CHAPTER I
INTRODUCTION AND RESEARCH DESIGN

1.1 INTRODUCTION

The textile industry in India with a strong raw material production base, vast pool of skilled personnel, entrepreneurial talent, and good export potential and low import content, flexible production systems, skilled manpower and low wage cost has an immense potential in the globalised textile economy. The textile industry can be broadly classified into two categories, namely the organized mill sector and the unorganized decentralized sector. The organized sector of the textile industry represents the mills. It consists of spinning mills and composite mills. In the composite mill, the spinning, weaving and processing facilities are carried out under one roof. On the other hand, the decentralized sector has been found to be engaged mainly in the weaving activity, which makes it heavily dependent on the organized sector for the yarn requirements. This decentralized sector consists of three major segments viz, powerloom, handloom and hosiery. In addition to the above, readymade garments khadi as well as carpet manufacturing units are present in the decentralized sector.
It is an acknowledged fact that the composite sector has intrinsic strength in terms of economies of scale, higher productivity, superior technology, better technical and skilled man power and integrated working capability to supply high value added, superior quality goods both for domestic and overseas markets. However these strengths have been diluted by multiplicity of taxes and levies, high cost of capital, lop sided fiscal policies, redundant and outdated controls and regulations, restrictive labour and industrial laws, lack of aggressive marketing, poor perception of Indian products abroad, procedural problems in exporting, poor infrastructure in transport, communication and banking, high power tariff, etc. All these factors have created negative growth in the mill sector. The consequential impact has been sickness and closure of mills on a large scale.

Handloom sector is an age-old one in India. Handloom weavers are spread all over India. Most of the handloom weavers are not trained in any formal textile training institutions. But the art of weaving in handloom sector is an inherited one. It is handed down from father to son and is passed on from one generation to another generation. The handloom sector, which suffers from inherent disadvantages in terms of production, productivity, adaptability and price-competitiveness has continued to receive attention from the Government for its survival.
The Powerloom sector plays a major role in the country. The quantum of production of fabrics in the powerloom sector works out to 62.4 per cent of the overall production\(^1\). It provides one of the basic necessities of life. As the powerloom units are situated mostly in semi urban and rural areas, it contributes substantially to the growth of the economy in those areas. The industry is endowed with availability of raw cotton and the raw materials indigenously, in adequate quantity at reasonable cost. The labour is available at lower wages. Overhead costs of the unit are relatively lower. This sector is in a position to offer products at competitive rates as compared to the mill products. Tamil Nadu has been in the forefront in the Indian powerloom sector. The Tamil Nadu state ranks second after Maharastra with regard to the number of powerlooms\(^2\).

The powerloom sector in Tamil Nadu provides direct and indirect employment to millions of people. The State produces large volumes of powerloom fabrics that find a market in every nook and corner of the country. The structure of powerloom sector in Tamil Nadu differs from other states like Maharastra and Gujarat. It varies in respect of the production pattern, size of the units and concentration of powerloom centres.
1.2 STATEMENT OF THE PROBLEM

The powerloom sector is poised to meet the increased global competition in the post 2005 trade regime under WTO. In order to meet the changed competitive conditions due to globalization and liberalization of the economy, there is an urgent need for studying the current status of the powerloom sector in India in terms of loomage, production of fabrics, employment opportunity and export of fabrics from powerloom sector. Tamil Nadu is one of the states where a large number of powerlooms are functioning in the textile industry. There are 4,37,325 looms (registered and unregistered looms) functioning in the state\(^3\). It is nearly one fifth of the total powerlooms in India. In Tamil Nadu, most of the production in powerloom sector is being carried out on job work basis. The survey of Textile Committee reveals that, more than three fourths of the powerloom units operate on job work basis. The remaining one fourth of the units undertakes own production and market their fabrics under their own brand name\(^4\).

It is necessary to study the organizational structure, mode of starting, sources of job work, production of fabric to and the various problem faced by the small scale job work powerloom units. In Tamil Nadu, powerlooms are spread over all parts of the state. The districts like Coimbatore, Erode, Salem and Madurai have the powerloom units
of medium scale and large scale. But in Tirunelveli district most of the powerloom units are functioning on a small scale level and depend on job work weaving. Hence in this context, the present study, “A study on the powerloom sector of the cotton textile industry in Tirunelveli district” has been undertaken.

