical Coating

The side chemical coating in the Match boxes helps the Match sticks to burn immediately after striking against the surface of the outer side of the match box. For this purpose, the sides of the match boxes after box filling are first arranged in the specially designed frames. Each frame contains four wooden pieces, rectangularly structured by clips, to accommodate 100 matchboxes. The arranged boxes will be brushed with side coating chemicals on both sides. After this process, again these boxes are allowed to dry and then they are ready for band rolling and labeling the next process. Since a Match box side is coated with chemicals, it is also done by the chemical dipping workers while they are paid mainly on time rate; in certain industries, piece rate is also adopted.

(g) Band rolling and labeling

Band rolling and labeling are the two activities made simultaneously. They give the finishing touch to the Match manufacturing. The labeling is done
immediately after band rolling, which follows box filling and side chemical coating.

The match industry is obliged to wrap a band roll strip over each match box, across its open end, labeling is a process by which the trade labels are pasted over the ends of the band roll, which makes it is necessary to tear off the bandroll to open the match box. The trade labels are printed piece of paper containing the name and emblem of the brand, producer, place of production and the like to identify the manufactures of the Matches.

Since band rolling and labeling are very simple activities, this process is done by women labourers. They are paid wages on piece rate system.

(h) Bundle Packing

It is the final process involved in Match production. In order to market the match products manufactured by the Match industry, it is highly necessary that the Match boxes are well packed. There are three types of packing namely, one dozen packing, gross packing and bundle packing. After the packaging the products are sent to different places for marketing. Generally there are 2 kinds of Match industries based on its productions namely machanised sector and non mechanized sector.
The details of the pattern of bundle packing in non-mechanised match industries in Kovilpatti of Thoothukudi District are shown below.

**TABLE 1.4**

**PATTERN OF BUNDLE PACKING IN KOVILPATTI TALUK OF THOOTHUKUDI DISTRICT**

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of Packing</th>
<th>Details of Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Match box</td>
<td>100, 90, 80, 60, 50, 45, 35 and 30 match sticks</td>
</tr>
<tr>
<td>2</td>
<td>Dozen packing or mini bundle</td>
<td>10 match boxes</td>
</tr>
<tr>
<td>3</td>
<td>Gross packing or one unit</td>
<td>10 mini bundles or 100 boxes</td>
</tr>
<tr>
<td>4</td>
<td>Wooden case or bundle packing</td>
<td>60 gross packing or 600 boxes</td>
</tr>
</tbody>
</table>

Source: Compiled from oral interviews with experts of safety match manufacturing in the study area.

**1.3 STATEMENT OF THE PROBLEM**

Industrial policy that could create condition of economic prosperity is very vital for the growth of industrial structure and for providing more employment opportunities with the object of raising the standard of living of Indians. By providing more investment and employment opportunities, the government of India formulated and administered various industrial policies. According to the Eighth Five Year Plan categories, the cottage match industry get the maximum
protection from the Central Government in the form of (a) duty concessions, (b) constant supply of imported raw material like chlorate and wax and (c) assured marketability through KVIB and Co-operative societies. The small scale match manufacturers get more credit facilities from the suppliers and bank for their production operations at liberal transactions. Most of the match entrepreneurs are at a low level of literacy and least exposed to the more advanced marketing techniques.

Tamil Nadu occupies an important place in the industrial map of India. It is one of the four industrialized southern states in the country. In Tamil Nadu, Kovilpatti is a small town well known for its match industries all over India. Kovilpatti taluk, the birth place of matches is situated in Thoothukudi district. Kovilpatti town is an industrial area. So match industry has become a means of living for a large number of people. Hence the match industries are flourishing in this area. Most of the match units are established in Kovilpatti town. There are 1834 match industries in Kovilpatti town. Most of the match units are registered. However, some registered units have been shutdown due to various reasons. In early match industries, they were successful in marketing products because of marketing strategies adopted by them. At present, such marketing strategies adopted by the match industry are inadequate for various reasons, such as, pricing techniques, sub-standard quality and inability to compete with global market, inadequacy of raw materials, shortage of labour and the like, there is a compelling
reason to study the marketing problems of Match industries in Kovilpatti town, Thoothukudi district.

1.4 REVIEW OF LITERATURE

The Indian Institute of Foreign Trade\textsuperscript{12} attempted a study on the match industry in the year 1979. The study reported on the evolution, the hazards and the employment potential of the match industry.

