CHAPTER – I

INTRODUCTION AND DESIGN OF THE STUDY

1.1 INTRODUCTION

Productivity indicates the overall efficiency of the organization. Michel Porter of Harvard University states that the principal goal of a nation is to produce high standard of living for its citizens. It depends on the productivity with which the resources are employed. Productivity is often confused with production. Higher production does not mean higher productivity. It can be achieved only by better utilization of resources. The productivity measurement of N.T.C. gains importance in understanding its economic viability. At the time of takeover and nationalization the mills were sick and closed. Therefore the corporation is entrusted with the responsibility of nursing these units back to health. The old and obsolete machinery were replaced with latest machinery. The planned modernization put the mills on firm grounds. The Corporation is giving more thrust to achieve the designated objectives. The cost of production is still high due to high wage cost, power cost etc. The revival plan contemplates strategic decisions and capital restructuring etc.

Productivity is defined as “The ratio of output”. Men, Machines, Materials, Capital, Power, Buildings and Services – all these contribute to productivity. Higher productivity can be regarded as efficient use of the input in terms of Men, Machines, Materials, Capital, Power, Buildings and Services etc. by using the existing resources more effectively; the standard of living of people can be increased.

“Standard of living in a country is measured by the quality and the extent of housing, food, clothing, education and recreation that the country’s people can provide in terms of Men, Machines, Materials, Capital, Power, Buildings and Services etc. by using the existing resources more effectively, Higher the productivity, Higher will be the gross national product, which in turn will provide for a higher level of economic well being for the people.
Productivity has become one of the key issues with planners, policymakers, managers and other professionals. The simple reason is that as the population of the world is increasing we are becoming more and more keenly aware of how scarce the world resources are.

1.2 JAPANESE EXPERIENCE

Many of the highly industrialized countries like the U.S.A. and other West European countries have been organizing conferences to discuss this very vital issue. We all know that high productivity is the key to the Japanese success in industrial field. The Japanese experience has really proved the supremacy of productivity over all other issues. Even though many other countries have better natural resources and they have been leaders in technological innovations, Japan has surpassed most of these countries. It has happened by their evangelical commitment to productivity.

From a very modest beginning in the early 50’s we have come a long way in establishing capital intensive industries in India. Over the three decades India has set-up industries in almost all the areas of industrial activity. The range of products manufactured in India is really impressive. We have over the year’s set-up infrastructural facilities for the basic and capital goods industries. With a view to creating a strong, industrial base for the future development of the programme of industrialization by setting up public enterprises.

In terms of any economic indicator be it national income, per capita income, exchange earnings or any other, the position in India is not satisfactory. It implies that we have not been able to manage and utilize own resources in an efficient or productive manner.

Several studies conducted by economists have shown that the capital output ratio of the economy has been steadily increasing. It was 3:1 in the 50’s; It rose to 5:1 in the 70’s and some estimates indicate that today it may be as high as 6:1. This implies that for the same amount of output, we are using more and more capital or in other words the output per unit of capital is declining.
Many studies indicate that the growth rate of value added per worker in industry was around 4.48 per cent in the early fifties. It declined to 2.96 per cent in the late fifties. Since there has been a continuous fall. It was less than half per cent in the seventies.

The National Productivity Council has estimated that labour productivity in industry rose by not more than 20 per cent in the twelve years between 1964 and 1976. In the same period the fixed capital per worker went up by as much as 198 per cent. Thus the injection of huge amounts of capital has not resulted in increased output commensurate with investment.

Many major establishments like textile mills, jute mills, sugar mills, paper mills and engineering establishments have faced the problem of industrial sickness. They are not able to raise adequate funds to modernize the mills. They have to carry on with excess labour force. The management methods followed by these establishments are also not scientific and up-to-date.

A study of utilization of various resources such as machine, material, labour and capital will reveal the efficient use of the scarce resources with a view to highlight the interaction between the supply of inputs and their utilization.

1.3 PRODUCTIVITY

Output/input (or) value of production/ cost incurred (or)Growth/Capital employed. Productivity is the amount of input per unit of input. It may be expressed in terms of physical units or money. Thus it may be expressed in terms of output per man or per man hour or per machine hour. In case of money, the productivity is the value of production per rupee of cost incurred i.e., value of production divided by the cost incurred.

1.4 PRODUCTIVITY VS PRODUCTION

Productivity is not production. Production means the volume of output and it can be increased by increasing the input of labour, materials and services. Productivity increases when lesser quantities of inputs are employed for the same production. Productivity also
increases when more output is turned out for the same resources. Thus increased productivity will reduce the cost per unit so that it is possible to pass on the savings to the consumer by selling the products at lower prices or to obtain the higher profits to the concern by selling the products at the same prices. If the products are sold at lower prices it will create more demand, stimulate investment and create more employment this higher productivity enhances the national wealth and per capita income which in turn increases the purchasing power of money and lead to higher standards of living in respect of the following,

- Food and Nutrition
- Clothing
- Housing including sanitation
- Health Facilities and Educational Facilities
- Information Media
- Energy Consumption and Transportation
1.5 OBJECTIVES OF PRODUCTIVITY

In this connection the objectives of productivity are indicated below

- To eliminate waste in all forms.
- To reduce costs and make items cheaper.
- To provide better standard of living to maximum number of people.
- To improve working conditions and reduce fatigue.
- To earn more revenue for the government.
- To help the worker in earning higher wages, incentives and bonus.
- To obtain higher profits.
- To reduce losses.
- To enable the management to get more capital.
- To enable the shareholders to get higher dividend and maximize wealth.

Productivity is war on waste and inefficiency. It is a way of life and an attitude of mind. It is a constant and continuous effort at improving things. It means motivating people to do things better.

The European productivity agency has aptly summarized the position in the following words. “Productivity is an attitude of mind. It is a mentality of progress of the constant improvement of that which exists. It is the certainty of being able to do better today than yesterday and continuously. It is the constant adoption of economic and social life to changing conditions. It fixes the continual effort to apply new techniques and new methods. It is the faith in human progress.

The quality of labour force, effective work, better capital equipment, technology, materials management, role of standardization and better management etc. would contribute to higher productivity improvement in the quality of output for the same input.
1.6 TECHNIQUES TO LOCATE WASTE

The following techniques are used for locating areas of waste.

- Work study
- Job evaluation
- Value analysis and cost reduction
- PERT / CPM
- Operations research
- Market research
- Statistical quality control
- Ergonomics
- Inventory control

1.7 HISTORY OF N.T.C. MILLS

After Nationalization modernizations of the mills were carried out in a phased manner and about Rs.588.10 lakhs were spent on Modernization and the spindle capacity increased from 6048 to 27912. After Modernization, the technical and financial background also improved considerably and the mill could earn profit due to its achievements.

National Textile Corporation Ltd., New Delhi has identified 22 mills for modernization under Revival Plan. Our mill is one of the mills to be modernized among the 22 mills in India assisted by the Ministry of Textiles, New Delhi. The envisaged amount of Modernization is Rs.1351083 Lakhs. On completing the modernization scheme the mills will have the improvement in productivity yarn quality and utilization, and will make profit in the years to come.
National Textile Corporation was incorporated in April, 1968 and started functioning in October, 1968. It was set up with the main objective of managing the affairs of the sick textile undertaking taken over by the government. To rehabilitate and modernize these mills after the takeover and expand them with a view to making them economically viable is also one of the aims. When N.T.C. came into being in 1968, there are only 16 mills under government management. But the number gradually raised upto 103 during 1972-73. All the government managed mills were nationalized by an Act of Parliament in December, 1974. The management of two more mills in Kanpur was taken over in July, 1976 by an issue of an ordinance, thus bringing the total number of mills under N.T.C. to 105. Starting with an Authorized capital of Rs.10 crore it was raised to Rs.15 crore during 1973-74 to Rs.75 crore during 1974-75 and to Rs.135 crore during 1976-77. It is proposed to increase it further to Rs.185 crore. The paid-up capital was Rs.11.26 crore as on 31st March, 1974 which has now been increased to Rs.121.25 crore as on March 31, 1978.