1.3 REVIEW OF LITERATURE

A review of previous studies on powerloom sector is essential to understand the areas already investigated. So the new areas so far unexplored may be studied in depth. The first and comprehensive study of the powerloom sector at the all India level was made by the Fact Finding Committee (Handloom and Mills) in 1942. It showed that it was very difficult to collect accurate statistics on powerloom sector. The report further stated that neither rational distribution nor uniform pattern of growth had been achieved in the powerloom sector5.

The Textile Enquiry Committee (1954) reported that the ultimate replacement of handlooms by powerloom was inescapable and visualized a decentralised powerloom industry organised on a co-operative basis. The Committee recommended a phased conversion programme of handlooms into powerlooms in the co-operative sector6.

The Powerloom Enquiry Committee (1963) had analysed the status of powerloom sector in India. The committee examined the
structure and growth of the powerloom sector with special reference to
types, holdings, ownership, supply of raw materials, sorts of fabrics
produced, processing, marketing and financing facilities to the industry.
It also examined the remunerativeness of the powerloom weavers
taking into account the cost of production and performance of workers
and the working conditions of workers. The Committee’s report stated
that the problems of the powerloom sector were multifold. However,
the most critical core was the prevalence of low level of technology. The
technology level in most of the powerloom units was so primitive and
production process so inefficient that they had no future in the
integrated competitive world market and were most vulnerable to the
threat of imports. It called for an urgent action plan to upgrade the
technology of the powerloom sector to a minimum benchmark level
which would enable them to face the onslaught of cheap imported
fabrics. According to the Committee’s report the pre-weaving and post
weaving facilities available at the time of study were very poor,
affecting the quality of the fabrics. They suggested co-operativisation
of the looms (or) at least setting up of common service facilities for
better input sourcing and output marketing.

of Powerloom Weaving Industry in Sankarankovil in Tirunelveli
District” had analysed the powerloom industry in Sankarankovil. He examined the total number of looms, fixed capital, working capital, sources of finance, cost structure of co-operative contracts and the master contracts. He studied the particulars of workers employed in the region, their community-wise classification, the average waste rate, the items of production, average prices of products and gross profit earned by the powerloom weavers in the study area.

Padma H. Rao (1988) had analysed the impact of the then new textile policy. She pointed out that the decentralised powerloom units suffered an intrinsic structural and functional disadvantage in respect of cost of production. The powerloom units were inherently weaker than the textile mills. She also urged the establishment of research units for improving powerloom fabrics.

Rayudu (1988) in his book “Economics of Textiles Co-operatives” had analyzed the structure of the powerloom co-operatives in Andhra Pradesh, and assessed the economic and organizational viabilities of decentralized textile industry. The powerloom sector had been facing a lot of problems like technical knowhow, inadequate financial base and marketing, processing facilities raw materials and accommodation. The handloom Cooperatives dominated the powerloom. He pointed out that it was necessary to have reservations for powerlooms. It was also
desirable to have an apex body of national powerloom weavers societies, apart from the establishment of separate co-operative spinning mills to manufacture yarn exclusively to meet the requirements of powerloom co-operatives\textsuperscript{10}.

Sundararaj (1989) had studied the production and marketing of powerloom products in Aruppukottai. He analysed the production and marketing problems and also computed the cost per unit of fabric produced by powerlooms and handlooms. He found that irregular fluctuations in yarn price and frequent power failure led to a high cost of production in the powerloom units. He recommended that the Government should arrange supply of uninterrupted power supply to the powerloom units. He further suggested that like handloom products, rebate for powerloom products should be provided to increase the sales\textsuperscript{11}.

Sathiyavathi (1990) had studied the socio-economic conditions of powerloom weavers in Komarapalayam. She pointed out that the unsold stock highly affected the economic conditions of the powerloom weavers. She suggested that the Government should help the powerloom weavers to make quick sales. She also suggested that co-operative societies should be formed to provide a common workshed for powerloom weavers\textsuperscript{12}.
Balakrishnan (1993) had studied the handloom and powerloom units at Jakkampatti. He pointed out that timely and adequate supply of inputs to the weavers at a reasonable rate is of prime importance and suggested that the labour turnover should be reduced\textsuperscript{13}.