Dattareyula and Gandhi\textsuperscript{13} (1979) in their article titled, “Study of Safety Matches in India”, have stated that the excise duty forms 20 per cent of the cost of production and it increases its total cost. They have listed the variety of matches that are being produced throughout the world. They have pointed out the type of matches produced at household or kitchen as standard matches, double dip or bird’s eye match, wax match, book match, pyrotechnic matches, vesta matches, wind proof matches and water proof matches.

Sankaralingam\textsuperscript{14} (1979) in his article titled “Small Scale Match Industry Need to Foster its Growth” has stated that the match industry needs sympathetic

\begin{itemize}
  \item \textsuperscript{12}Report on the “Study on the safety Match industry” \textit{Indian institute of Foreign Trade}, 1979, p.25.
  \item \textsuperscript{13}Dattareyulu, M., and Gandhi, S.P., “Study on Safety Matches in India”, \textit{Indian Institute of Foreign Trade}, 1979, p.84.
  \item \textsuperscript{14}Sankaralingam, S.S., “Small Scale Match Industry Need to Foster its Growth” \textit{Commerce}, October 20, 1979.
\end{itemize}
and constructive help from the central and state governments in procuring raw materials at reasonable prices.

Anantharaman\textsuperscript{15} (1980) in his article titled “The Match Makers of Sivakasi IV” has stated that the child in the work place is one of those unfortunate ones tagging along with the mother for want of facilities at home. He has also stated that Sivakasi produces 1.25 laksh gross matches every day and pays excise duty of rupees six lakhs as per day to the government.

Anand Vardhan\textsuperscript{16} (1980) in his article titled, “Handmade Safety Match Units Face Fragmentation” has stated that the workers in the small scale and handmade match units enjoy facilities such as employees state insurance benefit, provident fund and bonus.

Nag\textsuperscript{17} (1980) in his article titled “Fifty Years of Cottage Match Industry” has narrated the growth trends in production and demand for matches. He has pointed out that the production potential in cottage match units is on par with mechanized sector and they need the help in getting raw materials and finance.

Perumalammal\(^\text{18}\) (1981) in her study titled “Women workers of match factories in Thayilpatti, Kamarajar District” has analysed the working and living conditions of women workers in match industry. The study is based on 56 match industries of Kamarajar District. The researcher observed that the working conditions of women workers of the industry taken up for study were unsatisfactory because they were oppressed with long hours of work, low wages, and poor health and the like.

The Safety Match Development Commission\(^\text{19}\) (1981) under the Small Scale Industries Division of the Department of Industries formed by the Government of India in 1981 has presented a report titled “A Project Profile Report of the Reserved Items”. It has reported that for a safety match unit, with the capacity of annual production of 30,000 gross match boxes, the fixed capital requirement is Rs.22,450 (10.02 per cent) and the working capital is Rs.2,01,600 (89.98 per cent).


Krishna Iyyar and John Thomas Chirayath\textsuperscript{20} (1982) in their article titled, “Small Sector Match Industry – Role of Early Pioneers”, have stated the practice of making a flame by using sulphuricated splints considered to be the beginning of the scientific methods of the present match industry.

Moulik T.K and Purushotham P.,\textsuperscript{21} (1982) in their study titled “The Match Industry in Sivakasi: A Case Study of Technology, Working Condition and Self-Employment” indicate the various findings, which include women members supervising all operations performed by hired labourers. The wage payment is followed and they are paid on piece rate basis. They work more than 9 hours in the factory and on returning to their homes they do spend another three or four hours in box making. This shows how hard they worked to get more wages to meet their family expenditure.

Ruskin\textsuperscript{22} (1982) in his study titled “Study of Match and Fire Works Industries in Tamil Nadu” has pointed out that a labourer works for six days in a week and gets one-day holiday in a week without wages. He has also found out


that there is harmonious relationship between the labourers and employers and they do not like the intervention of trade unions.

**Sushila Mehta**\(^\text{23}\) (1982) in her study of the last several decades of the 20\(^{th}\) century (1920-1990), states that there were vast and sweeping changes in the economic and industrial development in India. A United Nations survey of progress of women towards equality from 1975 to 1980 pointedly brought out the fact that in developing countries economic development in itself has been bad news for women. The economic participation of women has been declining in these countries with the introduction of new technology and industrialization of production.

**Amirthalingam**\(^\text{24}\) (1983) in his study report has said that we cannot find any children begging in this area as in other areas. To that extent match industry gives employment to all people irrespective of age and sex.