With a view to ensuring effective management on decentralized basis, N.T.C. has formed nine subsidiary corporations with head quarters at Delhi, Kanpur, Indore, Bombay (two subsidiaries) Ahmedabad, Calcutta, Bangalore and Coimbatore. In each subsidiary, N.T.C. is to hold not less than 51 per cent of the equity capital and the State Governments concerned have the option to contribute up to 49 per cent. If there is any shortfall in contribution from State Governments, the same is made good by the N.T.C..

The National Textile Corporation is presently managing 105 textile mills. Out of 105 mills, 35 mills are spinning units, 65 are composite units, 4 weaving units and one processing unit. The total installed capacity of these mills was 2.88 million spindles and 48,849 looms.

This accounts for roughly 15 per cent of the spinning capacity and 22 per cent of the weaving capacity of the cotton textile mills industry of the country. These mills provide direct employment to over 1.5 lakh persons.
N.T.C. mills have their own bleaching and processing units. It is contributing significantly to the per capita availability of cloth in the country particularly to the weaker sections of the society and thereby helps to keep the prices at a reasonable level to the consumer. They are also supplying yarn to handloom weavers at concessional rates. N.T.C. markets cloth of coarse medium and also finer varieties. They are also producing controlled cloth for the masses. Of late, they are marketing “SULABH” as subsidized polyester blended fabric.

The N.T.C. distributes cloth through their shops spread throughout the country. They distribute cloth through their sales depots in locations of their mills and head offices. N.T.C.’s cloths are also marketed by a number of retail outlets. Besides they offer direct sales through agents and also institutional sales to defence establishments, government and semi-government organization, police, transport undertaking etc.,

Their cloth is marketed through co-operative societies and also through the national consumers, co-operative federation and various state co-operative federations.
1.8 MODERNISATION

About the efforts made to modernize the existing production system to cope with the changing needs, the Committee was informed that in the early years of the take over, the Corporation invested about Rs.20 crores on quick-yielding assets in order to put the mills on rails.

The old and obsolete machinery available in the mills were replaced with latest machinery in a phased manner at a cost of about Rs.130 crores, which helped the Corporation to improve its capacity utilization, productivity and to introduce value-added yarn and cloth, by availing financial assistance from All India Financial Institutions, viz., IDBI, IFCI and IIBI. The financial institutions abruptly stopped assisting further modernization plans of the Corporation since 1992, taking the “group concept”, even though the corporation had been regular in repaying its interest and principal and there were no over dues at that point of time.

Since then no fruitful modernization was carried out in any of the unit mills. The corporation would not be able to produce yarn and cloth with international quality parameters with the available infrastructure. Therefore, keeping in view the changing trends in the global scenario, it has been planned to invest a sum of Rs.31.43 crores towards modernization machinery in the six unit mills identified for revival. This proposal for modernization had been included in the Revival Plan submitted to the Government of India.

N.T.C. initially faced an uphill task, but in 2002 the public sector company launched a major modernization and revival programme, which has now started paying dividends. For the first time, N.T.C. is expected to report marginal profits for fiscal2009-10, says K.Ramachandran Pillai, Chairman and Managing Director, N.T.C. in 2010-11, it expects good profits.

1.9 NEED FOR IMMEDIATE REVIVAL OF N.T.C.
Continued recession and the glut in the yarn market have affected the performance of the textiles industry as a whole and N.T.C. in particular. They also note that unfavourable sale prices combined with abnormal raw-material prices, high power tariff, high interest costs, high incidence of excise duty, etc., made the Corporation to suffer huge losses since 1992-93. The Committee has been informed that there was no reimbursement of cash losses and continued cash losses year after year had eroded the availability of working capital. This has forced the Corporation to meet its financial commitments through interest bearing current liability financing and there has been default in repayments to financial institutions. The South India Textile Research Association (SITRA) has conducted a Performance Audit of all the 15 mills and reached a conclusion that all the shortcomings are mainly due to inadequate working capital funds and recommended that immediate action should be taken to arrange adequate funds to provide sufficient working capital and to improve net worth of the Corporation.

At the time of take over and nationalization, the mills were sick and closed. The corporation was entrusted with the responsibility of nursing these units back to health and put them of firm grounds. Reaping the gains of modernization assisted by favourable conditions, the corporation wiped out its entire loses and even declared dividends. It could be said that the corporation was successful in shouldering the responsibility of nursing the sick units. Thus the corporation has been able to achieve the designated objectives.

Corporation is giving more thrust on: (i) development of new products based on customer’s needs and market demand, (ii) development of new markets for its products,(iii) customer satisfaction through consistent quality ,and (iv) cut down cost of production through cost reduction and cost control measures

**1.10 REVIVAL OF SICK MILL**
The Central Government has taken the following measures to revive the sick mill. Modernization grants were given to the sick mills. Because at the time of take over all the sick mills had only old machines. Proper training was given to the labour in order to suit to the changing situations. The Government advised to reduce long term debt, since the profits earned were used to pay more interest. The sick units were asked to borrow long term loans from the financial institutions at a very low interest. There was huge idle capacity when the mill became sick.

The Government through its grants at regular intervals made the sick mills uses the installed capacity to the optimum extent. The Government gave income-tax concessions to these units, which helped to a great extent for the growth of mills. The Government controlled the price. The units were asked to diversify the line of production.

1.11 CAPACITY

The installed capacity of the mills under N.T.C. is 31.83 lakh spindles and 29621 looms, whereas the commissioned capacity is 26.44 lakh spindles and 18593 looms. Besides these factors, introduction of chamber based excise duty resulted in high cost of processing, which in turn resulted in loss of outside job work orders. However this duty has been withdrawn from the current financial year 2001-2002.

The continuous adverse trading conditions affected the working capital position of the mills very badly. While some mills are able to withstand the strain, because of their earlier modernization and profits, some mills could not withstand the strain and even the routine maintenance works have been postponed for want of working capital. The working capital shortage coupled with the heavy backlog in maintenance affected the capacity utilization considerably, besides affecting productivity and quality of finished goods.

1.12 RIVIVAL PLAN
The corporation had proposed to implement the revival plan to induct adequate funds and to improve the net worth. The revival plan contemplates strategic decisions including disinvestment of four unviable mills, capital restructuring etc. in brief, the revival plan envisaged the following:

- Disinvestment of 4 unviable mills.
- Sale of surplus lands.
- Capital restructuring.
- Introduction of VRS for surplus labour.

About the capital restructuring, the Committee were informed that the net worth of the Corporation was already negative and the disinvestment of the units and sale of surplus lands were bound to take some more time. Therefore, in order to avoid reference to the BIFR, the Corporation needed the following measures on a priority basis:

- Conversion of Holding Company loans into equity to the extent Rs.22.05 crores.
- Waiver of interest on Holding Company loans to the extent of Rs.8.22 crores.
- Waiver of interest and liquidated damages by the financial institutions amounting to Rs.30.67 crores.

The Revival Plan contemplates an investment of Rs.50.94 crores, which included inter-alia Rs.31.43 crores for modernization of machineries in six mills proposed for revival, Rs.10.15 crores towards working capital margin and Rs.9.36 crores towards wages support during the period of implementation of the Revival Plan. The Revival Plan had been recommended by the Ministry of Textiles.
1.13 SURPLUS LANDS

The Corporation has identified 41.27 acres of surplus lands in its various mills and these lands were likely to fetch about Rs.53.81 crores on disposal as per the latest estimates based on the approved Guideline rates of the State Government. This money could be utilized to repay the high interest bearing liabilities and also to augment the working capital position of the Unit Mills. The surplus lands were identified initially in the year 1983 and relevant data was subsequently updated taking into account the reduction / closing down of uneconomic activities.