Roy Chowdhury and Supriya (1995) in their article “Political Economy of India’s Textile Industry; the case of Maharashtra” had discussed the decline of mill sector and growth of powerloom sector in Maharashtra during the period 1984-1989. They pointed out that the mill sector had undergone a gradual decline due to government control on entry, exit and expansion, and most importantly increasing competition with powerloom sector. According to them, the powerloom sector frequently employs the same technology as mills, but is designated as a part of small-scale sector and qualifies for important tax exemption and has a much lower wage structure\textsuperscript{14}.

The National Productivity Council (1997) had studied the need for modernisation of the powerloom sector. It reported that a fund to the tune of Rs.3,539.10 crore should be allotted in the Ninth Five Year Plan. The study also revealed that nearly 75 per cent of the powerlooms operating in the country require modernisation in varying degrees. The NPC suggested three modernisation approaches viz., technology
replacement, technology upgradation and technology upgradation cum replacement\textsuperscript{15}.

Roy Chowdhury and Supriya (2001) in their paper "Powerlooms in Silk Weaving-case studies from Karnataka" had examined the role of state policy with regard to powerlooms, dynamics of the relation of production and the political implications of the diversities of interest and capital associated with this sector in two selected areas in Karnataka – Dodhbollapur and Anakal. The findings of the study highlighted the low wages, exploitative role of mercantile and usurious capital, low levels of production and profitability and casualness of labour force in the powerloom sector\textsuperscript{16}.

Natarajan (2001) in his thesis "Marketing of Grey Cotton Fabrics in Coimbatore District – Tamil Nadu" had analysed the investment pattern, cost of production, factors influencing the selection of channel of distribution, and marketing efficiency of powerloom units engaged in manufacturing of grey cotton fabrics. Out of 820 powerloom units in the study area, he selected 220 units on a random basis. He concluded that the powerloom units in the study area was beset with various problems in marketing such as severe competition, fluctuating market, reduction in price, return of the bales supplied, the order getting cancelled, delay in payment and collusion among traders in
reducing the prices. He recommended that the government should resort to formation of separate commission for powerloom development.

Anand P. Modgerar (2001) in his study “Diagnostic Study of SME’s (Small and Medium Enterprises) in Ichalkaranji Powerloom Cluster” had analyzed the strength, weaknesses, threats and opportunities of powerloom SME’s in Ichalkaranji powerloom cluster. In his opinion, availabilities of qualified technical labour, easy availability of raw material, large domestic market were the strength of powerloom sector in the study area. Low level productivity, no exposure to export market, low access to testing, designing and technical survival were the weaknesses of the powerloom sector. Scope for product diversification, growing domestic and international market were the opportunities and the slow improvement in quality to meet the international standards was the threats to the powerloom SME’s in the study area.

Shunmugam (2002) in his paper “Decentralized powerloom Industry; The incidence of semi-feudalism” had examined the sources of finance for investment in fixed/working capital and the extent of debt with special reference to the differential organizational pattern. The study was conducted at Komarapalayam of Salem District. He
concluded that nearly two thirds of loom operators borrowed money from the master weavers, private financiers or from both the sources for their fixed capital requirements\textsuperscript{19}.

Ganesan (2002) in his thesis “A Study of Operational Efficiency of Powerloom Weavers Co-operative Societies in Madurai Region” had examined the productivity, production efficiency, marketing operations, working capital management and factors governing the profitability of powerloom weavers’ co-operative societies in Madurai region. He concluded that the marketing operation of the powerloom weavers’ co-operative societies did not cope with the changing scenario. Overdependence on the Co-op tex, improper channels of distribution, poor storage facilities and poor quality of fabric affect the sales performance of the societies\textsuperscript{20}.

Sheikh (2002) in his article “Growth and BMR (Bench Marking Requirements) of the Textile Industry Problems and Prospects” had analysed the performance of powerloom sector in Pakistan. He stated that out of 2,25,000 powerlooms, 55,000 looms were inactive as they were too old and obsolete and not suitable for varieties of fabrics required for domestic and international markets. He concluded that the textile industry in Pakistan was in urgent need of balancing, modernizing and replacing of old looms in achieving global competitiveness\textsuperscript{21}. 
Mathivanan (2002) had analysed the status of textile industry in Tamil Nadu. He had stated that the Tamil Nadu contains about a quarter of the powerlooms in India, and possibly over half of the looms were engaged in the manufacturing of cotton fabrics. The powerlooms sector in Tamil Nadu had a late start, but grew steadily and very rapidly in the 1990s. He concluded that the short production run of powerlooms had a significant advantage over the mills and the traders preferred to deal with powerlooms to achieve the product differentiation.