A study was conducted by **Smith Kothari**\(^\text{25}\) (1983) to know the Working conditions of women workers of match industry in Sivakasi. According to him, the working conditions of women workers in match industry are poor. There is


very little facility for ventilation in the small rooms of the cottage units. Similarly all the activities require squatting, which makes the women uncomfortable and forces them to suffer from postural defect. The occupational conditions in the various production stages are hazardous.

Suresh Babu M.,26 (1983) has studied the various aspects of hand made match industry. He observed that the match industry gives scope to men, women, adults and children equally. He also compared the various working conditions of match industries controlled by private entrepreneurs with those of the cooperative match industries.

S.B.P. Board of Consultants and Engineers27 (1984), made a comprehensive survey of various cottage industries. They have concluded that a small scale match unit producing 600 bundles per day (each bundle containing 100 match boxes of 50 sticks each) requires a working capital of Rs.2,00,000 and the marginal amount of fixed capital of Rs.50,000.


27S.B.P. Board of Consultants and Engineers, Hand Book of Reserved Small Cottage and Tiny Industries, S.B.P. Consultants and Engineers (P) Ltd., New Delhi, 1984, pp.393-394.
Venkatesan and Karunanidhi$^{28}$ (1989) in their report on “Development of Industries in Sivakasi Town – A Historical Enquiry” have stated that the development of match works goes to prove the fact that what is an immense hurdle to the weak happens to be a source of inspiration to the strong willed persons.

Narasimhalu K., and Sathya Murthy G.,$^{29}$ (1991) in their study “Performance of Match Industry” a case study of Chittoor district have stated that cottage Match Industry has a unique place since it offers job to male, female and children. Further it does not need a huge investment in plant and machinery.

Prabhakara Rao$^{30}$ (1991) in his work on “Problems and Causes of Sickness of Small and Tiny Industries” enquired about the factors responsible for the sickness of tiny and small industries. He ascertained that of the various factors, the prominent factors were management deficiency, inadequate and untimely availability of finance, outmoded technology and defective marketing of production.


Solaiappan and Subramanian\textsuperscript{31} (1991) in their research report titled, “Agro Forestry Situation” have pointed out that India is one of the largest producers of matches in the world and about 80 per cent of the matches produced in India are handmade. According them, about 95 per cent of the handmade match industries in India are in the southern districts of Tamil Nadu. The survival of this industry depends largely on the availability of the important raw material for the industry, namely the matchwood.

Soni\textsuperscript{32} (1992) in his book titled, “Inorganic Chemistry” has stated that till the end of the nineteenth century, matches were produced with yellow phosphorous and later on with sequi-sulphide of phosphorous. He has also stated that matches get readily ignited when struck against any surface. Hence, they were known as strike anywhere matches or otherwise called Lucifer matches.

Madasamy\textsuperscript{33} (1994) in his unpublished thesis titled “A Study on the Problems of Production in Cottage Match Industrial Units in Kamarajar District” has analysed the raw materials and labour problems of match units. He has also discussed the sources of working capital and the process of manufacturing. He has suggested that the entrepreneurs should be exempted from getting exemption


certificates for cottage match units. He has also suggested that the licences issued for chemicals like chloride and sulphur should be for at least three years. In order to provide more employment opportunity he has suggested that the government should encourage entrepreneurs to start cottage match units. He has also suggested that the procedure for getting the subsidy and term loans should be simplified.

Chandrasekhar\textsuperscript{34} (1996) in his study titled, “Study on the Match Industry in Sivakasi, Tamil Nadu”, has pointed out that total wage earnings of workers in the match factory will go up roughly two and a half times, if child labour is abolished.

Abraham Sebastian \textsuperscript{35} (1997) identified that the causes of industrial sickness in public limited companies were poor industrial relations, underutilisation of capacity, paucity of funds for working capital needs, higher interest burden, faulty product mix, lack of infrastructural facilities, demand recession, shortage of power, difficult market conditions, higher cost of raw materials, lock-outs and increased cost of financing.


Eleonora Curlo (1999) stated in his article that the firms that wish to be morally responsible in providing products that meet a high standard of safety may face problems competing against firms that make unsafe products and sell these products at cheap prices; these problems may be compounded when consumers do not accurately process information about safety and risk. This paper presents a conceptual argument that the tort system may serve to promulgate information which makes it feasible for firms to market safe products even in the face of these competitive obstacles. To corroborate the conceptual argument, the paper presents the results of an experimental study about the impact of negligence liability information on consumer product safety evaluation. The results show that provision of negligence information heightens consumer concern for safety and firms' ethical behaviour, and increases the proportion of consumer choices in favours of the brands sold by manufacturers with a favourable track record for quality. More importantly, they indicate that provision of negligence information reduces the likelihood that brands which conform to inferior safety standards will be chosen by consumers who care about safety standards.