When asked about the present status of the proposal for effecting the sale of surplus lands, the Committee was informed that the mode proposed to be adopted for effecting the sale of surplus lands was included in the Revival Plan submitted by the Corporation. On receipt of approval from the Government of India, necessary action would be taken to dispose off the surplus lands.

Public sector textile major National Textile Corporation (N.T.C.) is scripting a remarkable turnaround story, riding on the crest of the wave of the boom in the value of land in cities. Incorporated in 1968 as a central public sector enterprise under the Union Textile Ministry, N.T.C. was mandated to manage sick textile mills taken over by the government. By 1995, N.T.C. had 119 mills under its control, 25 of them in Mumbai.

However, over a period of time, the textile industry began declining in Mumbai, in line with global trends. As major metros such as New York and London saw industries moving out of the heart of the cities in the 1960s while the financial services sector began blossoming there, Mumbai also witnessed the transformation, starting from the 1980s.
N.T.C raised almost US$480 million by selling off land owned by five mills in Mumbai. It has similarly sold an additional US$420 million worth of land elsewhere in India, and plans to raise another US$500 million by auctioning 90 acres of land in central Mumbai.

Today, the former textile district of Mumbai is a bustling hub, home to towering office blocks, 5-star hotels, glittering shopping malls and high-rise residential buildings. Property prices in and around Worli, Lower Parel and Parel in Mumbai have scaled new highs, as developers promote luxury apartments in multi-storied buildings. Apartments in these projects are being sold at rates of more than US$450 a sq.feet. Top developers continue scaling up bids at auctions of mill land being sold both by N.T.C. and private textile mills.

Resources for the re-development of the mills are being generated by sale of surplus assets of the mills. The route was conceived to speed up the process of rehabilitation of the mills. N.T.C. will have a majority stake of 51 per cent in the joint venture model. The corporation has signed memorandum of understanding (MoUs) with strategic partners, who will invest funds to revive the mills. N.T.C.’s modernization effort also involves the setting up of four Greenfield ventures. Of these, two-New Minerva Mills at Hassan in Karnataka and Finally Mills at Achalpur in Maharashtra – are being setup as textile composite mills with spinning, weaving and processing activities.

Sale of excess land of textile mills owned by it in Mumbai and other cities has helped N.T.C. raise huge sums in recent years. The state-owned corporation has sold surplus land of over 70 mills owned by it in different states, fetching it over US$800 million. In Mumbai alone, N.T.C. has sold five plots for about US$480 million.
The company plans to raise a further US$500 million from its proposed auction of nine more mills, with more than 90 acres of surplus land in Mumbai. “The real estate market is reviving in Mumbai and we have taken a decision to auction land”, observes Pillai. “We expect about US$260 per sq. feet.” N.T.C. has a total of almost 1,350 acres of surplus land available for sale.

In pioneer spinners they are producing cotton, Pc and PV yarn only. the mill is Purchasing Cotton, Polyester Viscose stable Fibre from various sources lope from Govt. sector and from Private Parties, they mill is purchased most of the cotton from the branches of cotton corporation of India which is government of India undertaking. The mill head office is at Coimbatore was the cotton purchase division is functioning.

Kaleeswarar mills ‘B’ unit, Kalayarkoil is a unit of National Textile Corporation (Tamilnadu & Pondichery) Ltd Coimbatore, owned by Government of India. When the condition of the textile mill was worse the Government of India decided to take over the management of this sick textile mills. Accordingly an act was passed which was called “The sick textile undertaken act 1974” The main intention of this enactment was:

- To provide continuous employment to the employees.
- To fulfill the basic necessities of worker at cheaper rate.
- To protect Government revenue (Tax/Duty)

It is one of the best leading mills among N.T.C. mills in India. N.T.C. is the holding company New Delhi selected this unit as a model mill and deputed technical and higher officials of various subsidiaries to this unit for field study. “ENTYCE” yarn produced by Kaleeswarar mills “B” unit Kalayarkoil are 90% of their yarn produced are sold in the Mumbai market and some of them are sent to their own depot for sales. The capacity of this unit was increased only after 1984.
The mill had entered into export marketing during 1987-1988. The mill already exported to Belgium, West Germany and U.K. Its internal Products are sold to the depot at Madurai, Erode, Thirppur and Bunge.

N.T.C. Chairman and Managing Director K. Ramachandran Pillai said the new corporate logo reflected the new face of N.T.C. to the world. It had been designed as free flowing fabric, indicating the new aspirations and changing aspirations of India. Apart from re-branding, N.T.C. had developed a new marketing and corporate strategy that included revamping of all N.T.C. stores and setting up of new stores, he said.

Elton mayo of the Harvard Business School, sought to find the effects of various conditions (most notably illumination) on worker’s productivity. These studies ultimately showed that novel changes in work conditions temporarily increase productivity (called the Hawthorne Effect).

1.14 INDIAN TEXTILE INDUSTRY

India has been in the midst of a great social, political and economic change ever since reforms were introduced in various spheres of activity. The country has greater confidence to take on the competition from developed countries and has attracted global investors in ever increasing measure. The Textile industry is one of the oldest industries in India. The sector has made significant contributions in terms of forex. Earnings and employment and is one of the mainstays of the economy.

Indian Textile Industry occupies a very important place in the economic life of India. It contributes to the Indian Economy through generation of employment, output and export earnings. In the financial year 2006, it has been found out that the contribution of this industry amounts to 14% of the total output generation by the industrial sector.

Indian Textile industry’s contribution towards GDP has been estimated to be covering around 4% which itself is a commendable one. Textile has been one of the main sources of
income for the Indian economy through export. The total share of the Indian Textile Industry in the total earnings from export has been calculated to be 16.63%, as estimated by Ministry Of Textiles, India.

This industry has shown the potential of being one of the largest employment generating industries of the Indian economy. On a direct basis, Indian Textile Industry employs a whooping thirty five million people and more. In terms of employment generation, textile industry has come up to the second position, just after agriculture.

1.15 HISTORY OF TEXTILE

The history of textile is almost as old as that of human civilization and as time a move on the history of textile has further enriched itself. In the 6th and 7th century B.C, the oldest recorded indication of using fiber comes with the invention of flux and wool fabric at the excavation of Swiss lake inhabitants. In India the culture of silk was introduced in 400A.D, while spinning of cotton traces back to 3000B.C.

In China, the discovery and consequent development of sericulture and spin silk methods got initiated at 2640 B.C while in Egypt the art of spinning linen and weaving developed in 3400 B.C. The discovery of machines and their widespread application in processing natural fibers was a direct outcome of the industrial revolution of the 18th and 19th centuries.

The discoveries of various synthetic fibers like nylon created a wider market for textile products and gradually led to the invention of new and improved sources of natural fiber. The development of transportation and communication facilities facilitated the path of transaction of localized skills and textile art among various countries.
1.16 HERITAGE OF TEXTILE

Indian textile enjoys a rich heritage and the origin of textiles in India traces back to the Indus valley Civilization where people used homespun cotton for weaving their clothes. Rig Veda, the earliest of the Veda contains the literary information about textiles and it refers to weaving. Ramayana and Mahabharata, the eminent Indian epics depict the existence of wide variety of fabrics in ancient India.

These epics refer both to rich and stylized garment worn by the aristocrats and ordinary simple clothes worn by the common people. The contemporary Indian textile not only reflects the splendid past but also cater to the requirements of the modern times.

It is the second largest employment provider and the biggest export earner accounting for nearly a third of the country’s export earnings. It contributes Rs.7,000 crores annually as duties to the central Exchequer besides cess, State taxes and other taxes.