Textiles committee, Ministry of Textiles Government of India (2003) made a study on “Status of Powerloom Sector in Tamil Nadu - Focus on Modernization” had analysed the powerloom sector in a comprehensive manner in order to understand the issues that would enable improvement of strategy for modernization of this sector. Accordingly, the Textile committee had taken up the study on a basis to assess the status of decentralized powerloom sector in the state. Under this study, around 1200 representative units located in 16 powerloom clusters in Tamil Nadu were selected. The study analysed the structural pattern, business models, employment, investment capabilities, products and production process. This study concluded that there is a need to create a mechanism for creating awareness on the programmes and schemes offered by the Government.
Bhushium and Pharsiyawar (2004) in their article “Some Perspective in Handloom and Powerloom Textile Industry- A Case Study” had analysed the status of handloom and powerloom in Karnataka state. They stated that more than 22000 handlooms and 6000 powerlooms are functioning in the state of Karnataka and affected by stagnation in demand, inability to expand, inadequate working capital, increase cost of input. They concluded that the operational management of handloom and powerloom should be modified through effective strategic management.

PDEXCIL (Powerloom Development and Export Promotion Council) (2004) “Weaving Fabric of Life”, stated that the forces of modernization have not marginalized the matchless creativity of weavers, and the ancient art form has been given a new lease of life by the emergence of the powerloom industry. In a unique fusion of the old and the new, traditional motifs are being replicated by powerlooms on gossamer fine fabrics, using the most advanced technology. It concluded that the powerlooms has widened the scope of products and fabrics manufactured, because of the modernization process undertaken by the sector itself. The state-of the art techniques employed have extended the scope of the powerloom textile industry and made available an amazing array of fabrics, not only cottons but also rich feel luxurious blends of cotton, synthetics and other fibers.
Textile and Apparel policy (2005) had discussed the various problems faced by powerlooms in Andhra Pradesh. It stated that the low productivity and quality, inadequate awareness about the trends in international market, lack of exposure to new design and marketing strategies, absence of product innovation and diversification, lack of awareness and adoption of cleaner production technologies are the common problems faced by the powerloom units in Andhra Pradesh.

Gupta (2005) in his article “Focus on Human Resource of Powerloom Industry” had expressed the need of human resource development in powerloom sector. He pointed out that quality improvement in powerloom sector could be achieved through replacement of old conventional looms with modern shuttleless looms and improving work practices on the existing loom through skill and knowledge development of human resources in powerloom sector. He concluded that the human resource development through frequent training programmer and awareness seminars are greatly needed to enable powerloom sector to produce world class quality products and achieve high producing standard.

Maurice Landes, Stephen MacDonald, Santhosh Singh and Thomas Vollrath, (2005) in their research paper, “Growth Prospects for India’s Cotton and Textile Industries” had discussed the trends in
weaving industry in India. The study revealed that the weaving industry remains highly fragmented and small scale and characterized by the use of outdated technology. The growth of powerloom sector was about 7 per cent annually during the period from 1990 to 2003 and it produced more than 78 per cent of total fabric production in the country. It further stated that the powerloom sector filled the void created by the decline of the organized composite mills. The proliferation of powerloom stemmed largely from the ability of small-scale operations to avoid or evade government-imposed labour restrictions and excise duty. The powerloom sector is characterized by the use of obsolete technology and the lack of backward or forward integration with spinning or finishing.

Richard slater, Ram khanna, Bhaumik and Bhasu(2006) in their article, “The Role of the State in Business Development; the case of the Textile and Garments Sector in India” had expressed that the powerloom sector emerged as leading engine of growth of Indian economy in spite of numerous government restrictions and continuing areas of market failure. They stated that, in the early 1990s, there were many government barriers for the growth of powerloom sector. They pointed out that after 90s the government encouraged the decentralized powerloom sector by reduced transactions cost through institutional
finance and provided a range of support activities through weaver service centres which were still largely ineffective\textsuperscript{29}.

It was stated in the article (2006) “Textile Machine and Equipment in Pakistan” that Pakistan’s spinning and weaving industry was in a crisis, largely owing to higher prices because of mismanagement and the subsequent difficulty in obtaining loan for technically advanced machinery. According to the report, most of the weaving under contract (job work basis) was due to lack of working capital and affected by increasing electricity charges\textsuperscript{30}.