Amarjothi\textsuperscript{37} (2000) explained the human resource management of match industry in Sivakasi. It was found that about 76 per cent girls and 24 per cent of boys were engaged in this match industry. The cause for the employment of more number of female child labourers is the preference shown by employers to female children. In these match industries the contribution of child labourers to their families is sizeable. In total an average of 22 per cent of the total family income is contributed by the children which has substantially increased the income level of the households of the working children.

Ankur Agarwal (2001)\textsuperscript{38} found that the productivity in manufacturing industry had increased due to technological innovations. There should be organisational reforms and the employees should also be able to keep pace with the technological innovations. A good technology along with due motivation among the employees could make a unit more competitive than others.

Mohi-ud-Din Sangmi (2001)\textsuperscript{39} stated that material productivity showed tremendous fluctuations in productivity ratios. The lack of availability of sufficient material, equipment, components, tools and power, inefficient education


and training of workers in handling machines affected productivity. There was a lot of inefficiency in the overheads management of the company. The increasing trend of factory, office, administrative, selling and distribution overheads had posed a big challenge for the productivity of the unit as well as for the company as a whole.

According to Devadoss J.,\textsuperscript{40} (2004) Joint secretary, South India Match Manufacturers Association, Kovilpatti, the traders have a stranglehold on the cottage sector, which turns out match boxes of indifferent quality day in and day out in poor working conditions. Pointing out that there was no illegal matchmaking industry in TamilNadu, as such, he said the cottage sector should be freed from the clutches of the trade, and brought back into the cooperative fold under Government supervision.

\textbf{Palani Kumar}\textsuperscript{41} (2004), General Secretary of the All India Federation of cottage Matches Manufactures Association, told Business line in Sattur that the government needs to come out with a clear policy clarification on where the cottage matches units actually stood today. Asked if the entry of organized players in the Sivakasi, Kovipatti areas purely for outsourcing purposes was improving the living conditions of people in and around, he replied in the negative.

\textsuperscript{40}Devadoss, J., “Small Match Units Facing Stiff Competition from Corporate” \textit{The Hindu}, 16 December, 2004, pp.4-5.
\textsuperscript{41}Palanikumar, \textit{op.cit.}, 2004.
Mohan Padmanabhan\textsuperscript{42} (2006) in his article has stated that non-availability and rising prices of match splints has become a threat to match industry in and around Sivakasi and hence affects the exports of matches. The current supply of match wood from Tamil Nadu ranges between 100 and 250 tonnes per month, and to fully feed the Tamil Nadu matches industry for producing one crore bundles per month, the requirement of match wood is said to be around 10,000 – 12,000 tonnes per month. According to the consultancy project findings on the economic of growing ‘Alianthis Excelsa’ the match wood is now supplied by Kerala and only 17 per cent by Tamil Nadu which accounts for 95 per cent of matches production in the country. The Kerala State Match Splints and Veneers Manufacturers Association in a recent circular to the All India Chamber of Match Industries, Sivakasi, has mooted more remunerative prices of ‘matti’ to make the Kerala agriculturists plant more such trees. This non-availability and rising price of splints may increase the end product price and this in turn will affect the export of matches. Non-availability and rising price of splints has reduced the opportunities for exporters and has become a threat to them.

1.5 **SCOPE OF THE STUDY**

The approach to the study has been from the point of view of only the manufacturers and not from the point of the labour class or retailers who work or deal with the match units. The ‘universe’ consisted of all the functioning match manufacturing units which have got license from the local authorities (Town Municipalities Inspector of Factories, Central Excise Department, Police Department) and units which have not got license were left alone because such units could not be identified.

1.6 **OBJECTIVES OF THE STUDY**

The specific objectives of the study are:

1. To study the socio-economic profile of the owners of sample match industries in Kovilpatti town.
2. To analyse the problems in marketing and the level of problems in the marketing faced by the respondents in the study area.
3. To identify the factors influencing the marketing problems in match industries.
4. To explore the marketing strategies adopted by the match industries under study.
5. To examine the factors associated with the level of marketing strategy.
6. To assess the officials perceptions and identify the factors which cause sickness of match industries in the study area.