The area under cotton cultivation is the largest in the world. The spinning capacity is the second largest after China’s. India has the largest hand weaving sector and a long tradition of producing some of the finest and costliest fabrics in the world. India is the biggest yarn exporter with a share of 28 per cent of the world market and is known for the quality of its fine count cotton yarns. The Indian garment sector is a supplier to the top brands the world over.
1.17 GROWTH OF INDIAN TEXTILE INDUSTRY

Growth along with the investment of an industry depends heavily on the economic health of the country. Indian economy grew rapidly during the fiscal year 2006-2007 posting a growth rate of 9.4% p.a. Not only this, India has been performing significantly in the last three years where its average yearly rate of growth has been estimated to be 8%.

The fruits of economic growth have trickled down to people of the state which can be evidenced from the rising per capita income of India. Statistics reveal that during 2001-2007 (up to March 2007) the per capita income of India has increased by sixty two percent and has reached the level of Rs.25,778 or US$ 581.37 per annum. One of the most beneficial classes of this economic growth saga has been the middle income section of the society.

The total strength of this class in absolute terms has been found out to be 216 million which is expected to rise to 351 million by 2010. The major demand that is being generated is by a new class of people from the booming IT-BPO sector who are still at their prime age and are outwardly fashion savvy. This has generated huge demand for fashionable dresses which has consequently led to the emergence of some world class Indian designers with their latest fashion apparels.

Propensity of consumption (after excluding all spending on essential items like housing, health, education, etc.) by the average Indian people has increased at the rate of 5% to a total amount of US$ 219 billion in the year 2005. At this time, the organized retail sector has been able to tap a market of around US$ 8.2 billion which is projected to increase to US$ 25 billion by 2010.
Textile industry is one of the major contributors to the total output of the fast growing Indian industrial sector which is at present revolving around 14%. Textile sector's contribution to GDP of India is also significant which currently amounts to 4%.

It has been found out that Indian textile industry is one of the major sources of foreign exchange earnings for India and contributes around 16-17% of the total export earning. From the above discussion it is quite clear to us that the market size of India is growing at a very high pace. That is why the foreign investors are flocking to India for investment purposes in order to get hold of a chunk of this expanding pie.

With increasing demand for the products of Indian Textile Industry, new players are jumping in the league to get a slice of the profitable pie and the already existing textile mills are raising their capacity for increasing their supply. Hence, the expansion process of the domestic industry is also not far behind. Thus, it can be said that the whole Indian economy is on a growing trend which has its obvious impact on every possible sector including the Indian Industry.

Textile Mills in India are the manufacturing plants for producing woven textile fabrics and related products. Textile mill industry can be recognized as one of the largest industries in India, providing employment to about 10 lakh workers.

Major textile products manufactured by textile mills include yarn products, cotton yarns, blended yarn, synthetic yarn, specialty yarn, fabric products, woven fabrics, knitted fabrics, woolen and acrylic blankets, blazer cloth, tweed and all kinds of woolen cloth. Major activities of textile mills in India include weaving, knitting, knotting, crocheting and pressing the fibres. For the last couple of years, Indian textile mills are experiencing tremendous growth.
1.18 PRESENT SCENARIO OF INDIAN TEXTILE MILLS

Most of the textile mills in India are not at all technologically updated. Some of the major problem associated with these mills includes low productivity, increase in cost input, inadequate working capital, and stagnation in demand. These are the factors responsible behind the growth of Textile Mills in India. Some of the major factors responsible behind the growth of textile Mills sector are:

- An immense demand of Indian apparels and textiles in the international market
- Low custom duties on imported textile machinery

Less tight government restrictions on imported goods Major trading partners regarding import of textile machineries include U.S., Germany, Switzerland and U.K. India ranks second in the global textile industry and accounts a major portion to the overall Indian exports. For the sustenance of this growth and to maintain the competence in the international market, the textile mills in India need to be modernized.

1.19 PRODUCT RANGE

Some of the major products produced by textile mills in India are gazed and mercerized yarns, sewing threads, crochet and hand knitting yarns, industrial threads, yarn, grey woven fabric, dyed woven fabrics, grey knitted fabric, dyed knitted fabric, and garments like long coat, pant, shirt, baby pant, jacket coat and many more.

1.20 TAMILNADU TEXTILE CORPORATION

The Tamilnadu Textile Corporation was incorporated on 24.4.1969 as a fully owned Government Company under the Companies Act.1956 with the following objectives. To set up and own Textile Mills in the State of Tamilnadu, to carry on the business of Textile Mills in all its branches and to manage any such business or undertaking relevant to the Textile Industry.
FUNCTIONS OF TEXTILE MILLS IN TAMILNADU

Textile Industry of Tamil Nadu is the forerunner in Industrial Development and in providing massive employment in the State. It is predominantly Spinning oriented. The State Textile Industry has a significant presence in the National economy also. Out of 2049 large and medium textile mills in India, 893 mills are located in Tamil Nadu. Similarly, out of 996 small units in India, 792 are located in Tamil Nadu. The 893 large and medium textile mills include 18 Cooperative Spinning Mills, 17 National Textile Corporation Mills and 23 Composite Mills.

The spinning capacity is 14.75 million spindles with a labour force of about 2.17 lakhs. The Textile Industry in the private sector has a very important role to play in the Industrial field, with regard to employment potential, overall economic and commercial activities. This industry enables the Central and State Government to earn revenue, besides foreign exchange through exports.

TEXTILE INDUSTRY IN TAMILNADU

Tamil Nadu has been outstanding in the growth of cotton industry. During 1879-1900 Madras became the seat of industrial development. The starting of the Buckingham Carnatic Mill in 1878 marked the beginning of the textile industry in the south. Since 1930, the growth of the textile industry in Tamil Nadu had been phenomenal with a network of 114 mills all over the state. It had an investment of Rs.180 crores. Its productivity was 1/5th of that of the Indian union. By about 1938-1939 about 41 mills sprang up in south India, Coimbatore alone accounting for 27 mills. From then onwards the March had been rapid in 1939-1956, the number of mills rose to 128.
To cater to the large number of handloom units, most of the south Indian mills concentrated on spinning. Thus the number of spindles in South India was higher at 23.3 per cent of the Indian Union, while the number of looms was a shade under 8 per cent as of 1956.

The industry in Tamil Nadu is mostly concentrated in and around Madras, Madurai and Coimbatore districts. Tamil Nadu has the second largest concentration of cotton mills in India. The cotton textile industry has carved for itself a special place in the industrial scene of the Tamil Nadu. As on 1987, as many as 352 out of 875 mills in India, (40%) 5.56 lakhs handlooms and more than a lakh power looms were located in Tamil Nadu.

Of the 352 mills (40%) functioning in the state, 328 are spinning mills (93%) and 24 are composite ones (7%) of the 303 mills in the state, 16 were in the public sector, 15 under the Co-operative fold and the rest in the private sector. The total spindlage capacity in Tamil Nadu stands at 66.23 lakh spindles accounting for 27.75 per cent of spindle capacity in India.

Further, the Significance of the cotton textile mills in the industrial set up of Tamil Nadu is illustrated by the result of the Annual Survey of industries. Next to the manufacture of miscellaneous food preparations, spinning and weaving occupied the proud place among the major organized industries of Tamil Nadu. It accounted for the largest number of workers and for the greatest amount of wages. Investment and production were also the highest. It accounted, for the highest value added to the economy of Tamil Nadu.
1.21 TEXTILE INDUSTRY EXPORTS

Textile industry plays a significant role in the growth of Indian economy and it is an important component of global trade. Textile industry accounts for about one third of India's total export earnings. It is regarded as the second largest industry of India and is the largest foreign export earner, accounting for 35% of the gross export earnings in trade. During 1992-93 and 2001-02, textile exports recorded an increase at a compound annual growth rate of 14.01%. Handloom and cotton are the two most significant sectors in textile industry together contribute the major portion of total textile export in India. Textile industry generally includes manufacturers, wholesalers, suppliers, and exporters of cotton textiles, handloom, woolen textiles etc. This industry has the potentiality of generating a large number of employment opportunities. About thirty five million people are already engaged with this sector.