Office of Textile Commissioner, Ministry of Textile, Government of India (2006) made a study on “Survey of Powerloom Sector” analysed the growth and structural profile of powerloom sector in India. According to the study, the inherent flexibility of the powerloom sector poised for great leap in the fabric manufacturing capacity of the country. The 19.26 lakhs looms in the decentralized powerloom sector are spread over 4.3 lakhs units with an average of holding of a little over 4 looms per unit. It further pointed out that the most of these plain and drop-box looms are old and obsolete due to outdated technology, which run at a very low speed, and not attached with any control mechanism for quality assurance. The study concluded that there is an urgent need for replacement of existing old looms with new high speed shuttles looms for sustaining competitiveness in the global market\textsuperscript{31}. 
Samwel and Selvamani (2006) in their article titled, “Paradigm Shift on Human Resource Development in Powerloom Weavers Co-operative Societies” had stated that the powerloom co-operative societies in Tamil Nadu mainly produced cloths which were required under the scheme of free supply of uniforms to school children and free distribution of sarees and dhoties scheme. They concluded that the growth and development of co-operatives largely dependent on the effectiveness and efficiency of education, training, motivation and overall development of man power\textsuperscript{32}.

Shrikrishna Mahajan (2006) in his article, “Decentralized Powerloom Industry in Ichalkaranji; A Study”, had studied the various incentives available to the decentralized powerloom sector under the category of cottage industry. He pointed out that, during the year 1950-51, only 2000 powerlooms were in Ichalkaranji, which increased to 90000 powerlooms in 2004-05. He concluded that the most of the powerloom owners were the converts of the handloom owners and as such they ran their looms as a way of their commercial proposition. He suggested that the powerloom weavers must develop their ability and will-power to accept the new challenges of tomorrow\textsuperscript{33}.

Ganesan (2007) “Powerloom Weaver’s Co-operative Societies in Tamil Nadu – Problems and Suggestions”, stated that the powerloom
sector has great potentiality for utilizing human resources available in rural areas. Most of the traditional handloom weavers have switched over to the powerloom sector because of its high income earning potential. He pointed out that the government started to form powerloom weavers’ co-operative societies and liberalized the licensing formalities on 1980 onwards. There were 105 powerloom weavers’ co-operative societies in Tamil Nadu and 16,780 powerlooms were brought under these societies during the period of study. These societies were affected by poor financial efficiency, low profitability, irregular co-operative elections and threat of the Handloom Reservation Act 1935. He concluded that the Government must strengthen the powerloom co-operatives by developing the co-operative principles among rural powerloom weavers by solving the constraints of existing powerloom co-operatives\textsuperscript{34}.

Even though many studies were conducted in the powerloom sector, a little attention was paid to the small scale powerloom units. Hence this study has been undertaken.

1.4 SCOPE OF THE STUDY

The study is mainly confined to the powerloom sector of Indian textile industry in general and the job work powerloom units particularly in the selected district. It includes an analysis of the sources
of job work, production of fabrics and problems faced by the job work
powerloom units in the study area on the basis of the opinions of
powerloom weavers collected through primary data. The present study
does not cover the powerloom units which are engaged in own
production and marketing of fabrics in their own trade name.

1.5. OBJECTIVES OF THE STUDY

The following are the specific objectives of the study,

• To analyse the growth of powerloom sector in India,
• To assess the labour productivity of the powerloom sector,
• To examine the motivational factors of the powerloom weavers,
• To trace the sources of job work and reasons for the selection of
  the job work,
• To study the problems of the powerloom weavers and
• To offer suitable suggestions on the basis of the finding of the
  study.

1.6 HYPOTHESES

The following hypotheses have been drawn up and tested using
appropriate statistical tools.

Null hypotheses

• Ownership structure and sources of job work are independent
• Income of weavers is independent of the sources of job work
• Number of looms does not influence the sources of job work
• Type of looms does not influence the source of job work
• Investment and varieties of fabrics produced by weavers are independent

1.7 PERIOD OF STUDY

The study units were contacted from March 2004 to August 2005 through structured interview schedules to obtain the relevant data. In the case of secondary data this study pertains to a period of fifteen years from 1990 - 1991 to 2005 - 2006. However, regarding the export of fabrics from powerloom sector, the data are available for only a shorter period from 1992 - 1993 to 2003 - 2004.