7. To offer suitable suggestion based on the findings in order to improve the marketing of matches in the study area.

1.7 HYPOTHESES OF THE STUDY

The following null hypotheses are framed and given below:

1. Sex is independent from the level of marketing problems and overall marketing strategies adopted in the match industries.

2. Age is independent from the level of marketing problems and overall marketing strategies in the match industries”.

3. The opinion on the level of marketing problems and overall marketing strategies in the match industries is independent of the marital status.

4. The opinion on the level of marketing problems and overall marketing strategies in the match industries is independent of religion.

5. There exists no relationship between the social status and their level of opinion on marketing problems and overall marketing strategies.

6. Family Type is independent from the level of marketing problems and overall marketing strategies in the match industries.
7. There exists no relationship between educational qualification and the level of marketing problems and overall marketing strategies in the match industries.

8. There exists no relationship between the family size and their level of opinion on marketing problems and overall marketing strategies.

9. The level of marketing problem and overall marketing strategies is independent of the income of the respondents.

1.8 GEOGRAPHICAL AREA OF THE STUDY

Kovilpatti town has been selected as a study area because the highest number of match industries is concentrated which is located in Thoothukudi district of Tamil Nadu.

1.9 METHODOLOGY

In view of considerable data from survey research as well as secondary sources collected and presented in this research report, ‘descriptive research’ is considered as the most appropriate for the present study. Hence the study has been descriptive and analytical. The research problem and the questionnaire all have been formulated and framed accordingly. The suggestions of the study
emerge from the inferences drawn from the sample survey of respondents in Kovilpatti town of Thoothukudi district.

1.10 DATA COLLECTION

1.10.1 Primary Data

The present study is an empirical one based on survey method. First hand data were collected from the field through questionnaire and observation. Data relating to various factors like production, personnel, marketing, etc., in Kovilpatti were gathered through the questionnaire. The schedule structured was extensively pre-tested.

A number of discussion were held with some exports such as businessman, central excise staff, etc., in Kovilpatti for designing the questionnaire and stating the research problem.

1.10.2 Secondary Data

The study depends on the secondary data available on standard text books of related topic, leading journal and published documents, records and reports issued by the Central Excise in Kovilpatti area.

1.10.3 Sampling Design

Kovilpatti town has been chosen as a study area which is located in Thoothukudi district. In Tamil Nadu, the highest number of match industries are
concentrated in Kovilpatti town. In Kovilpatti town, there are two types of match industries namely semi-mechanised and non-mechanised. Both semi-mechanised and Non-mechanised sector alone has been selected for this study. In Kovilpatti town, there are about 1834 match industries functioning and these industries form the universe of the study. From the universe, 360 match industries, 20 per cent of total industries, have been selected from Kovilpatti town at convenient random sampling method. The total number of 360 sample respondents was selected by using simple random sample technique. Hence, the sample size is restricted to 360 and gives equal representation for all industries.

1.11 CONSTRUCTION OF TOOLS AND PRE-TESTING

The questionnaire used in this study has been constructed by the researcher himself with the help of a Supervisor. The variables of the study have been identified by going through the various available literature and conducting trial interviews with the five secretaries of The Association of Match Industries in Kovilpatti. The variables thus identified have been used to design the questionnaire. Having designed the question a rough draft was prepared. After revising the draft in the light of suggestions from fellow researchers and the guide the questionnaire was revised and the final format was prepared. The final draft was pre-tested with the five respondents of the Match Industries. In the light of the pre-test, the questionnaire was modified and the final draft was prepared.
1.12. FIELD WORK

The primary data were collected directly from various match industries’ owners or respondents in Kovilpatti with the help of questionnaire. Field work for this study was carried on by the researcher himself. It was conducted during the period of January 2010.

1.13 STUDY PERIOD

Primary data through the interview schedule were obtained from the sample units for the one year period of 2010-11.

1.14 STATISTICAL TOOLS

(i) Percentage

In order to analyse the socio-economic profile of the sample respondents, the simple percentage analysis was adopted.