1.22 IMPORTANCE OF TEXTILE INDUSTRY

Economic development of a nation depends on multiple factors. Textile is important to compute development in both economic and welfare terms. The textile industry is the single largest foreign exchange earner for India. Currently India has the second highest spindlage in the world after China. Textile industry is providing one of the most basic needs of people and the holds importance: maintaining sustained growth for improving quality of life. It has a unique position as a self-reliant industry, from the production of raw materials to the delivery unfinished products, with substantial value- addition at each stage of processing: it is a major contribution to the country’s economy. Its vast potential for creation of employment opportunities in the agricultural, industrial organized, decentralized sector and rural and urban areas. 15 Percent Particularly for women and the disadvantage is noteworthy.
The textile in India has been a pioneer industry. India’s industrialization in other fields sources generated by the textile industry. The textile industry contributes four percent to the country’s GDP, 14 percent to industrial production and eight percent to indirect tax revenue, it employs close to 35 million persons-the second largest after agriculture- and accounts for 18 percent on industrial employment. In the global context, India offers comparative advantage in the textile and apparel sector with its excellent raw material base, skilled manpower and cost compositeness.

The Indian textile industry has already established its name in supplying high quality yarns and grey fabrics to the world market. However it is yet to make an impact in finished product. It only makes sense to go in for further value-added products such as garments and leverage on the country’s established name in these export markets.

Developing countries with both textile clothing capacity may be able to prosper in the new competitive environment after the textile quota regime of quantitative import restrictions under the Multi-Fibre Arrangement (MFA) came to an end on 1st January, 2005 under the World Trade Organization (WTO) agreement on Textile and clothing. As a result, the textile industry in developed countries will face intensified competition in both their export and domestic markets. However, the migration of textile capacity will be influenced by objective competitive factors and will be hampered by the presence of the distorting domestic measures and weak domestic infrastructure in several developing and least developed countries.
The mood in the Indian textile industry given the phase-out of the quota regime of the Multi-Fibre Arrangement (MFA) is unbearable with new investment flowing in and increased order for the industry as a result of which capacities are fully booked up to April 2005, as a result of various initiatives taken by the government, there has been new investment of Rs.50,000 crore in the textile industry in the last five years.

The textile industry undoubtedly will continue to grow and play a vital role to create more employment, enhance per capita income and earn valuable foreign exchange for the country in the coming years. Government is fully committed to restoring the glory of the textile industry in the economy with the dedicated efforts of the exporting commodity with the ambitious target us $50 billion set in the new textile policy will be achieved by the year 2010.

1.23 MILLS IN CRISIS

A severe demand recession in India and abroad, coupled with other factors, has pushed the textile industry in southern India, which is centred in Coimbatore, into a crisis. The textile industry in Coimbatore, which accounts for a predominant part of the industry in southern India, is facing a crisis.

A substantial part of the capacity of the spinning mills in and around the city, which manufacture yarn, remains idle. Thousands of mill workers have not received their wages for months. They face even more serious prospect of losing their jobs as the danger of several units closing down in the immediate future appears to be real.

For three years now, the industry has been reeling under the impact of a demand recession in the domestic market and a steep fall in yarn exports, particularly since the start of the South-East Asian economic crisis in 1996.
Ironically, the turmoil in the industry is blamed on economic liberalization, which was widely believed to have contributed to Coimbatore’s success in the last decade. The textile industry is the engine of Coimbatore’s economy, and the slowdown has meant that Coimbatore’s image as a boom town, earned in the 1980s and early 1990s, is now considerably faded.

The union Government’s failure to provide relief to the industry has raised doubts whether it is inclined to relieve the industry of “Excess capacity”, which some sections of the industry believe is at the root of the crisis. These apprehensions are heightened by the Government’s decision not to extend to the spinning industry the benefits of the Rs.25,000-crore Technology Upgradation Fund (TUF), which was announced recently.

1.24 ORIGIN OF TEXTILE

The term ‘Textile’ is a Latin word originating from the word ‘texere’ which means ‘to weave’ Textile refers to a flexible material comprising of a network of natural or artificial fibers, known as yarn. Textiles are formed by weaving, knitting, crocheting, knotting and pressing fibers together. Textile Museum is that specialized category of museum which primarily preserves different types of textile and textile products.

India traces back to the Indus valley Civilisation where people used homespun cotton for weaving their clothes. Rig-Veda, the earliest of the Veda contains the literary information about textiles and it refers to weaving. Ramayana and Mahabharata, the eminent Indian epics depict the existence of wide variety of fabrics in ancient India.

These epics refer both to rich and stylized garment worn by the aristocrats and ordinary simple clothes worn by the common people. The contemporary Indian textile not only reflects the splendid past but also cater to the requirements of the modern times.
1.25 NATURE OF THE STUDY UNIT

The unit selected for this study purpose is Kaleeswarar and Pioneer Mills. It is situated at Kalaiyar Koil and Kamuthakudi which is considered a backward area of Sivagangai District. This is the biggest mill in that area.

The mill was founded by Mr. Somasundaram Chettiar. It commenced its production on 21st October, 1965, with an initial capacity of 10,120 spindles. The mill was taken over by the National Textile Corporation with effect from 1st April, 1974. After nationalization, the mill expanded its capacity gradually. It is considered one of the well-operated mills among the various units of the National Textile Corporation. During 1982, the mill was sanctioned finance by IDBI and IFCI to expand its capacity further as well as for modernizing its machineries. As a result, the capacity of the mill had been tripled from 1965 to 1984 in manufacturing activity. The mill provided an employment opportunity to nearly 650 people. People living in Kalaiyarkoil and surrounding area mostly depend upon the mill for employment purpose.
1.26 REVIEW OF PREVIOUS LITERATURE

**Sastry (1966),** analysed the partial and total factor productivities by using production function approach for the Indian sugar industry for the period 1951 to 1961. Analysis was made separately for both the aggregate level and regional level.

**Annamalai (1978),** deals with changes in productivity in Indian Cotton Textile Industry and Tamilnadu Cotton Textile Industry between 1959 and 1970 excluding the year 1967. In his study both partial productivity and total factor productivity ratios were computed by using Kendrick Method. From this study he concludes that total factor productivity increased by about 1.3 per cent per annum for the whole period in the case of Indian Cotton Textile Industry and 0.5 per cent in case of Tamil Nadu Cotton Textiles Industry.

**Goel and Snair (1979),** have analysed labour productivity and output growth in Indian Mining and Manufacturing Industries during 1951-76. Employing identified equations they arrived at the following conclusion: There was a conflict between the share of employment and that of productivity in the given additional output of the sectors i.e., when the share of employment increases that of productivity declines and vice-versa.

**Mehta (1980),** in his study on total and partial productivity for the period 1953-1965 computed partial productivity of capital and labour and total factor productivity by Solow and Kendrick methods. The total factor productivity indices measured by both methods showed a downward trend. The movement in labour productivity and capital productivity showed a diverse trend. Labour productivity increased significantly in industries like vegetable oil, chemicals, tanning, glass and glassware and insignificantly in matches, iron and steel and cement industries. Labour and capital showed an inverse relationship. In his study capital intensity was able to explain the growth in labour productivity in sugar, tanning, ceramics, cotton textiles, confectionery and sewing machines, while in the case of other industries, despite a rise in capital per person, it had not led to gain in labour productivity, implying that
growth in labour productivity in many industries was not due to capital intensity. Accordingly, Mehta concludes that capital intensity need not increase labour productivity.

Arun Ghose’s (1984), paper examines some efficiency parameters of the steel, cement and sugar industries in order to focus attention on the problem of efficiency in Indian manufacturing industry. His study is useful in two ways; first, in highlighting the reasons for the low productivity observed in a few important industries and secondly, in bringing out the absence of any direct link between investment and efficiency.