1.8 STUDY UNITS

For the study purpose Tirunelveli district has been selected, because most of the small scale job work weaving units are located in this district. The weaving on job work basis is also undertaken on other important powerloom centres like Erode, Salem, Madurai and Coimbatore districts. But the powerloom units located in the above centres are functioning on medium and large scale basis. But in all India level, most of the powerloom units are small scale units, which are run with an average of four units35. Hence, Tirunelveli district has been selected for the study purpose. In Tirunelveli district the important
powerloom centers are Sankarankovil, Puliyan kudi and Subbulapuram. There are 420 powerloom units functioning in the study area\(^36\). Out of which 200 units are small scale units that undertaking job work. In Sankarankovil 170 units (out of 350), Puliyan kudi 20 units (out of 40) and Subbulapuram 10 units (out of 30) units are small scale units undertaking job work. All the two hundred units are selected for the census study.

1.9 DATA

Both primary and secondary data are used. The secondary data are collected from office of textile commissioner, Office of Textile Committee, Powerloom Export Development Promotion Council, Powerloom Service Center, publications of the Ministry of Textiles, journals, books, unpublished records and reports. Primary data are collected from the job work powerloom weavers with structured interview schedules. Before undertaking the survey, a pre-test was conducted and the interview schedule was modified and restructured suitably.

1.10 OPERATIONAL DEFINITIONS

1.10.1 Powerloom

The central excise authorities defined what would constitute a loom. It was stated that the loom should be a whole loom & satisfy the
definition given in the cotton textiles (control) orders 1948. Clause 3(10) of the said order says that “Powerloom means a loom which is worked by power as defined under clause (g) of section 2 of the factories Act 1948. (LXIII of 1948)”. Under the said clause(g) of the Factories Act, power means “electrical energy or any other form of energy which is mechanically transmitted and is not generated by human or animal agency”.

In this study a powerloom means the loom which is operated by power.

1.10.2 Job Work Weavers

Job works weavers are those powerloom weavers who own looms but undertake the production on behalf of the job work providers who supply the yarn in the required form.

1.10.3 Job Work Providers

The job work providers are those persons who are providing weaving job work to the weavers on piece rate system. For the study purpose they include master weavers, manufacturer weavers, export dealers and powerloom co-operative societies.

1.10.4 Master Weaver

The master-weaver is a manufacturer of powerloom fabrics without owning any looms but carries out the production activities
through job work weaver. The master weaver purchases the yarn, processes the same and hands over to the job work weaver on a piece rate basis and undertakes the marketing of the fabrics in their own name.

1.10.5 Manufacturer Weaver

The manufacturer weaver is a powerloom weaver who owns looms and carries out production and marketing of fabrics in his own name. He provides the weaving job work to the job work weavers only when the orders are beyond his production capacity. He hands over the excess order to the job work weaver for weaving on piece rate basis.

1.10.6 Export Dealer

An export dealer is a trader of powerloom fabrics without owning any looms but carries out the production activities through the job work weavers for export of powerloom fabrics on piece rate basis.

1.10.7 Powerloom Co-operative Society

A powerloom co-operative society is one which is registered under the Co-operative Society Act, carrying production of powerloom fabrics through its member weavers and marketing the same in their own name.
1.10.8 Small Scale Powerloom Units

For the study purpose, the unit which operates up to 12 looms is considered as small scale units.

1.10.9 Inherited Powerloom Units

Inherited powerloom units are those units which are established by the parents of the present job work weavers.

1.10.10 Newly Started Powerloom Units

Newly started powerloom units which are established by the weavers themselves with their own investments and entrepreneurial skills.

1.10.11 Weaver

Weaver in this study means the weaver who owns the small scale powerloom unit and undertakes job work.

1.11. ANALYTICAL TOOLS

To analyse the primary and secondary data the following statistical tools have been applied.

Arithmetic mean and percentage analyses are used to describe the data.

Likert’s scale

Likert’s scale is used to study the opinion of powerloom weavers regarding the problems of powerloom units in the study.
area. The scores for the statements are given in the following method: strongly agree – 5, agree – 4, undecided – 3, disagree – 2 and strongly disagree – 1. By using this score intensity value has been calculated.

**Garret ranking technique**

To analyse the motivational factors of powerloom weavers Garret ranking technique has been adopted. The ranks given are transmuted into scores with the following formula.

\[
\frac{100-\text{Rij}-0.5}{\text{Nj}}
\]

Rij = Rank given for the item by the jth individual.