(ii) Chi-Square

In order to examine the association between the profile variables and level of marketing problems and level of marketing strategies adopted by the
respondents in match industries, Chi-square test has been employed. It is calculated by adopting the following formula:\[\chi^2 = \sum \frac{(O - E)^2}{E}\]

where,

\[O = \text{Observed frequency} \]
\[E = \text{Expected frequency} \]

\[E = \frac{\text{Row Total} \times \text{Column Total}}{\text{Grand Total}}\]

\[C = \text{Number of columns in a contingency table} \]
\[r = \text{Number of rows in a contingency table} \]

(iii) **One-way Analysis of Variance (ANOVA)**

In order to find out the significant relationship between type of match industries and variables relating to marketing strategies adopted by the match industries and industrial sickness in match industries, the one way analysis of variance (ANOVA)\[\text{Ibid.}\] was applied in the present study when the variables included

\[44\text{Ibid.}, p.166.\]
for the study are in interval scale and the group of samples are more than two. The ‘F’ statistic is calculated by using the following formula:

\[
F \text{ ratio} = \frac{\text{Variance between Groups}}{\text{Variance within Groups}}
\]

The above F ratio is calculated and compared with the respective table value.

(iv) **Factor Analysis**

In order to find out the factors influencing the attitude of the respondents towards marketing problems and industrial sickness of match industries, Factor Analysis\(^{45}\) was applied. The factor analysis is used to narrate the data related to variables influencing the attitude of the respondents relating the marketing problems and industrial sickness of match industries.

Mathematically, factor analysis is somewhat similar to multiple regression analysis. Each variable is expressed as a linear combination of underlying factors. The amount of variance a variable shares with all other variables included in the analysis is referred to communality. The co-variation among the variables is described in terms of a small number of common factors plus a unique factor for each variable. These factors are not over observed.

\(^{45}\text{Marjorie A. Pett, Nancy R. Lackey and John J. Sulliam, Making Sense of Factor Analysis, Sage Publication, New Delhi, 2003, pp.73-78.}\)
If the variables are standardized, the factor model may be represented as:

\[ X_i = A_{i1} F_1 + A_{i2} F_2 + A_{i3} F_3 + \ldots + A_{im} F_m + V_i U_i \]

where,

- \( X_i \) = \( i^{th} \) standardized variable,
- \( A_{ij} \) = Standardized multiple regression coefficient of variable on common factor \( j \)
- \( F_i \) = Estimate of \( i^{th} \) factor
- \( W_{ij} \) = Weight or factor score coefficient
- \( V_i \) = Standardized regression coefficient of variable \( i \) on Unique factor \( i \)
- \( U_i \) = The unique factor for variable \( i \) and
- \( m \) = Number of common factors
- \( K \) = Number of variables.

The unique factors are uncorrelated with each other and with the common factors. The common factors themselves can be expressed as linear combinations of the observed variables.

\[ F_i = W_{i1} X_1 + W_{i2} X_2 + W_{i3} X_3 + \ldots + W_{ik} X_k \]

where,

- \( F_i \) = Estimate of \( i^{th} \) factor
- \( W_i \) = Weight or factor score coefficient
- \( K \) = Number of variables.
It is possible to select weights or factor score coefficients so that the first factor explains the largest portion of the total variance. Then a second set of weight can be selected, so that it is the second factor, which accounts for most of the residual variance subject to being uncorrelated with the first factor. The same principle could be applied to selecting additional weights for the additional factors. Thus, the factors can be estimated so that their factor scores, unlike the value of the original variables, are not correlated. Furthermore, the first factor accounts for the highest variance in the data, the second factor the second highest, and so on.

1.15 LIMITATIONS OF THE STUDY

The present study mainly concentrates only on the marketing problems of the match industries in Kovilpatti town, and the financial and other aspects of the Match industry have not been considered. The present study considers both the member of co-operative society match industry and the non member of cooperative society match industry which were established before ten years as the subject of study. The new industries are not considered. The study does not include the other agencies like the Match industry association, Government and the like.

The scope of the study is limited to the marketing problems of matches, being produced in Kovilpatti town. The information collected is confined to the
internal records of the export match units and the attitude of the respondents. The Benami match units under different names are not considered. Only the match industries engaged in safety matches are taken into consideration.

1.16 CHAPTER SCHEME

The present study “Marketing Problems of Match Industries – A Study with Reference to Kovilpatti Town” is organised into six chapters.

Chapter I introduces the subject and deals with historical background of safety match industry in India, Tamil Nadu and Thoothukudi district, statement of the problem, review of literature, objectives of the study, hypothesis of the study, scope of the study, methodology, limitations and scheme of work.

Chapter II is the profile of the study area.

Chapter III discusses the profile of the respondents and their problems in marketing of matches.

Chapter IV analyses the marketing strategies adopted by the respondents for promoting match industries in the study area.

Chapter V analyses perception of the respondents towards sickness of match industries in the study area.

Chapter VI presents the summary of findings, conclusion and suggestions.