Lakshmana Rao. V (1984), has published an article titled “Productivity related variables – An inter-industry analysis”. He has examined inter relationships between productivity and capital intensity and managerial resources.

Mansukhani T.V. (1985), in his article “Productivity and Technology Linkages – The case of HMT” has dealt with the growth in labour productivity and total factor productivity.

Santosh Sharma (1985), in his book on Productivity in Road Transport, He emphasized that productivity is not merely a question of making employees put in greater effort or enforcing greater discipline in the work force but is in a great measure related to the development of a sound organizational framework and management system.
Arya (1985), Attempted to study the elasticity of substitution in Indian cement industry for the period 1951 to 1970. For the period 1951-60 wages increase per man hour and increase in capital per man and favourable effects on labour productivity. The labour productivity has increased over the period of time. During 1961-70 increase in wage-rate per man hour had an unfavourable effect. On labour productivity, when it was taken along with increase in capital per worker it had favourable effects on labour productivity.

Dabir-Alai’s (1987), study estimates total factor productivity (TFPG) rates for the large scale manufacturing industries using solow and Kendrick methods for the period 1973-74 to 1978-79. His study concludes that the manufacturing sector is dominated by industries whose TFPG had remained positive over the period 1973-74 to 1978-79.

Laharia S.L. and Singh V.P. (1987), in their article “Scientific Productivity Measurement” have examined the different approaches used to measure scientific productivity.

Usha Sunderajan (1988), has published an article “Organisational effectiveness and productivity – A case study”. Here she concludes that factors like policy, process structure or behaviour of people do not necessarily affect effectiveness or productivity.

Sumanth (1990), pointed out that capital investment, capital intensity, capacity utilization, government regulations, union’s influence and management are some of the factors that affect labour productivity.

Candace (1991), estimated the multi factor productivity growth and differentials at a company level of five U.S. and Japanese motor vehicle firms.

Ahluwalia (1991), attempts to analyse the long-term trends in total factor productivity and partial productivities in the organized manufacturing sector in India over the period from 1959-60 to 1985-86. The role of factor input growth and total factor productivity growth in accounting for the growth in value added is also explored. The analysis is concluded at a
detailed level of desegregation for 63 constituent industry groups at the three-digit level as well as for the four use-based sectors of manufacturing, i.e. intermediate goods, consumer non-durables, consumer durables and capital goods. For as many as 36 industries accounting for over 50 per cent of the total value added in manufacturing in 1970-71, however, the contribution of total factor productivity growth was negative. The more important among these industries were food manufacturing except sugar, iron and steel and non-ferrous metals. For almost all of the 63 industries, capital intensity showed a strong and significant upward trend. Labour productivity showed significant positive growth for fewer industries accounting for 64 per cent of the value added in manufacturing. There were a few industries which even experienced a decline in labour productivity. The trend in capital productivity was dominantly downward.

Jeyasekar. V (1992), in his research work, “A study of financial performance of Co-operative spinning mills” has stated that the aim of the productivity is the maximization of output and input.

Chandrasekaran and Sridharan (1993), estimate total and partial factor productivity indices to analyse the operating performance of cotton industry in India from 1973-74 to 1986-87. The total factor productivity has been arrived at by using Kendrick’s index. For the purpose of finding out the estimates of input elasticity, neutral technical progress and returns to scale, cobb-Douglas production function, CES and VES functions are used. They conclude that labour productivity in the cotton industry had increased at a higher rate than capital productivity and contributed to the growth of output and efficiency achieved. Low capital productivity observed in their study could be due to managerial factors.

Sabarinathan. S and Jenifer. V (1993), published an article on Financial Performance Using the Ratio Analysis at Kaleeswarar Mills B Unit of National Textile Corporation Ltd in the Journal of Business and Management (IOSR-JBM). The study was
based on secondary data from records, reports and profile of the organization. The validity of any research is based on the systematic method of data collection analysis. The Ratio analysis is the process of identifying the financial soundness and cost effectiveness of the firm by establishing relationship between the items of balance sheet and profit and loss a/c. The present study has thrown major concentration in ratio analysis, from the 5 years balance sheet and profit and loss a/c. An objective of the study includes the profitability, cost of goods sold and other experience company overall financial performance of the company. Short term and long term position of the company. Based on the five years balance sheet and profit and loss a/c suitable suggestion were given by the researcher for a better soundness and cost effectiveness of the company.

Rolf Fare (1994), made a study on “Productivity Growth, Technical Progress, and Efficiency change in Industrialized Countries” that this study concludes that the productivity Growth in 17 OECD countries over the period 1979-1988. We find that U.S. Productivity growth is slightly higher than average, all of which is due to technical change. Japans’ productivity growth is the highest in the sample, with almost half due to efficiency change.
Alan Oster (1995), made a study on “Measuring Productivity in the Australian Banking Sector” shows that almost all of the series point in the same direction supports the hypothesis that productivity in the banking sector has been rising during the 1990s. Banks continually look to re-organize their processes and exploit new technology in an attempt to compete with other providers of financial services. Consequently, measurement of productivity in banking begs further research.

Dave Ulrich (1997), made a study on “Measuring Human Resources An Overview of Practice and a Prescription For Results” One of the most common weaknesses of HR professionals is fear of quantitative, measurable results of generating discussion and dialogue about gaps in an HR department’s delivery of HR practices. By reviewing emerging research which shows the impact of HR on business results; by showing how HR practices relate to a business’ balance scorecard through productivity.

Mark Rogers (1998), made a study on “The Definition and Measurement of Productivity” the research concludes that work being undertaken as a part of a collaborative research program entitled The Performance of Australian Enterprises: Innovation, Productivity and Profitability.

Joaquin Maudos (1999), made a study on “Total Factor Productivity Measurement and Human Capital in OCED Countries” concludes that TFP evolution in OCED countries breaking down the productivity gain into technical change and efficiency. From the Malmquist indices the results obtained indicate the existence of significant effect associated with human capital and its importance for an accurate measurement of TFP.
Daniel Koretz (2000), made a study on “Limitation in the Use of Achievement Tests as Measures of Educators Productivity” that the Research provides sparse guidance about how to broaden the range of measured outcomes to provide a better mix of incentives and lessen score inflation. Several possible directions, however, warrant further exploration.

Iain Fraser (2001), made a study on “Farm Level Efficiency and Productivity Measurement Using Panel Data Wool Production in South-West Victoria” states that the farms change their relative rank in forms of efficiency across years. Also, unlike aggregate studies of total factors, productivity, we find at best erratic and modest growth, worrying results for this industry. However, caution is needed when interpreting these results, and for that matter, benchmarking analysis is currently practiced.

Lorin M Hitt (2002), made a study on “Investment in Enterprise Resource Planning Business Impact and Productivity Measures”. The study concludes that firms that invest in ERP tend to show higher performance across a wide variety of financial metrics. Even though there is a slowdown in business performance and productivity shortly after the implementation, financial markets consistently reward the adopters with higher market valuation.

Tae Hoon Oum W G (2003), made a study on “A Survey of Productivity and Efficiency Measurement in Rail Transport” the studies concludes that increased competition via regulatory liberalization and deregulation has improved efficiency. Many European studies find that managerial autonomy increases efficiency. It is important that the effects of differential operating environments such as traffic density and the characteristics of a rail network should be removed in order to make a proper comparison of efficiency.

Roland T Rust (2004), made a study on “Measuring Marketing Productivity: Current Knowledge and Future Directions” affirmed that it is possible to show how marketing expenditures add to shareholder value. The effective dissemination of new methods of
assessing marketing productivity to the business community will be a major step toward raising marketing’s vitality in the firm and, more important, toward raising the performance of the firm itself.