Nj = Total ranks given by the jth individuals.

**Curve-fit Equations**

The Curve-fit Equations given in Statistical Package for Social Science (12 versions) were used to estimate the growth trend of the powerlooms, employment and fabric production from powerloom sector. The fitted equations were:

- **Linear (LIN)**: \( Y = b_0 + [b_1 \cdot t] \)
- **Logarithmic (LOG)**: \( Y = b_0 + [b_1 \cdot \ln(t)] \)
- **Inverse (INV)**: \( Y = b_0 + \frac{b_1}{t} \)
- **Quadratic (QUA)**: \( Y = b_0 + [b_1 \cdot t + b_2 \cdot t^2] \)
- **Compound (COM)**: \( \ln(Y) = \ln(b_0) + \ln(b_1) \cdot t \)
Growth (GRO) : \( \ln(Y) = [b_0 + (b_1 t)] \)

Exponential (EXP) : \( \ln(Y) = \ln[b_0] + [b_1 t] \)

\( y \) - respective variables. \( b_0, b_1 \) and \( b_2 \) are the parameters to be estimated.

**Linear Regression**

To analyse the relationship between the number of looms and fabric production, linear regression model has been used\(^4\). The following functional form is applied.

\[
Y = f(x)
\]

\[
Y = \text{Production}; \ X = \text{No of Looms}
\]

This is rewritten as

\[
y_i = a + bX_i
\]

**Kendall’s coefficient of concordance test**

Kendall’s coefficient of concordance test\(^4\) is used to compare the rankings pattern of the powerloom weavers on various problems faced by them. The formula used is

\[
W = \frac{S}{\frac{1}{12}k^2 (N^3-N)}
\]

Where

\[
S = (R_j - \bar{R}_j)^2; \quad R_j = \text{Ranks} ; \quad \bar{R}_j = \text{Average of ranks}
\]

\( K = \text{Number of sets of rankings ie, the number of judges} \)

\( N = \text{Number of objects ranked} \)
**Spearman’s Rank correlation coefficient**

Spearman’s Rank correlation coefficient value is calculated.\(^43\)

\[
\text{Spearman’s rank correlation } (r_s) = 1 - \frac{6\Sigma d^2}{n^3-n}
\]

Where

\[d = \text{difference between ranks,}\]
\[n = \text{number of paired observations.}\]

**Chi-square test**

Chi-square test\(^44\) used to test the association between the income of powerloom weavers and the sources of job work.

The formula for chi-square is

\[
\chi^2 = \sum \frac{(O-E)^2}{E} \text{ with } (r-1)(c-n) \text{ degree of freedom}
\]

Where

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

\[O = \text{Observed frequency}\]
\[E = \text{Expected frequency}\]
\[r = \text{Number of rows in a contingency table}\]
\[c = \text{Number of columns in a contingency table.}\]
1.12 LIMITATIONS OF THE STUDY

The primary data collected from the weavers belong to job work powerloom units, may not be accurate because they are subjected to personal bias. Since the small scale job work powerloom units are functioning like a cottage industry in the study area they do not maintain any books of accounts, registers in their units. Hence the financial details of the production could not be studied.

1.13 SCHEME OF THE REPORT

The thesis has been organized and presented in seven chapters.

The introduction, statement of the problem, review of literature, scope of the study, objectives of the study, hypothesis, period of study, data, study units, analytical tools and the chapter scheme are presented in the first chapter.

An overview of the powerloom sector is given in the second chapter.

Looms in the powerloom sector and mill sector, production of fabrics by all sector, export of powerloom fabrics and growth of powerlooms in selected states are analysed in the third chapter.

The profile of job work powerloom weavers and powerloom units are discussed in the fourth chapter.
The sources of job work, varieties of fabrics produced are examined in the fifth chapter.

The opinions on various problems faced by the job work powerloom units are analysed in the sixth chapter.

The seventh chapter is a summation of findings. Suggestions are also offered by the improvement of powerloom units which are engaged in job work fabric production.
FOOTNOTES


4. Ibid, p. 44.


6. Ibid. p.93.

7. Ibid. p.94.


29. Richard slater,Ramkhanna,TKBhaumilk and RBhasu, “*The Role of the State in Business Development. The Case of Textile and Garments Sector in India*” www.bham.ac.uk.