**Sabine Biege (2005),** made a study on “Challenges of Measuring Service Productivity in Innovative, Knowledge-Intensive Business Services” concludes that neither innovativeness nor knowledge-intensity up to now have been covered adequately in service productivity measurement concepts. A review of three measurement concepts revealed that existing proposals up to now are on a very rough level.

**Erwin Dievert W (2005),** made a study on “Concepts and Measures of Productivity” states that the Productivity growth indexes build in a standard of comparison but productivity level indexes do not. With productivity growth measures, it is important to notice whether the standard of comparison is suitable for the intended uses of the productivity estimates. For instance, if a comparison over time is built into a productivity growth measure, it will not usually be appropriate to compare the resulting estimates with figures for other production units. Productivity level index values can be compared in whatever ways are deemed sensible. In this respect, they can be used more flexibly than the productivity growth figures.
Ruhul A (2006), made a study on “Measuring Productive Efficiency Incorporating Firms’ Heterogeneity: An Empirical Analysis” that the results show that there are wide variations in efficiency across firms attributable to firms’ heterogeneity. Further, it shows that there is ample scope for increasing efficiency from the given resources and technology.

Soeren Mattke (2007), made a study on “A Review of Methods to Measure Health-related Productivity Loss” affirmed that the greatest impediment to estimating the cost of productivity lost to illness is the lack of established and validated methods for monetization. The issues raised in this review are intended to stimulate future research to validate and improve such methods.

Erwin Diewert (2008), made a study on “The Challenge of Total Factor Productivity Measurement” the current system of industry statistics that is used by every advanced country today has not kept up with the evolution of the world economy from primary and manufacturing production to the production of services. As a result, inter country comparisons of total factor productivity growth at the industry level are not likely to be very accurate.

Dorcas Beaton (2009), made a study on “Measuring Worker Productivity: Frameworks and Measures” concluded with Over the course of the next 2 years, the group will be seeking sponsorship for an international consortium of researchers, clinicians, and individuals with arthritis-with expertise in measuring job demands and understanding work–life balance- to work to understand how the modular components should be analyzed and interpreted for use in randomized controlled trials.
Gboyega. A (2010), made a study on “Concept and Measurement of Productivity” result shows that measures of productivity growth have no precision with which productivity growth is measured. In general, in the case of non-parametric approaches to total factor productivity measurement, the task is to calculate productivity growth, which is believed to be observable.

Gupta. R (2010), made a study on “Development of a Productivity Measurement Model For Tea Industry” the study reveals that the model is comprehensive and satisfies the six criteria of measurement theory such as validity, comparability, completeness, timeliness, inclusiveness and cost-effectiveness. Further, the study reveals that the proposed model identifies the areas of poor resource utilization responsible for measured total productivity decline in the tea industry. These resources are labour, material and energy and a number of suggestions have been put forward as a mitigating measure.

Anne W Kamau (2011), made a study on “Intermediation Efficiency and Productivity of the Banking Sector in Kenya” results show that though the banks were not fully efficient in all respects, they performed fairly well during the period under study. Banks still have reason and scope to improve performance by improving their technology, skills and enlarging their scale of operations so as to be fully efficient. Based on the main conclusions, policies encouraging competition, products diversification to advance loans, risks minimization through increased capital regulation and privatization of some banks are generally recommended.
Rajkumar Patil (2011), made a study on “Productivity Enhancement and Measurement in Pharmaceutical Industry” affirmed that the key to successful implementation of productivity improvement is to focus on producing measurable results. A more productive workplace is ultimately a more profitable and enjoyable workplace. In order to maximize productivity, an organization must have a clear mission and communicate that mission to all employees.

Chad Syverson (2011), made a study on “What Determines Productivity?” This paper surveys and evaluates recent empirical work addressing the question of why businesses differ in their measured productivity levels. The causes are manifold, and differ depending on the particular setting. They include elements sourced in production practices—and therefore over which producers have some direct control, at least in theory—as well as from producers’ external operating environments.

Goparaju Purna Sudhakar (2012), made a study on “Measuring Productivity of Software Development Teams” that the productivity measures such as SLOC, KLOC and Function points are discussed. The research concludes that the soft factors affecting the software development team productivity. The productivity measured can be improved. An organization working on the factors affecting the software development team’s productivity can improve the overall organizational productivity. Organizational productivity is dependent on individual and team productivity. Thus improving software development team’s productivity results into improved organizational productivity. The productivity improvement is part of team development. Hence, one should try to increase the productivity of software development teams resulting into the better organizational productivity and performance.

Besa Xhaferi (2012), made a study on “Measuring Productivity” This study concluded that the definition of variables used in the model and the estimation methodology
are crucial for the results we will obtain. Also we suggest that micro-panel dataset may be helpful in solving estimation and comparison models in productivity studies.

William F. Massy (2012), made a study on “Data Needed for Improving Productivity Measurement in Higher Education” the authors conclude that the improving Measurement of Productivity in Higher Education, which reviews the principles and pitfalls of measuring university productivity and proposes a practical method for doing so at the sector and institutional segment levels. The summary emphasizes the method’s data requirements and describes needed changes in IPEDS and other databases.

Binaykumar Ray (2012), made a study on “Technical Productivity Analysis for Cement Industry at Firm Level” it reveals that to attain higher energy efficiency, firms should increase the use of input as slag per unit of cement production and the capacity of utilization of firm. Higher salary and wage bill are indicative of lesser automation; and hence salary and wages show positive and significant relationship with energy intensity. The results also show that energy intensity is negatively correlated to energy price. To encourage efficient utilization, the Government should deregulate the price of coal and electricity and should give incentives to firms to invest in new technologies.
Daniel Coublucq (2013), made a study on “Econometric Analysis of Productivity with Measurement Error Empirical Application to the US Railroad Industry” results suggest that the rationalization of the rail network allowed by the deregulation (Staggers Act, 1980) increased productivity. The communication expenditures also played a role in shaping the productivity gains, results suggest that if a regulatory policy does not preserve the economic incentives to invest in the network, opening the rail network to entrants could have a significant negative impact on the productivity and thus on the performance of the US rail freight industry.

Rick McKellar (2013), made a study on “Productivity Measurement in the United States Health System” The research concludes that the bundled and global payments provide incentives for providers to stint on care. Here, proper metrics for quality will be key. These are needed to help guide patient and purchaser decisions and to promote accountability. Until we identify meaningful productivity measures that include quality and reflect societal interests, we will be shackled in our efforts to design a better health care system.

Yu Sheng (2013), made a study on “Measuring Output, Input and Total Factor Productivity in Australian Agriculture an Industry-level Analysis” this study uses the growth accounting approach to estimate total factor productivity in Australia’s agriculture industry. Agricultural productivity grew at an average rate of 2.1 per cent a year between 1949 and 2012, mainly driven by output expansion. The estimate provides a unique, long-term measure of the productivity performance of Australian agriculture, and contributes to the ongoing debate on the underlying estimation methods.
Bitzer, Philipp (2013), made a study on “Towards a Productivity Measurement Model for Technology-Mediated Learning Services” that we propose to evaluate the model by means of a factor analysis to enrich TMLS research in terms of systematic evaluation and assessment. Furthermore, we provide practitioners with a tool to measure the productivity of their TMLS using both tangible and intangible indicators.

Attarat E (2014), conducted a study on various factors affecting labour productivity and methods to improve it. The findings also show that health and safety factors has not been a concern of small, medium companies and has some effect, while in large companies are better, although not as major concern and has average effect. Practically it is difficult task to all to improve labour productivity up to 100%. But if you have properly control on above factors, productivity can be improved up to large extent.

Afaha, John Sylvester (2014), made a study on “Measuring Productivity for Optimal Performance in the Nigerian Industrial Sector a Co-Integration Approach” results of the study recommends that government must create “enabling environment” for manufacturers in the area of infrastructures, financial, legal and property rights. High cost of borrowing is due to high interest rate spread therefore this paper advocates a cut in margin between lending and deposit rates. For a resounding performance the establishment of the Microfinance Banks, Small and Medium industries Equity Investment Scheme (SMIEIS), amongst other agencies should be overhauled.
Anne Landin (2014), made a study on “Productivity and Efficiency in the Development of the Swedish Construction Sector” the results suggest that the model offers a reliable basis for determining changes in efficiency at the project level that can be used to inform design decision-making. At the macro level, the challenge for the sector is to bring about a development-oriented process that continually increases efficiency.

Anupriya (2014), made a study on “Survey on Various Productivity Measures of Software Development Teams” states that the productivity measured can be improved. An organization working on the factors affecting the software development team’s productivity can improve the overall organizational productivity. Organizational productivity is dependent on individual and team productivity. Thus improving software development team’s productivity results into improved organizational productivity. The productivity improvement is part of team development. Hence, one should try to increase the productivity of software development teams resulting into the better organizational productivity and performance.
1.27 STATEMENT OF THE PROBLEM

The textile sector is a complex industry using several fibers such as cotton, silk, synthetics and regenerated man-made fibers and jute. The machines and processes are used for converting these fibers into yarns and fabrics are similar in principle, but are in fact quite distinct. Thus measuring the productivity of the textile industry is a complex task. There are various types of resources which are not inter-convertible in textiles can be measured in terms of any of the resources used.

The relative contributions of various factors such as man, machine and material to productivity will be different in different industrial situations. It depends on the number of considerations like the level of technological development, the relative cost of labour and equipment, the cost of material and other factors. Thus higher productivity is not an accident. It is the result of effective planning and judicious use of resources.

National Textile Corporation Limited (N.T.C.) was setup with the main objective of managing the affairs of the six textile undertakings taken over by the govt. It was also proposed to and modernizes these mills after the takeover and expands them wherever necessary with a view to making them economically viable.

N.T.C. Limited (Holding Company) was incorporated in April 1968 and started functioning in October 1968. At present there are 119 mills controlled by 9 subsidiaries. The corporation has now completed 27 years of commercial operation.
1.28 SCOPE OF THE STUDY

This study aims at highlighting the productivity measurement in N.T.C mills in Tamilnadu. It also aims to see the productivity trend in the mill. Hence this study has been attempted from the secondary data collected from the mills.

1.29 AREA OF THE STUDY

The study was limited by analyzing the various factors responsible for measuring the productivity in N.T.C mills in Sivagangai district. Though many number of mills are established in Tamilnadu. Two mills are taken into account for the study on the basis of convenience sampling.

1.30 OBJECTIVES OF THE STUDY

GENERAL OBJECTIVE: To identify the factors which are responsible for the measurement of productivity in N.T.C. mills in Tamilnadu and make suitable suggestions to improve the productivity.

SPECIFIC OBJECTIVES

The specific objective of this research work is

1. Introduction and design of the study
2. To study the concept of productivity
3. To measure productivity in textile mills
4. To analyse and interpret the data in N.T.C.mills
5. To see productivity trend in N.T.C. mills
6. To offer findings and suggestions for improving productivity and a conclusion
1.31 METHODOLOGY ADOPTED IN THE STUDY

**Data Collection:** Secondary Data have been collected for the research work

**Secondary Data:** Secondary data was collected from the journals, magazines, research reports and from the related websites. The researcher visited the mills and had a discussion with the general manager and factory manager regarding material labour, capital employed and other factors responsible for measuring the productivity. Their ideas were taken into consideration.

**Analysis of the Data:** After the completion of the data collection, the researcher Analysed the collected data with the help of statistical packages such as SPSS 17 (Statistical Package for Social Science).

**Frequency Tables:** Simple frequency tables were applied which showed the position of the variables about the mills.

**Descriptive Statistics:** Descriptive statistical tools such as percentage, mean, have been used to describe the profile of the respondent and their response to the questions.

**Anova:** Anova test was conducted to study the various factors of attributes that influence the productivity measurement.

**Stepwise Multiple Regression:** The step wise multiple regression test was conducted for the purpose of finding out the most preferred variables in measuring productivity.

1.32 SAMPLING FRAME WORK OF THE STUDY

Sample design and sampling method: For this study exploratory and descriptive research designs were used. This study was conducted in NTC mills in Sivagangai district. Convenient sampling was used for selecting the sample mills from the 11 mills in tamilnadu.

**Sample Size:** The population of the study covers NTC mills in Tamilnadu. Mills in the Sivagangai district was selected on the convenient sampling to obtain information.
1.33 OPERATIONAL DEFINITION OF CONCEPTS

Productivity

Productivity means the ratio between output and input. It is the basis to evaluate the productivity trend in textile mills at Kalayarkoil.

Labour Input

Labour input refers to labour required per unit of output and wage costs per unit of output.

Capital Input

Capital inputs are the following – buildings machinery and tools and actual holdings of bank balances and cash.

Materials Input

It means materials supplied to production department in physical quantities.

Management of Productivity

It denotes the contributions of managerial and technical services in the process of production.

Productivity Measurement

It relates to productivity of labour, capital, raw material and of management.

1.34 PERIOD OF THE STUDY

The study covers the period of Eleven years from 2004 – 2014.

1.35 DATA PROCESSING

After the collection of the secondary data, thorough check up of the data was made. The missing details were found and later collected. To process the data a Master Table was prepared for each information used in the analysis. Then separate tables were prepared manually with the help of a calculator for further analysis and interpretation.
1.36 MEASUREMENT OF THE VARIABLES

In this study the researcher has identified the ratios such as material ratio, labour ratio, capital ratio, power and fuel ratio. With the help of these ratios the productivity in the N.T.C. mills has been measured.

1.37 FRAME WORK OF ANALYSIS

Using the secondary data, the productivity in the textile mill at Kalayarkoil and Kamuthakudi has been measured. For the purpose of analysis, trend by the least squares method has been used. For studying the relationship between the variables the correlation has been used. The data collected was analysed with ratios, descriptive statistics and non-paramatric tests was also used.

1.38 LIMITATIONS OF THE STUDY

The present study is based on the data collected from the sample N.T.C.mills in Sivagangai district and the result may vary from other regions of Tamilnadu or at the national level. In the present study only those mills were considered which is in the Sivagangai district. Since ‘r’ is a pure number it always lies between +, - 1 the change and origin of the scale will not affect its value. The basic figures are rounded off to two digit numbers for the computation of correlation.

1.39 HYPOTHESIS

1. There is a significant relationship between the output and materials.

2. There is a significant relationship between the output and labour.

3. There is a significant relationship between output and capital.

4. There is a significant relationship between output and machine repair.
1.40 CHAPTERISATION

The report of this study is divided into six chapters

**Chapter 1:** The first chapter deals with the design of the study. It contains Introduction, Statement of the problem, Review of previous studies, Scope of the study, Objectives of the study, Operational definition of the concepts, Methodology, Period of the study, Data processing, Measurement of the variables.

**Chapter 2:** The second chapter deals with the concept of productivity. It contains the meaning of productivity. Earlier approaches to productivity and modern approach to productivity. It also deals with the measures of productivity and the models of productivity. The factors which contribute to the improvement of productivity have been focused in this chapter.

**Chapter 3:** The third chapter attempts to measure productivity. An attempt has been made to ascertain where there is any exist for this purpose the input factors like material, labour, capital, power and fuel and the like were taken into account.

**Chapter 4:** This Chapter is devoted for analysis and interpretation of data by using appropriate statistical tools.

**Chapter 5:** The fifth chapter shows productivity trend of material, labour, capital, power and fuel. An attempt has been made to show the direction of the trend.

**Chapter 6:** The last chapter presents the summary of findings, and suggestions. It also gives a conclusion of the study.